



15ACMEB_4 series

15W - Single Output AC-DC Converter - Universal Input - Isolated & Regulated

AC-DC Converter 15 Watt

- ⊕ Universal input: 85~264VAC
- ⊕ Regulated output, low ripple and noise
- ⊕ High efficiency up to 86%
- ⊕ Short circuit protection (SCP)
- ⊕ Over current protection
- ⊕ Over voltage protection
- ⊕ Meet EN60950, UL60950
- ⊕ Mounting: PCB Mounting, Chassis Mounting, DIN Rail Mounting
- ⊕ IEC60601-1, EN60601-1, ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1 approval (2xMOPP)

The 15ACMEB_4 series is a compact size power converter offered by Gaptec. It features universal input voltage, taking both DC and AC input voltage, low power consumption, high efficiency, high reliability, safer isolation. Meets IEC60601-1, EN60601-1, ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1 standards (2xMOPP), and widely used in medical, industrial, instruments, telecommunication and civil applications. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.



CB CE

Approval	Model*	Power [W]	Output voltage [V]	Output current [mA, max]	Capacitive Load [μF, max]	Efficiency [@230VAC, %, typ]
CSA/CE/CB	15ACMEB_05S4	15	5	2800	8000	73
CSA/CE/CB	15ACMEB_12S4	15	12	1250	4000	83
CSA/CE/CB	15ACMEB_15S4	15	15	1000	3000	83
CSA/CE/CB	15ACMEB_18S4	15	18	833	2000	84
CSA/CE/CB	15ACMEB_24S4	15	24	625	800	86

* Add suffix CM for Chassis mounting with screw terminals (f.ex. 15ACMEB_05S4CM), see different package measurements.
Add suffix DR for Din-Rail mounting (f.ex. 15ACMEB_05S4DR).

Input specifications		
Input voltage range	85-264 VAC; 100-370 VDC	
Input frequency*	47~440Hz	
Input current	115VAC • 0.37A (max)	230VAC • 0.22A (max)
Inrush current (<2ms, cold start)	115VAC • 10A (typ)	230VAC • 20A (typ)
Leakage current	0.1mA RMS typ./264VAC/60Hz	
Recommended external fuse**	• 2A/250V	• slow fusing

* Medical Certification Input frequency range 47-63 Hz

** Chassis mounting, DIN-Rail mounting package series include fuse.

Protection specifications	
Short circuit protection	Protection type: Continuous, self-recovery
Over-voltage protection	Protection type: • 5VDC output: ≤7.5VDC • 12/15VDC output: ≤20VDC • 18VDC output: ≤25VDC • 24VDC output: ≤30VDC
Over-current protection	Protection type: ≥110%Io self-recovery

Example:

15ACMEB_05S4
15 = 15Watt; AC = AC-DC; MEB = series; 5Vout; S = Single Output;
4 = 4kVAC isolation

Output specifications						
Item	Test conditions	Min	Typ	Max	Units	
Output voltage accuracy	Full load	±2			%	
Line regulation	Full load	±0.5			%	
Load regulation		±1			%	
Ripple & Noise	20MHz bandwidth (peak-peak value)	50	100	mV		
Stand-by power consumption		0.1			W	
Min. load		0			%	
Hold-up time (full load)	• @230VAC input • @115VAC input	80			ms	
		15			ms	

* Ripple and noise are measured by "parallel cable" method, please see AC-DC Converter Application Notes for specific operation.

Note:

- If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- 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;
- All index testing methods in this datasheet are based on our Company's corporate standards;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see „Features“ and „EMC“;
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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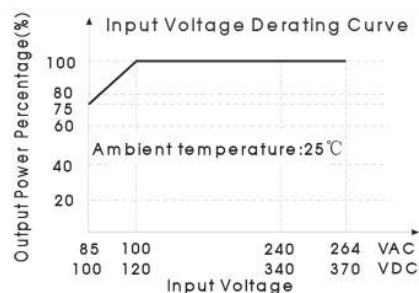
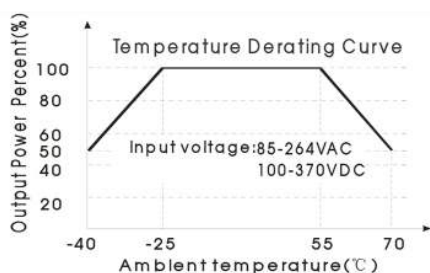
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Common specifications			
Operating temperature range	-40°C ~ +70°C		
Power derating temperature range	55°C ~ 70°C: 3.3%/°C -40°C ~ -25°C: 3.3%/°C		
Storage temperature range	-40°C ~ +85°C		
Welding temperature	Wave-soldering: 260 ± 5°C; time: 5 - 10s Manual welding: 360 ± 10°C; time: 3 - 5s		
Switching frequency	65 kHz TYP		
Humidity	95% MAX		
Cooling	Free air convection		
Temperature coefficient	±0.02%/°C		
I/O-isolation voltage	4000VAC (Test time: 1min Leakage current ≤5mA)		
Altitude during operation	5000m		
Atmospheric pressure	70kPa to 106kPa		
EMC / EMI / CE	EN55011(CISPR11) / EN55032(CISPR32) CLASS B		
EMC / EMI / RE	EN55011(CISPR11) / EN55032(CISPR32) CLASS B		
EMC / EMS / ESD	IEC/EN 61000-4-2	Contact ±6KV / Air ±8KV	perf. Criteria B
EMC / EMS / RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
EMC / EMS / EFT	IEC/EN 61000-4-4	±2kV	perf. Criteria B
	IEC/EN 61000-4-4	±4kV (See EMC recommended circuit)	perf. Criteria B
EMC / EMS / Surge	IEC/EN 61000-4-5	±1KV	perf. Criteria B
	IEC/EN 61000-4-5	±2KV (See EMC recommended circuit)	perf. Criteria B
EMC / EMS / CS	IEC/EN 61000-4-6	10Vr.m.s	perf. Criteria A
EMC / EMS / Voltage dips, short interruptions and voltage variations immunity	IEC/EN 61000-4-11	0%, 70%	perf. Criteria B
Safety standards	IEC60601-1, EN60601-1, ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1		
Safety certification	IEC60601-1, EN60601-1, ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1		
Safety class	Class II		
Insulation level	Primary to secondary: 2xMOPP		
Case material	Black flame-retardant and heat-resistant plastic (UL94V-0)		
MTBF	>300,000h MIL-HDBK-217F@25°C		
Package	Horizontal package: 62.00*45.00*22.50mm Chassis mounting: 96.10*54.00*31.00mm Din-Rail mounting: 96.10*54.00*35.60 mm		
Weight	Horizontal package: 85g Chassis mounting: 135g Din-Rail mounting: 175g		

Typical characteristics

Derating graphs

Power derating

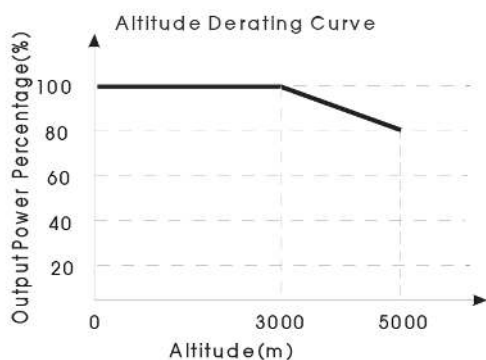
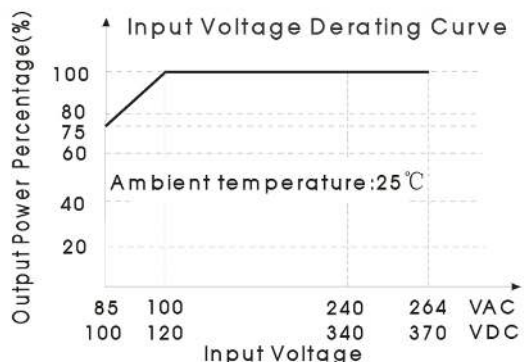
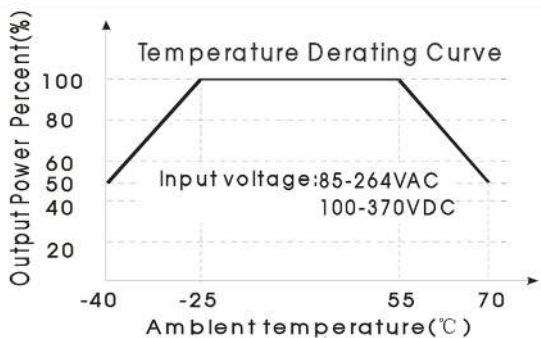


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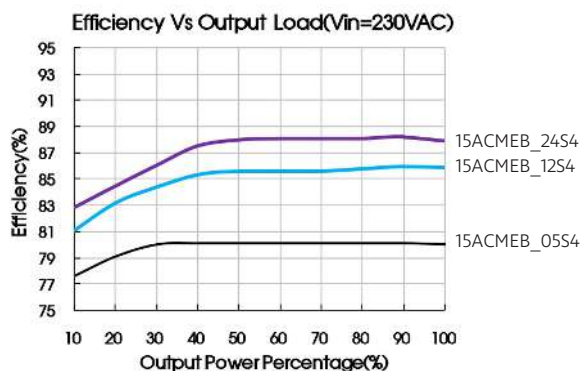
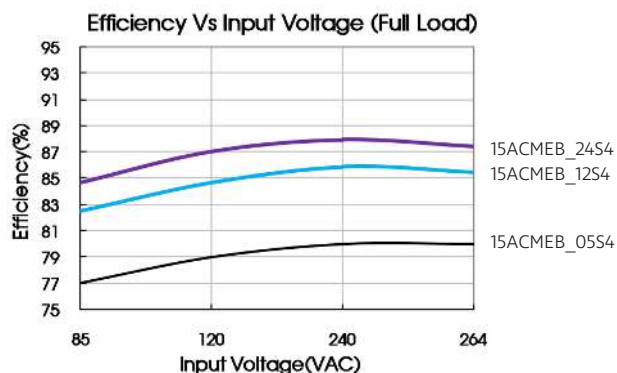
Derating graphs



Note:

1. When input 85-100VAC/100-120VDC, it need to be voltage derated on basis of temperature derating;
2. Altitude should be derated based on temperature derating when it is 3000 - 5000m;
3. This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.

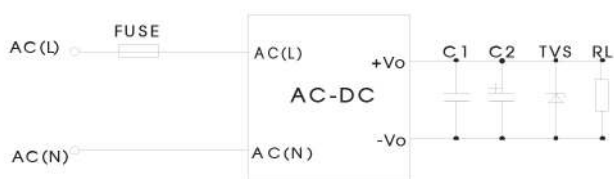
Efficiency



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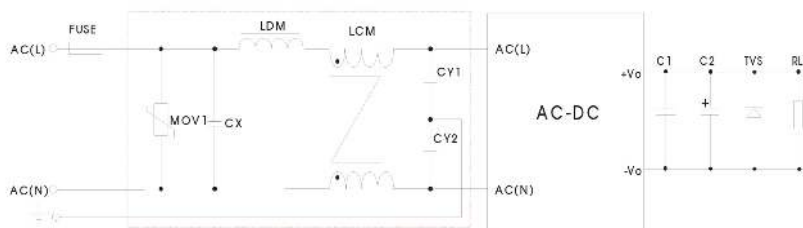
Typical application circuit



Element model	C2 (μF)	TVS1
15ACMEB_05S4	680	SMBJ7.0A
15ACMEB_12S4	470	SMBJ20A
15ACMEB_15S4	220	SMBJ20A
15ACMEB_18S4	220	SMBJ30A
15ACMEB_24S4	68	SMBJ30A

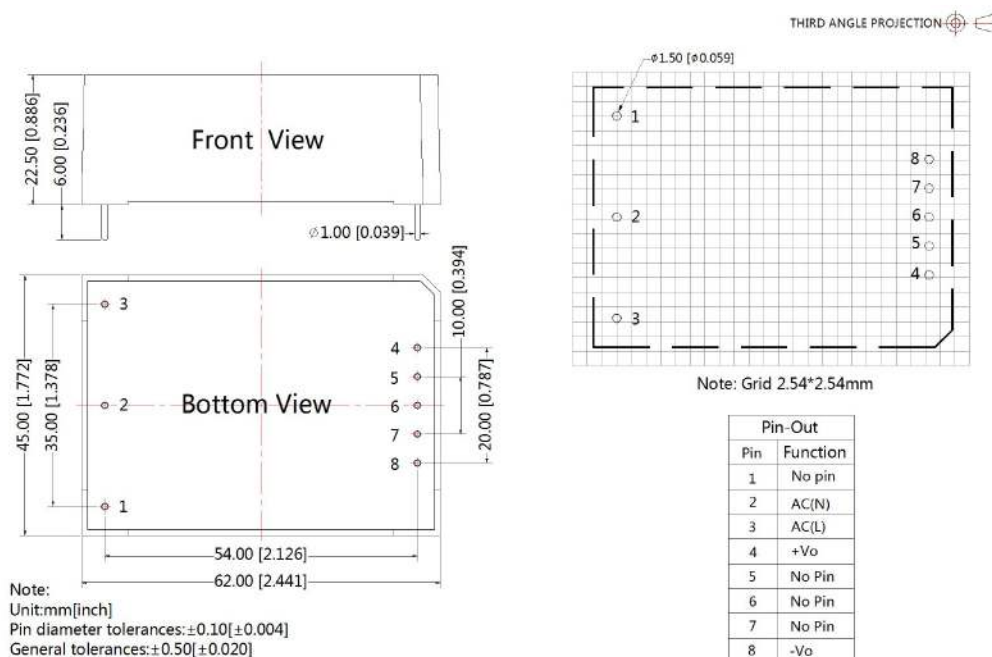
Output filtering capacitors C2 is electrolytic capacitor, it is recommended to use high frequency and low impedance electrolytic capacitor. For capacitance and current of capacitor please refer to manufacture's datasheet. Capacitor voltage reduced to at least 80%. C1 is ceramic capacitor, which is used to filter high-frequency noise, advice use 1μF. TVS is a recommended component to protect post-circuits if converter fails. External input FUSE model is recommended to use 2A/250V slow fusing.

EMC solution-recommended circuit



Element model	Recommended value
MOV1	S14K300
CY1, CY2	1nF/400VAC
CX	0.1μF/275VAC
LCM	10mH
LDM	4.7μH/2A
FC-LX1D	2KV/4KV EMC filter
FUSE	2A/250V slow fusing, necessary

Mechanical dimensions

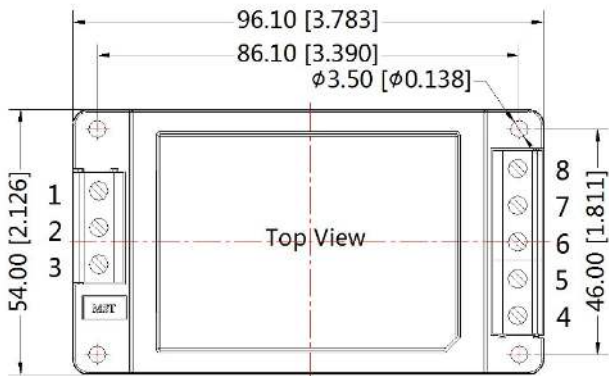


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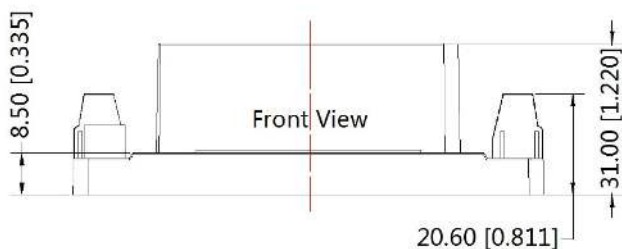
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Chassis mounting with screw terminals

THIRD ANGLE PROJECTION 



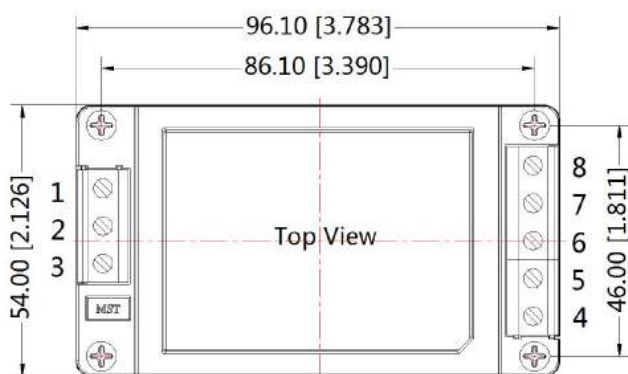
Pin-Out	
Pin	Function
1	NC
2	AC(N)
3	AC(L)
4	+Vo
5	NC
6	NC
7	NC
8	-Vo



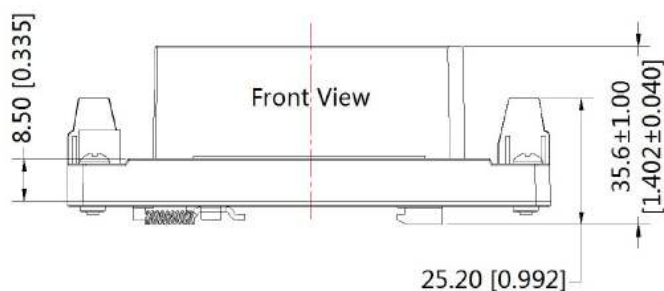
Note:
 Unit: mm[inch]
 Wire range: 24-12 AWG
 Tightening torque: Max 0.4 N·m
 General tolerances: ± 0.50 [± 0.020]

Din rail mounting

THIRD ANGLE PROJECTION 



Pin-Out	
Pin	Function
1	NC
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
 Mounting rail: TS35, rail needs to connect safety ground
 General tolerances: ± 1.00 [± 0.039]