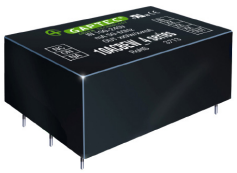
10ACBEW_4 series

10Watt - AC-DC converter



AC-DC Converter 10 Watt

- Wide 85-305V Universal AC or 100-430VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -40°C to +85°C
- High I/O isolation test voltage up to 4000VAC
- Regulated output, low ripple & noise
- Output short circuit, over-current, over-voltage protection
- High efficiency, high reliability
- Plastic case meets UL94V-0 flammability
- EMI performance meets CISPR32 / EN55032 CLASS B
- EN62368 safety approved

10ACBEW_4 AC-DC converters are highly efficient, environmental friendly 10W power modules. It features universal AC input and at the same time accepts DC input voltage, low power consumption, high efficiency, high reliability and double or reinforced insulation with an input to output isolation test voltage of 4000VAC. The converters meet IEC/EN61000-4, CISPR32/EN55032, UL/IEC62368 and EN62368 standards, and are widely used in industrial, electricity, instrumentation, telecommunications and civil applications. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

UL-62368-1 (E347551)

Common specifications

Item	Operating condition	Min	Typ	Max	Units
Short circuit-protection:		Hiccup, continuous, self-recovery			
Cooling:		Free air convection			
Operating temperature:		-40		85	°C
Storage Temperature		-40		105	°C
Soldering temperature:	Wave-soldering Manual-welding	260 ± 5°C; time: 5 - 10s 360 ± 10°C; time: 3 - 5s			
Storage humidity:				95	%RH
Power derating:	-40°C to -25°C 3.3/5/9/24V Output 12/15V Output +55°C to +70°C +70°C to +85°C 85VAC - 100VAC 277VAC-305VAC	2.67 3.33 4.00 2.00 1.67 0.71			%/°C %/°C %/°C %/°C %/°VAC %/°VAC
Safety standard:		IEC62368/EN62368/UL62368			
Safety Certification:		EN62368			
Safety Class:		Class II			
MTBF:		MIL-HDBK-217F@25°C > 300,000 h			
Hot plug:		Unavailable			
Case material:		Black flame-retardant and heat-resistant plastic (UL94V-0)			
Designed Life: (230VAC)	Ta: 25°C 100% load Ta: 55°C 100% load Ta: 55°C 80% load	>130x10³ h >20x10³ h >27x103 h			
Dimension	Horizontal package Chassis mounting DIN rail mounting	55.00 x 45.00 x 21.00 mm 96.10 x 54.00 x 29.50 mm 96.10 x 54.00 x 34.10 mm			
Weight: (Horizontal package)			75		g
Weight: (Chassis mounting)			125		g
Weight: (DIN rail mounting)			165		g

Isolation specifications

Item	Operating Conditions	Min	Typ	Max	
Isolation (Input-Output)	Electric Strength Test for 1min., leakage current vty6 ty6 vcy<5mA	4000			VAC

Example:
10ACBEW_03S4
10 = 10Watt; AC = AC-DC; B = Pinning; E = case style ; W = wide input
03 = 3.3Vout; S = single output; 4 = 4 kVAC isolation

Input specifications

Item	Operating condition	Min	Typ	Max	Units
Input voltage range	• AC Input • DC Input	85 100		305 430	VAC VDC
Input frequency		47		63	Hz
Input current	• 115VAC • 230VAC			0.26 0.16	A A
Inrush current	• 115VAC • 230VAC		13 23		A A
Leakage Current	305VAC/50Hz		0.25mA RMS Max.		
Recommended External Input Fuse	2A/300V, slow-blow, required				

Output specifications

Item	Operating condition	Min	Typ	Max	Units
Output voltage accuracy	All load range 3.3V Output Others		 ±3 ±2		 % %
Line regulation	Rated load		±0.5		%
Load regulation	0% - 100% load		±1		%
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		50	100	mV
Stand-by Power Consumption	24V Output Others			0.5 0.45	W W
Temperature Coefficient			±0.02		
Over-current Protection			110%-300%Io, self-recovery		
Over-voltage Protection	3.3/5VDC output 9VDC output 12/15VDC output 24VDC output			7.5 15 20 30	
Min. load		0			%
Hold-up Time	115VAC input 230VAC input		8 65		ms

Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta = 25°C, humidity <75% with nominal input voltage and rated output load;
2. All index testing methods in this datasheet are based on our company corpo rate standards;
3. We can provide product customization service, please contact our technicians directly for specific information;
4. Products are related to laws and regulations: see "Features" and "EMC";
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

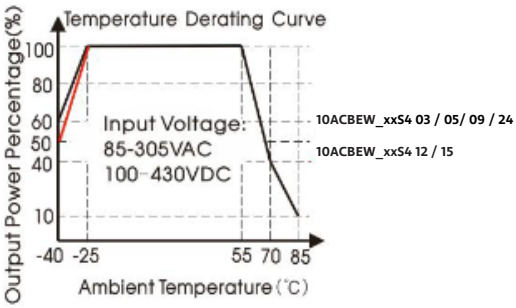
GAPTEC-Electronic GmbH & Co. KG
sales@gaptec-electronic.com – www.gaptec-electronic.com
Specifications subject to change without notice.

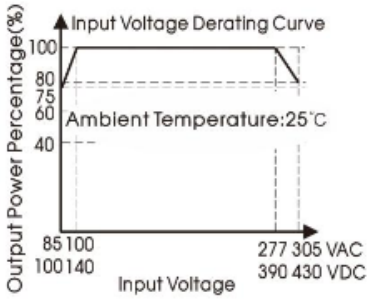
EMC specifications				
Emissions	CE	CISPR32/EN55032 CLASS B		
Emissions	RE	CISPR32/EN55032 CLASS B		
Immunity	ESD	IEC/EN 61000-4-2	Contact ±6KV/Air ±8KV	perf. Criteria B
Immunity	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
Immunity	EFT	IEC/EN61000-4-4 ±2KV IEC/EN61000-4-4 ±4KV (See Fig.2 for recommended circuit)		perf. Criteria B perf. Criteria B
Immunity	Surge	IEC/EN61000-4-5 line to line ±1KV/ line to ground ±2KV IEC/EN61000-4-5 line to line±2KV/ line to ground ±4KV (See Fig. 2 for recommended circuit)		perf. Criteria B perf. Criteria B
Immunity	CS	IEC/EN 61000-4-6	10 Vr.m.s	perf. Criteria A
Immunity	Voltage dips, short interruptions and voltage variations immunity	IEC/EN 61000-4-11	0%-70%	perf. Criteria B

Approval	Model	Power [W]	Output [Vo]	Output [Io]	Efficiency [%, typ]	Capacitive load [µF, max]
UL/CE	10ACBEW_03S4	6.6	3.3V	2000mA	70	26000
UL/CE	10ACBEW_05S4	10	5V	2000mA	76	9400
UL/CE	10ACBEW_09S4	10	9V	1100mA	78	3600
UL/CE	10ACBEW_12S4	10	12V	900mA	80	2400
UL/CE	10ACBEW_15S4	10	15V	700mA	81	1200
UL/CE	10ACBEW_24S4	10	24V	450mA	82	370

Note: * Use suffix "/CM" for chassis and suffix "/DR" for DIN-Rail mounting.

Product Characteristic Curve



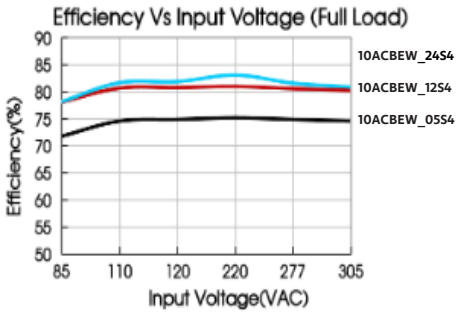


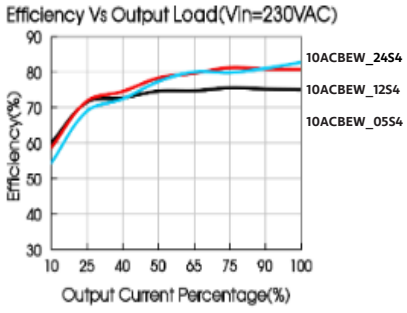
Note:

① With an AC input between 85 - 100VAC/277 - 305VAC and a DC input between 100 - 140VDC/390 - 430VDC, the output power must be derated as per temperature derating curves;

② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

Efficiency





Typical application

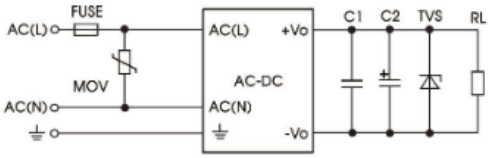
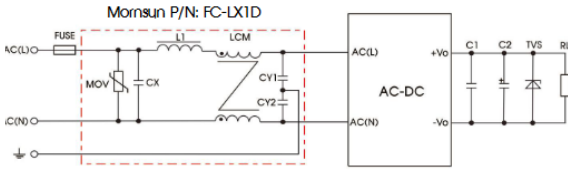


Fig. 1: Typical circuit diagram

Part No.	C1 (µF)	C2 (uF)	FUSE	MOV	TVS
10ACBEW_03S4	1	470	2A/300V, slow-blow, required	S14K350	SMBJ7.0A
10ACBEW_05S4		330			SMBJ7.0A
10ACBEW_09S4		120			SMBJ12A
10ACBEW_12S4		120			SMBJ20A
10ACBEW_15S4		120			SMBJ20A
10ACBEW_24S4		68			SMBJ30A

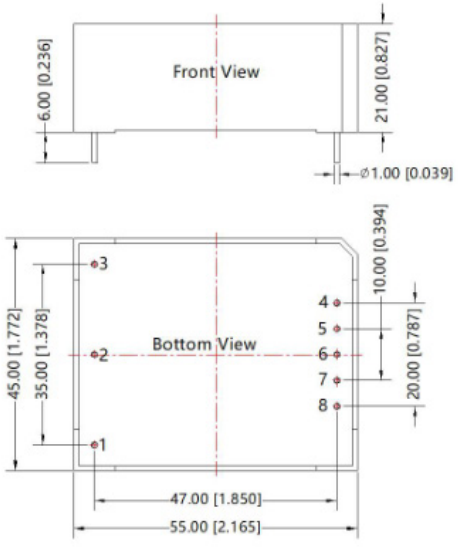
Output Filter Components:
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency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

EMC compliance recommended circuitcircuit

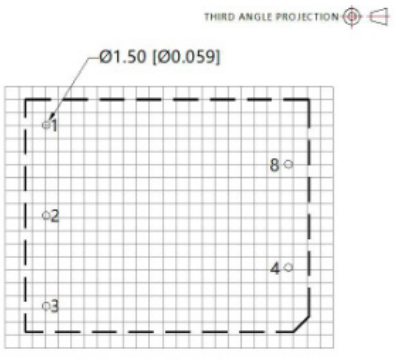


Component	Recommended value
MOV	S14K350
CY1, CY2	1000pF/400VAC
CX	0.1uF/310VAC
LCM	10mH, we recommend using part No. FL2D-Z5-103 (MORNSUN)
FC-LX1D	EMC Filter
FUSE	2A/300V, slow-blow, required
L1	4.7uH/2A

Dimensions and Recommended Layout



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

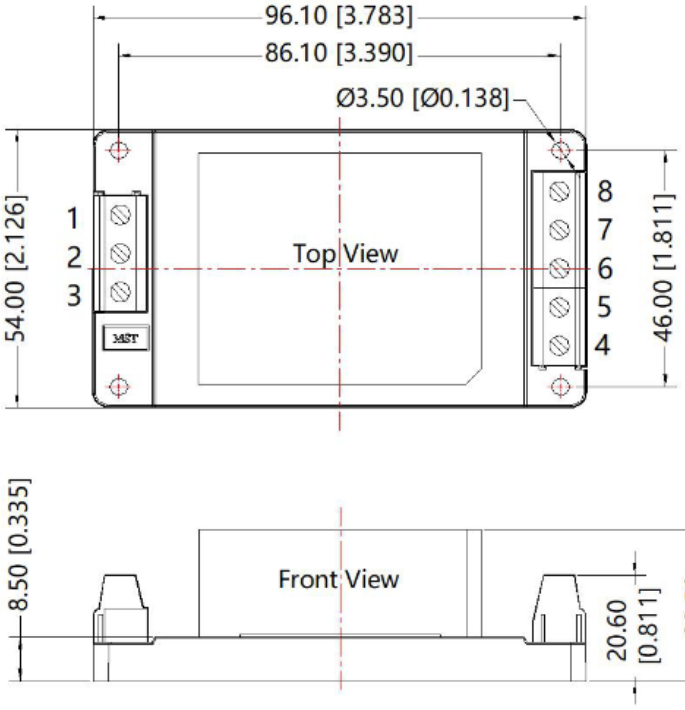


Note: grid 2.54*2.54mm

Pin-Out	
PIN	LHE10-23B
1	⏚
2	AC(N)
3	AC(L)
4	+Vo
5	No Pin
6	No Pin
7	No Pin
8	-Vo

Chassis mounting

THIRD ANGLE PROJECTION

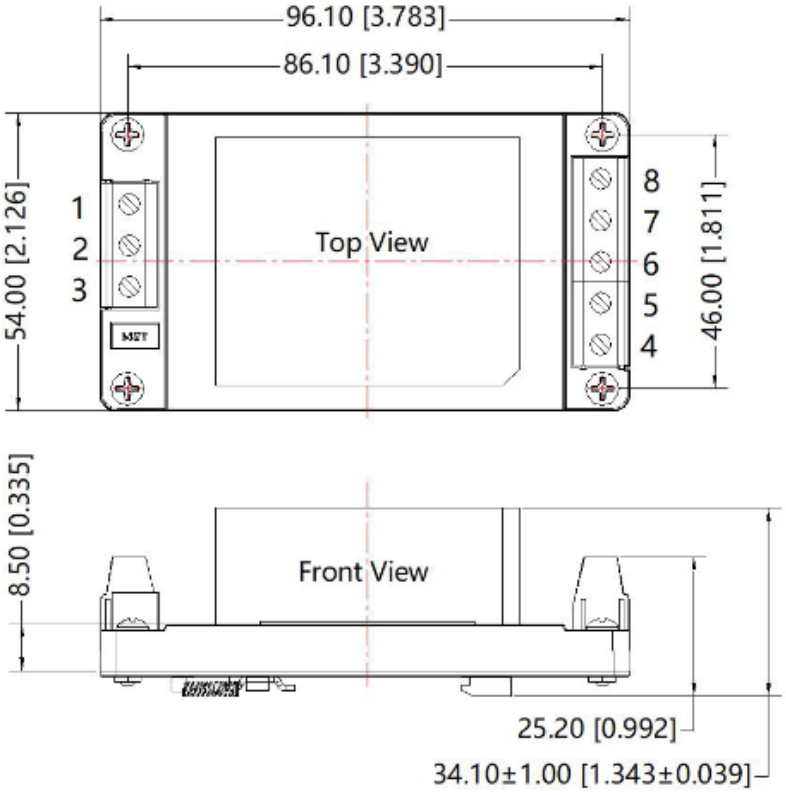


Pin-Out	
Pin	LHE10-23B
1	⏚
2	AC(N)
3	AC(L)
4	+Vo
5	NC
6	NC
7	NC
8	-Vo

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

DIN rail mounting

THIRD ANGLE PROJECTION



Pin-Out	
Pin	LHE10-23B
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]