

X Series

375 and 500 Watt AC-DC Converters



Input range 85...264 V AC with PFC
1 or 2 isolated, regulated outputs up to 96 V
Class I equipment



- Electrically and mechanically rugged DIN-rail front end
- Outputs individually controlled with 150% output peak power
- Operating ambient temperature range $-40...60^{\circ}\text{C}$ with convection cooling

Selection chart for front ends

Output 1		Output 2		Input voltage $U_{i \min} \dots U_{i \max}$	Rated power $T_A = 60^{\circ}\text{C}$ $P_{o \text{ tot}} [\text{W}]$	Type	Options ¹
$U_{o \text{ nom}}$ [V DC]	$I_{o \text{ nom}}$ [A]	$U_{o \text{ nom}}$ [V DC]	$I_{o \text{ nom}}$ [A]				
24.7	15	-	-	85...264 VAC (14...440 Hz) ³ 90...350 VDC	375	LXR 1601-6	R D1...D5
24.7	20	-	-		500	LXN 1601-6	
37	9.9	-	-		375	LXR 1701-6	S M2
37	13.2	-	-		500	LXN 1701-6	
49.4	7.5	-	-		375	LXR 1801-6	F K2
49.4	10	-	-		500	LXN 1801-6	
24.7	10	24.7	10		500	LXN 2660-6	
49.4	5	49.4	5		500	LXN 2880-6	

Selection chart for Battery chargers²

Output		Input voltage $U_{i \min} \dots U_{i \max}$	Rated power $T_A = 60^{\circ}\text{C}$ $P_{o \text{ tot}} [\text{W}]$	Type	Options ¹
$U_{o \text{ nom}}$ [V DC]	$I_{o \text{ nom}}$ [A]				
25.7...29.3	12.6	85...264 VAC (14...440 Hz) ³	345	LXR 1240-6 M1	F K2
25.7...29.3	16.9		460	LXN 1240-6 M1	
51.4...58.6	6.3	90...350 VDC	345	LXR 1740-6 M1	
51.4...58.6	8.4		460	LXN 1740-6 M1	

¹ For lead times and minimum order quantities contact Power-One.

² For availability contact Power-One.

³ Input frequency range certified for 14...440 Hz. For continuous operating frequency <40 Hz and >65 Hz contact factory.

Input

Input voltage	world wide mains, single phase for derating information see application note	85...264 V AC 90...350 V DC
Input frequency		14...440 Hz
Power factor	active PFC	up to 0.99
Inrush current	virtually no inrush current	

Output

Efficiency	$U_{i\text{ nom}}, I_{o\text{ nom}}$	up to 89%
Output voltage setting accuracy	$U_{i\text{ nom}}, I_{o\text{ nom}}$	$\pm 1.3\% U_{o\text{ nom}}$
Output voltage noise	IEC/EN 61204	typ. 50 mV
Output voltage ripple	sinusoidal output ripple at twice the line frequency	-1.2 V _{pp}
Line and cross regulation	$U_{i\text{ min}} \dots U_{i\text{ max}}$	typ. 50 mV
Load regulation	0...100% $I_{o\text{ nom}}, U_{i\text{ nom}}$	-1.6% $U_{o\text{ nom}}$
Minimum load	not required	
Current limitation	rectangular U/I characteristic	101...112% $I_{o\text{ nom}}$
Short term peak power	1 s, electronically controlled	150% $I_{o\text{ nom}}$
Operation in parallel	enabled by droop current share	
Hold-up time	$I_{o\text{ nom}}, U_o$ decreases to 80% of $U_{o\text{ nom}}$	typ. 15 ms

Control

Status indication	LED output(s) OK
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Protection

Input reverse polarity	bridge rectifier
Input fuse	not user accessible 10 A, fast blow
Input undervoltage lockout	typ. 80% $U_{i\text{ min}}$
Input overvoltage lockout	typ. 105% $U_{i\text{ max}}$
Input transient	voltage depending resistor (VDR)
Output(s)	no-load, overload and short circuit proof
Output overvoltage	second control loop, each output, 24/48 V 30/60 V SELV
Overtemperature	reduced output power if thermally overloaded

Safety

Approvals	EN 60950, UL 1950, CSA22.2 No. 950	EN 61010-1
Electric strength test voltage	class I, I/case	2 kV AC
	class I, I/O	3 kV AC
	class I, O/case	1 kV AC
	class I, O/O	0.35 kV AC
Pollution degree	AC-in / DC-in	3/2
Degree of protection		IP 20

EMC

Electrostatic discharge	IEC/EN 61000-4-2, level 4, contact/air (8/15 kV)	criterion A
Electromagnetic field	IEC/EN 61000-4-3, level 3 (10 V/m)	criterion A
Electr. fast transients/bursts	IEC/EN 61000-4-4, level 4, capacitive/direct (4/2 kV)	criterion A
Surge	IEC/EN 61000-4-5, level 3, in and out, line to line (2 kV)	criterion B
	level >3, input, line to case (3.5 kV)	criterion B
	level 2, output, line to case (1 kV)	criterion A
Conducted disturbances	IEC/EN 61000-4-6, level 3 (10 V)	criterion A
Electromagnetic emissions	CISPR 22/EN 55022, conducted	class A

Environmental

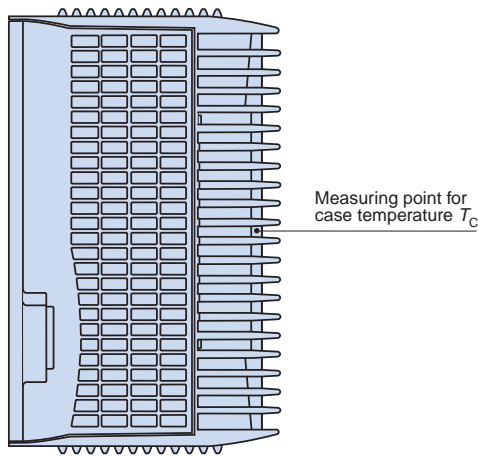
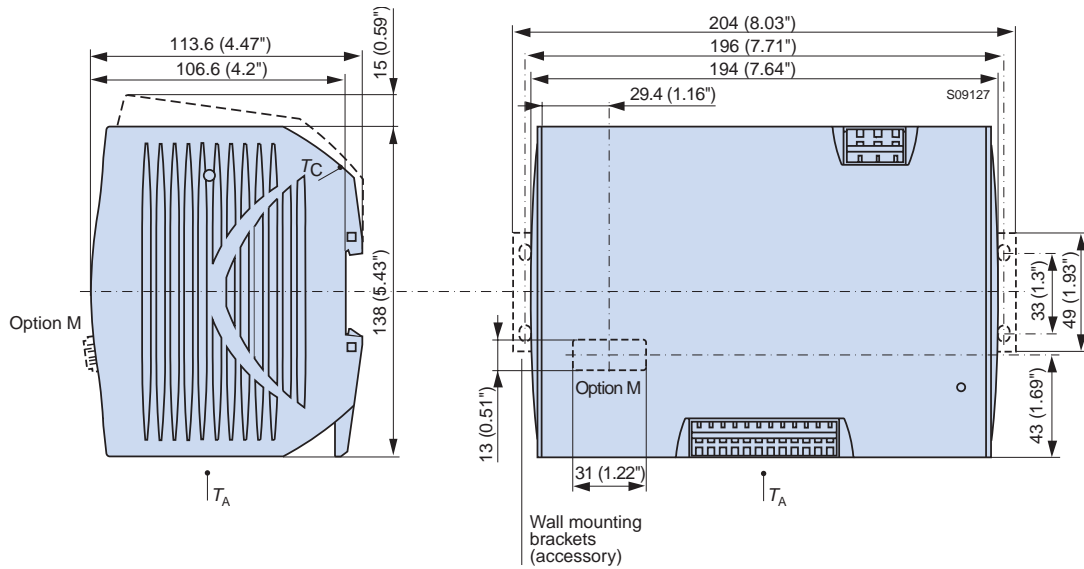
Operating ambient temperature	$U_{i\text{ nom}}, I_{o\text{ nom}}$, convection cooled	-40...60°C
Operating case temperature T_C	$U_{i\text{ nom}}, I_{o\text{ nom}}$	-40...87°C
Storage temperature	non operational	-40...100°C
Damp heat	IEC/EN 60068-2-3, 93%, 40°C	56 days
Shock and vibration	unit wall mounted with brackets	
Shock	IEC/EN 60068-2-27, 11 ms	50 g _n
Bump	IEC/EN 60068-2-29, 11 ms	25 g _n
Vibration, sinusoidal	IEC/EN 60068-2-6, 10...60/60...2000 Hz	0.35 mm/5 g _n
Vibration, random	IEC/EN 60068-2-64, 20...500 Hz	0.05 g ² /Hz
MTBF	MIL-HDBK-217E, G _B , 40°C	400'000 h

Options

Input and output undervoltage monitoring		D1...D5
Output voltage adjustment	60...110% of $U_{o\text{ nom}}$	R
Remote on/off		S
Multi option choice	(D1...D5, R, S) via Sub-D connector	M1...M2
Built-in second input fuse in the neutral		F
System connectors with screw terminals		K2

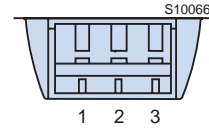
Mechanical data

Tolerances ± 0.3 mm (0.012") unless otherwise indicated.



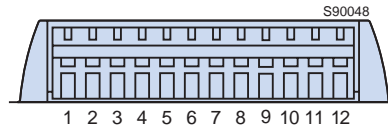
Terminal allocation input side

Pin	Des.	Determination
1	⊕	Protective earth
2	N■	Input neutral
3	P■	Input phase



Terminal allocation output side

Pin	Des.	Single output	Double output
1	⊕	Earth to load	Earth to load
2	+	Output pos.	Output 1 pos.
3	+	Output pos.	Output 1 pos.
4	-	Output neg.	Output 1 neg.
5	-	Output neg.	Output 1 neg.
6	+	Output pos.	Output 2 pos.
7	+	Output pos.	Output 2 pos.
8	-	Output neg.	Output 2 neg.
9	-	Output neg.	Output 2 neg.
10	Aux1	Options	Options
11	Aux2	n.c.	n.c.
12	⊕	Earth to load	Earth to load



Accessories

Mounting brackets for vertical chassis/wall mounting
 Protective covers over input and output terminals