



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

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:

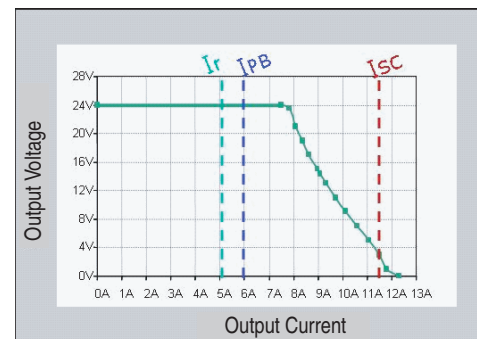
- ReservePower will deliver up to 25% additional current continuously.
- PowerBoost will deliver 150% of rated current for up to 5 s.

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



IRATED: 5 A
 ISHORT CIRCUIT: >9 A
 IPOWER BOOST: 7.5 A

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Cat. No.	IRATED [A]	ISHORT CIRCUIT (25 °C) [A]	IPOWER BOOST OR IRESERVEPOWER [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 XLP50F XLP72E XLP90B XLP90E-2 XLP95E	XLP15A XLP15B XLP15E XLP25A XLP30E XLP36C XLP50E XLP50EZ XLP72E XLP90B XLP100E XLP100F XLPRED	XLP15A XLP15B XLP15E XLP25A XLP30B XLP30E XLP50B XLP50E XLP50EZ XLP72E 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		b		c		e	
Power Supply Type		Rated Output Watts		Output Voltage		Multi-Phase Variations	
Code	Description	Code	Description	Code	Description	Code	Description
XLP	Compact family	15	15 W	A	5V DC		Can be left blank
XLS	Performance family	25	25 W	B	10...12V DC or 12...15 V DC	-2	Two phase
XLE	Essential family	30	30 W	C	Dual +/- 12 and 15V DC	-3	Three phase
		36	36 W	D	24V DC	-3C	Three phase, conformal coating
		40	40 W	E	24...28V DC	-3H	Three phase, input voltage 400V AC and 450...700V DC
		50	50 W	F	48...56V DC	-3N	Three phase, input voltage 480V AC
		60	60 W	G	36...43V DC	-D	360...900V - DC Only
		72	72 W	M	48V DC		
		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				

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 Cat. No. 1489-A1C060	1.41/0.82	Yes	—	1606-XLS80E
	120	24...28	5		1.10/0.62	Yes	✓	1606-XLS120E
	120	24...28	5		1.10/0.62	Yes	✓	* 1606-XLS120EA
	180	12...15	15		1.65/0.93	Yes	✓	1606-XLS180B
	240	24...28	10	6 A Slow Blow Fuse or Cat. No. 1489-A1C060	2.22/1.22	Yes	✓	1606-XLS240E
	240	24...28	10		2.22/1.22	Yes	✓	* 1606-XLS240EA
	240	24...28	10		2.22/1.22	Yes	✓	▶ 1606-XLS240EC
	240	48...56	5		2.22/1.22	Yes	✓	1606-XLS240F
	240	28...32	8	10 A Slow Blow Fuse or Cat. No. 1489-A1C100	2.22/1.22	Yes	✓	1606-XLS240K
	480	24...28	20		4.56/2.48	Yes	✓	1606-XLS480E
	480	24...28	20		4.56/2.48	Yes	✓	▶ 1606-XLS480EC
	480	24...48	20		4.56/2.48	Yes	✓	* 1606-XLS480EA
200...240V AC	480	48...56	10	10 A Slow Blow Fuse or Cat. No. 1489-A1C100	4.56/2.48	Yes	✓	1606-XLS480F
100...240V AC, 110...300V DC	480	36...42	13.3		4.56/2.48	Yes	✓	1606-XLS480G
200...240V AC, 220...300V DC	960	24...28	40		—/4.6	Yes	✓	1606-XLS960EE

* 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.

1606 Special Modules

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.
18...36V DC	40	5.1	8	N/A	N/A	Yes	—	1606-XLDC40A
14...32.4V DC	92	24	3.8	N/A	N/A	—	—	1606-XLDC92D
100...240V AC, 110...300V DC	91	24	3.8	6 A SLOW BLOW FUSE OR 1489-A1C060/20 A♣	1.02/0.48	Yes	✓	1606-XLSDNET4
100...240V AC, 110...300V DC	192	24	8	6 A SLOW BLOW FUSE OR 1489-A1C060/20 A♣	2.13/1.00	Yes	✓	1606-XLSDNET8
100...120/200...240V AC	80	24...28	3.3	10 A SLOW BLOW FUSE OR 1489-A1C100/20 A♣	1.50/0.68	No	—	1606-XLEDNET3
100...120/200...240V AC, 160...375V DC	60	24	2.5	10 A SLOW BLOW FUSE OR 1489-A1C100/16 A♣	1.30/0.70	Yes‡	✓	1606-XL60DR
100...120/200...240V AC, 210...375V DC	120		5	10 A SLOW BLOW FUSE OR 1489-A1C100/16 A♣	2.60/1.40	Yes‡	✓	1606-XL120DR
100...120/200...240V AC, 240...375V DC	240		10	10 A SLOW BLOW FUSE OR 1489-A1C100/10 A♣	6.00/2.60	Yes‡	✓	1606-XL240DR
24V DC	720	V _{in} -5V typ	30	N/A	N/A⚡	—	—	1606-XLRED20-30
24V DC	960	V _{in} -6V typ	40	N/A	N/A§	—	—	1606-XLRED40
10...60V DC	384	V _{in} 1 -9V typ	16➤	N/A	N/A	—	—	1606-XLPRED
10...60V DC	480	V _{in} 1 -9V typ	20➤	N/A	N/A	—	—	1606-XLSRED
24...28	960	V _{in} 2.15 typ.	40	N/A	N/A	—	—	1606-XLSRED40
24...28	1920	V _{in} 2.7 typ.	80	N/A	N/A	—	—	1606-XLSRED80
24...60V DC	480	V _{in} 1 -9V typ	20➤	N/A	N/A	—	✓	1606-XLRED

1606 Special Modules with UPS

Input Voltage	Output Power [W]	Output Voltage	Output Current [A]	Cat. No.
22.5...30V DC	240	22.5	10	⚡ 1606-XLS240-UPS
22.5...30V DC	240	22.5	10	1606-XLS240-UPSC
22.5...30V DC	240	12/22.5	5/10	1606-XLS240-UPSD
22.5...30V DC	240	22.5	10	1606-XLS240-UPSE
24...28.8V DC	480	22.5...27.8	20	1606-XLSBUFFER24
48...56V DC	960	45...54	10	1606-XLSBUFFER48

Bulletin 1606 Special Module Accessories

Description	Cat. No.
7 Ah/12V Battery Assembly with Bracket, for use with DC UPS	1606-XLSBATASSY1
7 Ah/12V Battery	1606-XLSBAT1
Battery bracket for 7 Ah/12V battery	1606-XLSBATBR1
26 Ah/12V Battery Assembly with Bracket, for use with DC UPS	1606-XLSBATASSY2
26 Ah/12V Battery	1606-XLSBAT2
Battery bracket for 26 Ah/12V battery	1606-XLSBATBR2

⚡ To be used alongside 20, 30, and 40 A power supplies.

‡ Single/parallel operation (inclined characteristic) selectable (jumper).

§ To be used alongside 40 A power supplies (or smaller).

♣ Unit has internal (not accessible/replaceable) input fuse. Additional protection is not required if used on branch circuits ≤ UL test levels.

➤ See product specifications for proper use.

⚡ **Cat. No. 1606-XLS240-UPS** is a charging module, used along side a power supply and a battery assembly. **The battery assembly must be ordered separately.** Order **Cat. No. 1606-XLSBATASSY1** for 7 Ah/ 12V battery assembly or **Cat No. 1606-XLSBATASSY2** for 26 Ah/ 12V battery assembly. Consult local codes and regulations for installation.

Bulletin 1606 Redundancy Module

	N+1 Redundancy	N+1 Redundancy	N+1 Redundancy	N+1 Redundancy		N+1 Redundancy	N+1 Redundancy
	1606-XLRED20-30	1606-XLRED40	1606-XLPRED	1606-XLSRED	1606-XLERED	1606-XLSRED40	1606-XLSRED80
Output Volts/Watts	30 A Dual redundancy module	40 A Single redundancy module	8 A Dual redundancy	10 A Dual redundancy		20 A Dual redundancy	40 A Dual redundancy
Input Voltage (47...63 Hz)	DC 24V (max. 35V)		DC 10...60V	DC 10...60V		24...28 V DC	24...28 V DC
Operational Range	18...36 V DC		10...60V DC	10...60V DC		24...28 V DC	24...28 V DC
Rated Input Current	20...30 A (max. 35 A)	0...40 A (max. 50 A)	Single input: 8 A max. Dual input: 16 A max. total	Single input: 10 A max. Dual input: 20 A max. total		Single input: 20 A max. Dual input: 40 A max. total	Single input: 40 A max. Dual input: 80 A max. total
Output Voltage	Vin -0.5V typ.	Vin -0.6V typ.	Vin -0.9V typ.	Vin -0.9V typ.		Vin -2.15V typ.	Vin -2.7V typ.
Rated Output Current	20...30 A (max. 35 A)	0...40 A (max. 50 A)	0...10 A	0...20 A		0...40 A	0...80 A
Operating Temperature Range (T_{amb})	-10 °C...+70 °C		-40 °C...+70 °C >60 °C with derating	-25 °C...+70 °C >60 °C with derating		-25 °C...+70 °C >60 °C with derating	-25 °C...+70 °C >60 °C with derating
Dimensions (W x H x D)	48 x 124 x 102 mm	48 x 124 x 117 mm	45 x 75 x 91 mm	32 x 124 x 102 mm	32 x 124 x 117 mm	36 x 124 x 127 mm	46 x 124 x 127 mm
Weight	625 g	646 g	136 g	290 g	350 g	340 g	440 g
Certifications/Standards*	1, 2, 3, 6		1, 2, 3, 6	1, 2, 3, 6		1, 2, 3, 6	1, 2, 3, 6
Special Features	Dual redundancy module for 2x35 A; N+1 redundancy	Single redundancy module for 2.5-50 A; N+1 redundancy	Redundancy for DC 10...60V applications; ABS/GL/RINA (Marine); Class 1 Div. 2	Redundancy for DC 10...60V applications; Class 1 Div. 2	Redundancy for DC 10...60V applications; Class 1 Div. 2; DC OK	Redundancy for DC 24...28V applications; Class 1 Div. 2	Redundancy for DC 24...28V applications; Class 1 Div. 2

* 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

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