

Features

- Universal Input: 85~305V AC, 100~430V DC
- Operating ambient temperature range: -40°C to +85°C
- High I/O isolation test voltage up to 4200V AC
- High efficiency up to 86%
- Output SCP, OCP, OVP
- High-Efficiency up to 85%
- Meets Emissions CLASS B and surge $\pm 2KV/\pm 4KV$ without additional circuits
- Meets 5000m altitude requirements



Ideal Power's 36LH15-23BxxR2-x 15W AC/DC Power Supply Converter Series are certified to UKCA, CE, CB, cURus, RoHS & EN 62368-1/IEC 62368-1/UL 62368-1/BS EN 62368-1 Standards and comply with the relevant Efficiency Regulations. These are primarily used in ITE, Audio & Video Industries and customised solutions are available upon request.

Models

Model No*.	Output Power	Nominal Output Voltage and Current (Vo/Io)	Efficiency (230VAC, %/Typ.)	Capacitive Load (μF)Max.
36LH15-23B03R2	9.9W	3.3V/3000mA	77	30000
36LH15-23B05R2	14W	5V/2800mA	79	16000
36LH15-23B09R2	15W	9V/1670mA	78	5500
36LH15-23B12R2		12V/1250mA	82	4500
36LH15-23B15R2		15V/1000mA	82	4000
36LH15-23B24R2		24V/625mA	83	800
36LH15-23B48R2		48V/320mA	85	400

Input Specifications

	Conditions	Min	Typ	Max	Unit
Input Voltage Range	AC input	85	--	305	V AC
	DC input	100	--	430	V DC
Input Frequency		47	--	63	Hz
Input Current	115VAC	--	--	0.37	A
	230VAC	--	--	0.22	
Inrush Current	115VAC	--	16	--	
	230VAC	--	30	--	
Leakage current	277VAC/50Hz	0.25mA RMS Max.			
Recommended External Input Fuse	2A/300V, slow fusing				
Hot Plug	Unavailable				

Output Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Voltage Accuracy	3.3V output	--	±2	--	%
	others	--	±3	--	
Line Regulation	Full load	--	±0.5	--	
Load Regulation	0%-100% load	--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak)	--	50	100	mV
Temperature Coefficient		--	±0.02	--	%/°C
Stand-by Power Consumption	230VAC	3.3V/5V/9V/12V/15V/24V		0.3	W
		48V		0.5	
Short-circuit Protection		Hiccup, continuous, self-recovery			
Over-current Protection		≥150%Io, self-recovery			
Over-voltage Protection	3.3/5V output	≤7.5VDC (Hiccup)			
	9V output	≤15VDC (Hiccup)			
	12/15V output	≤20VDC (Hiccup)			
	24V output	≤35VDC (Hiccup)			
	48V output	≤60VDC (Hiccup)			
Minimum Load		0	--	--	%
Hold-up Time	115VAC input	--	5	--	ms
	230VAC input	--	40	--	

Note: * The "parallel cable" method is used for ripple and noise test, please refer to AC-DC Converter Application Notes for specific information.

General Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Isolation	Input-output	4200	--	--	VAC
	Input - PE	2500	--	--	
	Output - PE	1250	--	--	
Impulse Withstand Voltage	Input-output	6000	--	--	VDC
	Input - PE	6000	--	--	
	Output - PE	6000	--	--	
Insulation Resistance	Input-output	100	--	--	MΩ
	Input - PE	100	--	--	
	Output - PE	100	--	--	
Operating Temperature		-40	--	+85	
Storage Temperature		-40	--	+105	°C
Storage Humidity		--	--	95	%RH
Soldering Temperature	Wave-soldering	260 ± 5°C; time: 5 - 10s			
	Manual-welding	360 ± 10°C; time: 3 - 5s			
Switching Frequency		--	65	--	KHz
Power Derating	-40°C to -25°C	4.00	--	--	% / °C
	+55°C to +70°C	2.67	--	--	
	+70°C to +85°C	1.33	--	--	
	85VAC-100VAC	1.67	--	--	% / VAC
	277VAC-305VAC	0.72	--	--	
	2000m-5000m	6.67	--	--	% / Km
Safety Standard	9V/48V output	BS EN/EN62368-1(Report) safety approved; Design refers to UL/IEC62368-1, IEC62477-1			

Safety Standard	Others	UL/IEC62368-1 & BS EN/EN62368-1 (Report) safety-approved; Design refer to IEC62477-1
Safety Class		CLASS I
MTBF	MIL-HDBK-217F@25°C	≥500,000 h

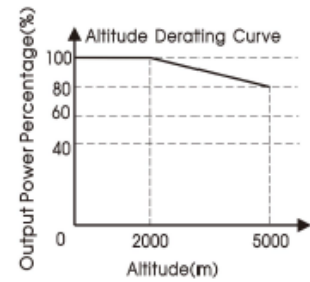
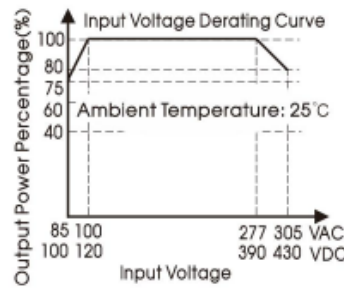
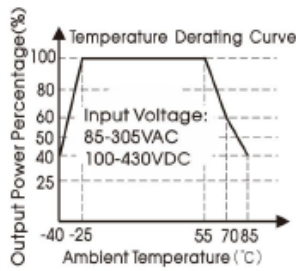
Mechanical Specifications

Case Material	Black plastic, flame-retardant and heat-resistant (UL94V-0)	
Dimensions	Horizontal package	62.00 x 45.00 x 22.50 mm
	A2 chassis mounting	96.10 x 54.00 x 31.00mm
	A4 Din-Rail mounting	96.10 x 54.00 x 35.60mm
Weight	Horizontal package	80g (Typ.)
	A2 chassis mounting	125g (Typ.)
	A4 Din-Rail mounting	165g (Typ.)
Cooling method	Free air convection	

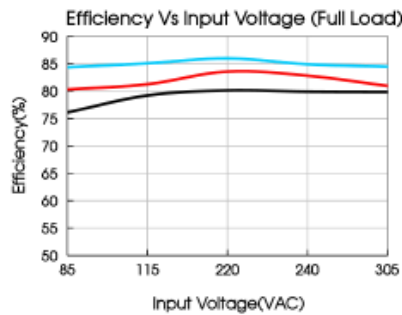
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32 EN55032	CLASS B		
	RE	CISPR32 EN55032	CLASS B		
Immunity	ESD	IEC/EN61000-4-2	Contact ± 8KV/Air ± 6KV	Perf. Criteria B	
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A	
	EFT	IEC/EN61000-4-4	± 4KV	perf. Criteria B	
	Surge		IEC/EN61000-4-5	line to line ±2KV/line to PE ±4KV	perf. Criteria B
			IEC/EN61000-4-5	line to line ±4KV/ line to PE ±6KV (See Fig. 2 for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A	
	PFM	IEC/EN61000-4-8	10A/m		
Voltage dips, short interruptions and voltage variations		IEC/EN61000-4-11	0%, 70%	perf. Criteria B	

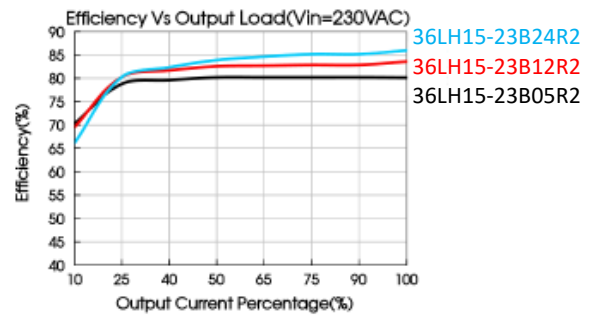
Characteristic Curve



Note: ① With an AC Input between 85-100VAC/277-305VAC and a DC Input between 100-120VDC/390-430VDC, the output power must be derated as per temperature derating curves:



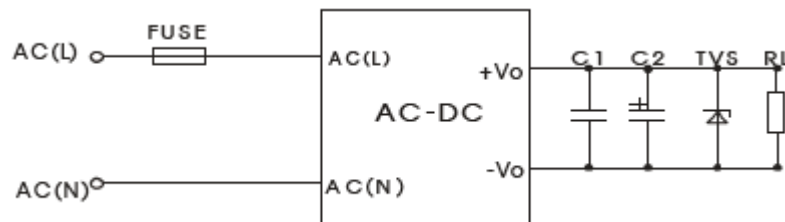
36LH15-23B24R2
36LH15-23B12R2
36LH15-23B05R2



AC - DC

Design Reference

Typical application: Fig 1



Model	C1	C2	FUSE	TVS
36LH15-23B03R2	1uF/50V	680uF/25V	2A/300V, slow-blow, required	SMBJ7.0A
36LH15-23B05R2		680uF/25V		SMBJ7.0A
36LH15-23B09R2		470uF/25V		SMBJ12A
36LH15-23B12R2		220uF/25V		SMBJ20A
36LH15-23B15R2		220uF/25V		SMBJ20A
36LH15-23B24R2		68uF/35V		SMBJ30A
36LH15-23B48R2		33uF/63V		SMBJ64A

Note:

Output Filter Components: We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacturer's datasheet). Choose a Capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

Design Reference

EMC compliance recommended circuit:

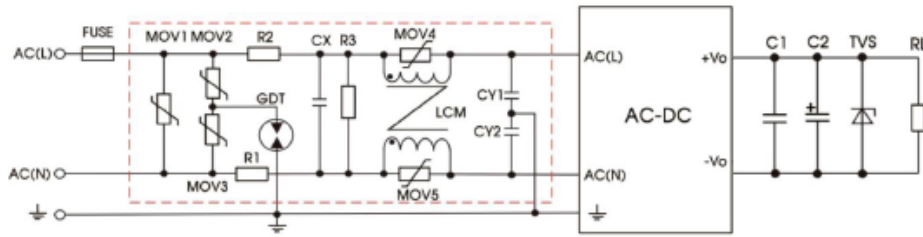
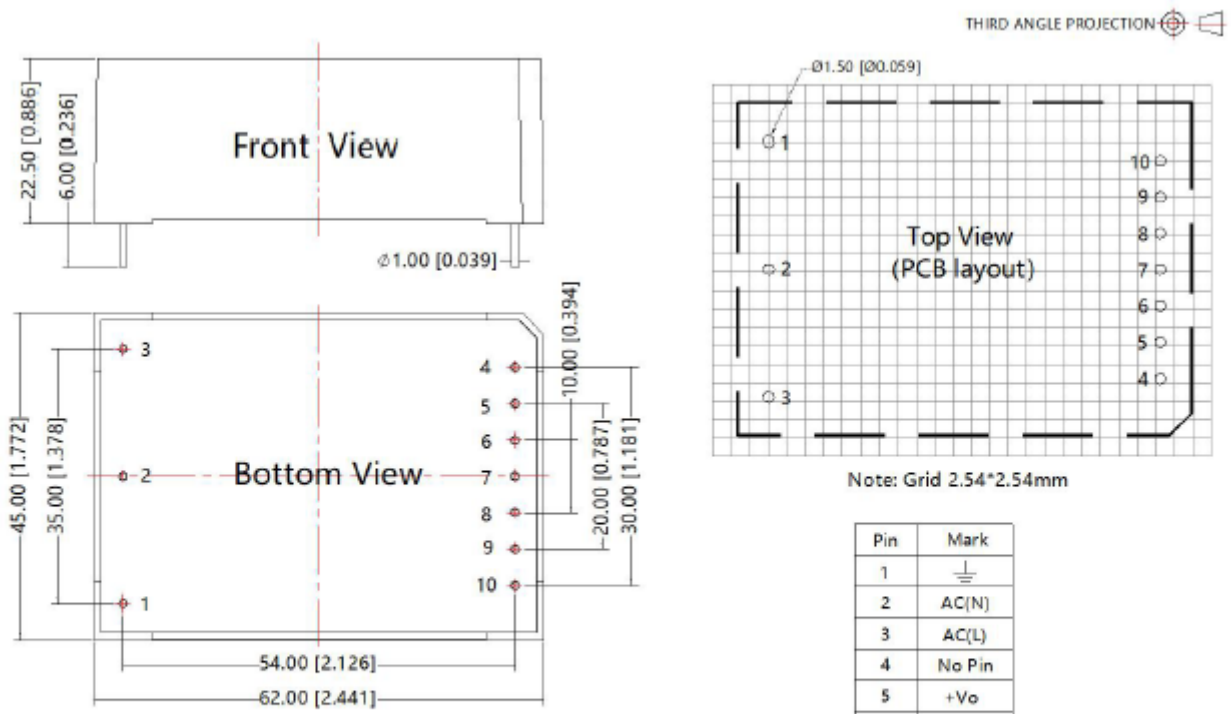


Fig 2: EMC application circuit with higher requirements

Component	Recommended value	Component	Recommended value
MOV1	S20K350	CY1/CY2	2200pF/400VAC
MOV2/MOV3	S14K350	GDT	B 5G3600
MOV4/MOV5	S07K350	R3	1MΩ/2W (wire-wound resistor, required)
CX	0.15uF/310VAC	FUSE	2A/300V, slow-blow, required
R1/R2	2Ω/3W (wire-wound resistor, required)		
LCM	10mH, P/N: FL2D-Z5-153 (MORNSUN) is recommended		

Note: R3 (required) can also be replaced by 4 pieces of 1.5MΩ/1206 patch resistors in series and parallel.

Dimensions and Recommended Layout

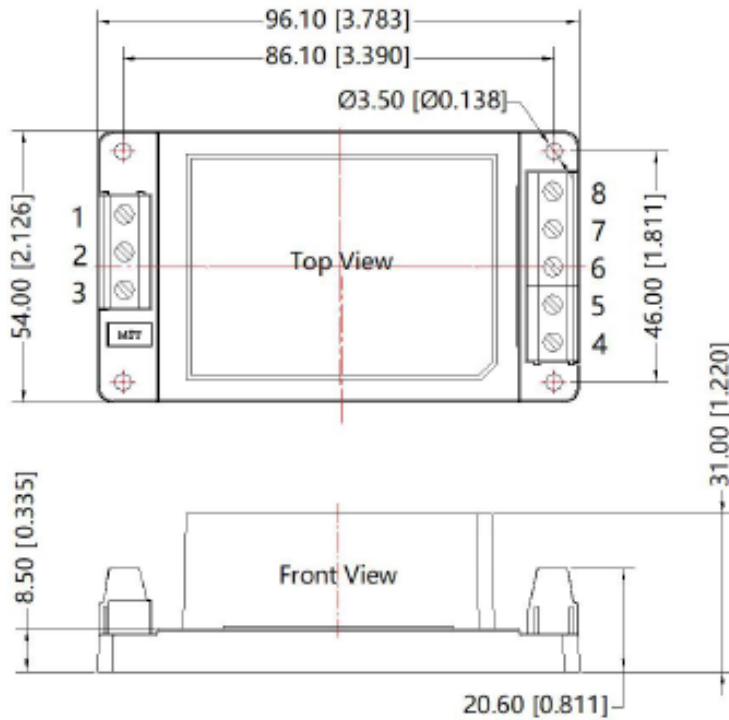


Note:
 Unit: mm[inch]
 Pin diameter tolerances: ±0.10[±0.004]
 General tolerances: ±0.50[±0.020]

Pin	Mark
1	
2	AC(N)
3	AC(L)
4	No Pin
5	+Vo
6	No Pin
7	No Pin
8	No Pin
9	-Vo
10	No Pin

Dimensions and Recommended Layout

A2S Dimensions:



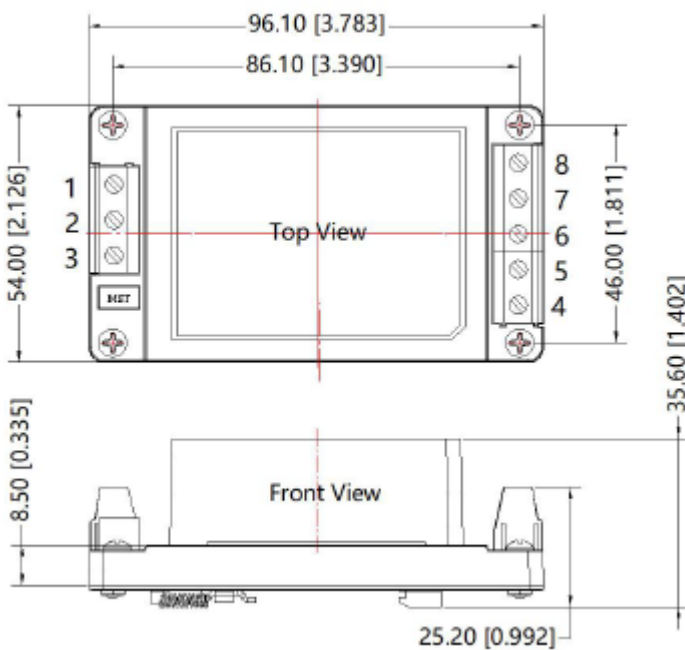
THIRD ANGLE PROJECTION

Pin	Mark
1	
2	AC(N)
3	AC(L)
4	+Vo
5	NC
6	NC
7	NC
8	-Vo

Note:
Unit: mm[inch]
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N-m
General tolerances: ±1.00[±0.039]

Dimensions and Recommended Layout

A4S Dimensions:



THIRD ANGLE PROJECTION

Pin	Mark
1	
2	AC(N)
3	AC(L)
4	+Vo
5	NC
6	NC
7	NC
8	-Vo

Note:
Unit: mm[inch]
Mounting rail: TS35, rail needs to connect safety ground
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N-m
General tolerances: ±1.00[±0.039]

Notes:

Packing information please refer to Product Packing Information which can be downloaded from www.idealpower.co.uk.

Packaging bag number: 58220006 (Horizontal package); 58220010 (A2/A4 package);

Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75% with nominal input voltage and rated output load.

All index testing methods in this datasheet are based on our company's corporate standards.

We can provide product customization services, please contact our technicians directly for specific information.

Products are related to laws and regulations: see "Features" and "EMC".

If the product involves multi-brand materials and there are differences in colour etc, please refer to the standards of each manufacturer.

Our products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.