



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:

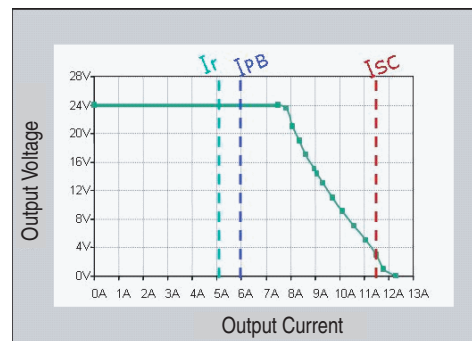
- ReservePower will deliver up to 25% additional current continuously.
- PowerBoost will deliver 150% of rated current for up to 5 s.

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



I_{RATED}: 5 A
 I_{SHORT CIRCUIT}: >9 A
 I_{POWER BOOST}: 7.5 A

Cat. No.	I _{RATED} [A]	I _{SHORT CIRCUIT (25 °C)} [A]	I _{POWER BOOST OR I_{RESERVEPOWER}} [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.

Power Supplies

Quick Guide/ Special Applications

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.



Bulletin 1606 Special Modules

	1606-XLDC40A	1606-XLDC92D	1606-XLSDNET4	1606-XLSDNET8	1606-XLEDNET3
Output Volts/Watts	24V/40 W	24V/92 W	24V/91 W	24V/192 W	24V...28V/80 W
Input Voltage (47...63 Hz)	18...36V DC	24V DC	100...240V AC; 110...300V DC	AC 100...240V 110...300V DC	100...120V AC/200...240 V AC
Operational Range	16...40V DC	14...32.4V DC	85...264V AC 88...360V DC	85...276 V AC 88...375 V DC	90...132V AC/180...264V AC
Hold-up Time	18...36V DC	18...36V DC	43 ms (120V AC) 77 ms (240V AC)	38 ms (120V AC) 41 ms (240V AC)	>60 ms (120V) >244 ms (240V)
Rated Input Current	<2.9 A	<5.5 A	1.1 A (100V AC) 0.5 A (240V AC)	2.3 A (100V AC) 1.0 A (240V AC)	1.24 A (100V AC) 0.68 A (240V AC)
Efficiency	typ. 82%	typ. 90.3%	typ. 92.4%	typ. 92.7%	typ. 90%
Output Voltage	5.1V	24V	24V	24V	24...28V
Rated Output Current	8 A	3.8 A	3.8 A	8 A	3.3 A @ 24V 2.9 A @ 28V
Ripple/Noise	<50 mV _{pp}	<50 mV _{pp}	< 50 mV _{pp}	< 50 mV _{pp}	<50 mV _{pp}
Operating Temperature Range (T _{amb})	0...+70 °C >60 °C with derating	-25...+70 °C >60 °C with derating	-25...+70 °C >60 °C with derating	-25...+70 °C >60 °C with derating	-25...+70 °C, >60 °C with derating
Non-Operating Temperature Range	-25...+85 °C	-40...+85 °C	-40...+85 °C	-25...+70 °C >60 °C with derating	-40...+85 °C
MTBF*	> 510 000 hours	-	>581 000 hours	>831 000 hours	>700 000 hours
Dimensions (W x H x D)	49 x 124 x 102 mm	32 x 124 x 102 mm	40 x 124 x 117 mm	60 x 124 x 117 mm	32 x 124 x 102 mm
Weight	470 g	410 g	620 g	900 g	430 g
Certifications/Standards*	1, 2, 3, 5, 6, 7		1, 2, 3, 5, 6, 7	1, 2, 3, 5, 6, 7	1, 2, 3, 4, 5, 6, 7
Special Features	—		NEC Class 2 power supply; Active PFC; ODVA Approved; Class 1 Div. 2; Semi F47	Active PFC; ODVA Approved; Class 1 Div. 2; Semi F47	NEC Class 2 power supply; ODVA Approved; Class 1 Div. 2; Semi F47

* 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

	N+1 Redundancy 1606-XL60DR	N+1 Redundancy 1606-XL120DR	N+1 Redundancy 1606-XL240DR
Output Volts/Watts	24V/60 W	24V/120 W	24V/240 W
Input Voltage (47...63 Hz)	100...120V/200...240V AC manual select; 160...375V DC	100...120/200...240V AC manual select; 210...375V DC	AC 100...120/200...240V manual select; DC 240...375V
Operational Range	—	85...132/176...264V AC	85...132/176...264 V AC
Hold-up Time	>20 ms (AC 196V)	>37 ms (AC 196V)	>25 ms (AC 196V)
Rated Input Current	<1.3 A (115V)/<0.7 A (230V)	<2.6 A (115V)/<1.4 A (230V)	<6 A (115V)/<2.8 A (230V)
Efficiency	typ. 86.5%	typ. 89%	typ. 89%
Output Voltage	24V	24V	24V
Rated Output Current	2.5 A	5 A	10 A
Power Boost	—	6 A	12 A
Ripple/Noise	<30 mV _{pp}	<30 mV _{pp}	<30 mV _{pp}
Operating Temperature Range (T _{amb})	-10...+70 °C >60 °C with derating	-10...+70 °C >60 °C with derating	0...+70 °C >60 °C with derating
Non-Operating Temperature Range	-10 °C...+70 °C >60 °C with derating	-40...+85 °C	-40...+85 °C
MTBF*	700 000 hours	480.000 hours	390.000 hours
Dimensions (W x H x D)	49 x 124 x 102 mm	64 x 124 x 102 mm	120 x 124 x 102 mm
Weight	470 g	620 g	980 g
Certifications/Standards*	1, 2, 3, 5, 6	1, 2, 3, 5, 6, 7	1, 2, 3, 5, 6
Special Features	RDY relay contact; N+1 redundancy; plug connectors; NEC Class 2 power supply	RDY relay contact; N+1 redundancy; plug connectors	RDY relay contact; N+1 redundancy; plug connectors

* 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