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
3 kV AC I/O electric strength test voltage

- Electrically and mechanically rugged DIN-rail front end
- Outputs individually controlled with 150% output peak power
- Operating ambient temperature range –40...60°C with convection cooling

Selection chart for front ends

Output 1 $U_{o\,nom}$ [V DC]	Output 1 $I_{o\,nom}$ [A]	Output 2 $U_{o\,nom}$ [V DC]	Output 2 $I_{o\,nom}$ [A]	Input voltage $U_{i\,min}$…$U_{i\,max}$	Rated power T_A = 60°C $P_{o\,tot}$ [W]	Type	Options[1]
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, F1 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 chargers[2]

Output $U_{o\,nom}$ [V DC]	Output $I_{o\,nom}$ [A]	Input voltage $U_{i\,min}$…$U_{i\,max}$	Rated power T_A = 60°C $P_{o\,tot}$ [W]	Type	Options[1]
25.7...29.3	12.6	85…264 VAC (14…440 Hz)[3] 90…350 VDC	345	LXR 1240-6 M1	F, F1 K2
25.7...29.3	16.9		460	LXN 1240-6 M1	
51.4...58.6	6.3		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 >100 Hz contact factory.

Input

Input voltage	world wide mains, single phase	85...264 V AC
	for derating information see application note	90...350 V DC
Input frequency	wide frequency range	16 2/3...440 Hz
Power factor	active PFC	up to 0.99
Inrush current	virtually no inrush current	

Output

Efficiency	$U_{i\,nom}$, $I_{o\,nom}$	up to 89%
Output voltage setting accuracy	$U_{i\,nom}$, $I_{o\,nom}$	±1.3% $U_{o\,nom}$
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	$U_{i\,min}$...$U_{i\,max}$	typ. 50 mV
Load regulation	0...100% $I_{o\,nom}$, $U_{i\,nom}$	–1.6% $U_{o\,nom}$
Minimum load	not required	
Current limitation	rectangular U/I characteristic	101...112% $I_{o\,nom}$
Short term peak power	1 s, electronically controlled	150% $I_{o\,nom}$
Operation in parallel	enabled by droop current share	
Hold-up time	$I_{o\,nom}$, U_o decreases to 80% of $U_{o\,nom}$	typ. 15 ms

Control

Status indication	LED output(s) OK	

Protection

Input reverse polarity	bridge rectifier	
Input fuse	not user accessible	10 A, fast blow
Input undervoltage lockout		typ. 80% $U_{i\,min}$
Input overvoltage lockout		typ. 105% $U_{i\,max}$
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 in progress	EN 60950, UL 1950, CSA22.2 No. 950, UL 508 listed	
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 B

Environmental

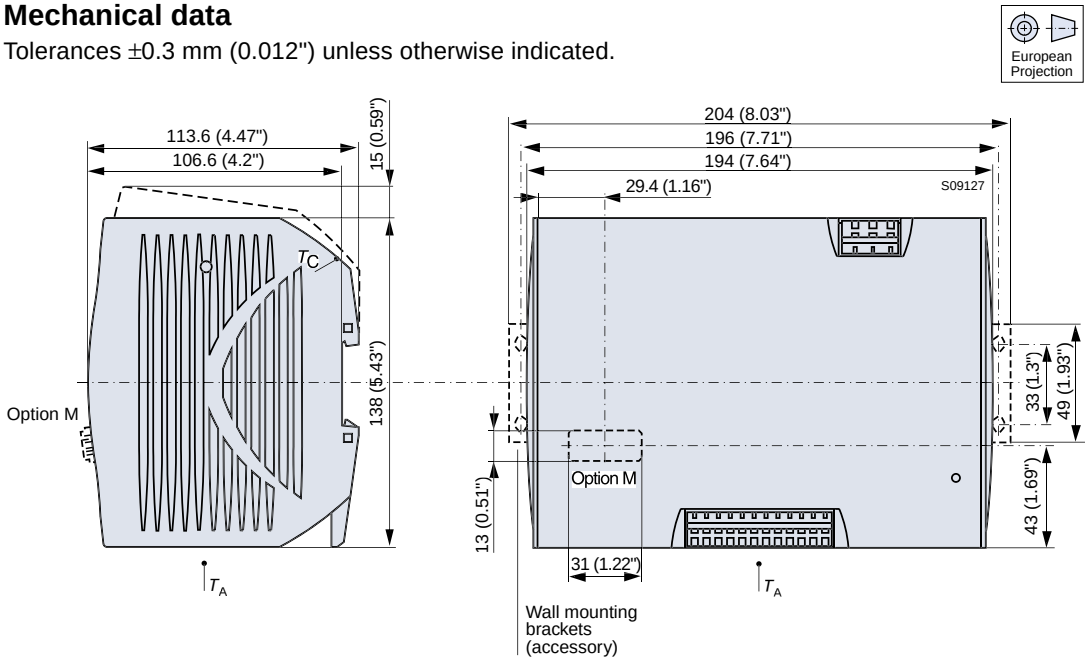
Operating ambient temperature	$U_{i\ nom}$, $I_{o\ nom}$, convection cooled	–40...60°C
Operating case temperature T_C	$U_{i\ nom}$, $I_{o\ nom}$	–40...87°C
Storage temperature	non operational	–40...100°C
Damp heat	IEC/EN 60068-2-3, 93%, 40°C	56 days
Shock and vibration	unit wall mounted with brackets	
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

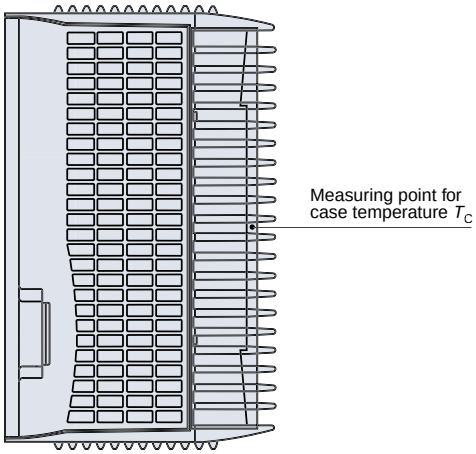
Options

Input and output undervoltage monitoring		D1...D5
Output voltage adjustment	10 V...110% of $U_{o\ nom}$	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
No fuse fittet (for operation from high DC)		F1
System connectors with screw terminals		K2

Mechanical data

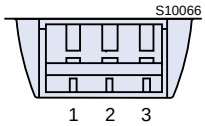
Tolerances ±0.3 mm (0.012") unless otherwise indicated.





Terminal allocation input side

Pin	Des.	Determination
1	⏚	Protective earth
2	N∼	Input neutral
3	P∼	I



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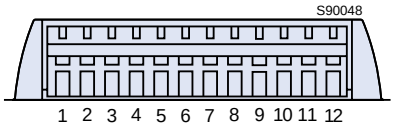
Terminal allocation output side

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	Options	Options
12	⏚	Earth to load	Earth to load



Accessories

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