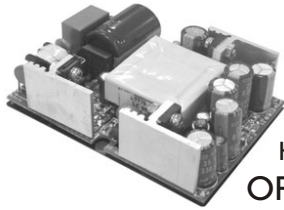


# KADN/KAMN40 SERIES

AC - DC POWER MODULE  
28 ~ 40W SINGLE & DUAL OUTPUT



KAMN40 series



KADN40 series  
OPEN FRAME

## FEATURES

- AC/DC POWER MODULE
- UNIVERSAL INPUT 85 ~ 265 VAC
- HIGH EFFICIENCY UP TO 87%
- SHORT CIRCUIT PROTECTION
- INTERNAL INPUT FILTER
- 3 YEARS WARRANTY
- MEDICAL SAFETY APPROVED
- LOW LEAKAGE CURRENT
- TWO MOPP INSULATIONS



## MODEL LIST

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)	CAPACITOR LOAD (max.)
<b>Single Output Models</b>							
KADN/KAMN4005	85 ~ 265 VAC	40 WATTS	+ 5 VDC	8000 mA	80%	82%	7000 $\mu$ F
KADN/KAMN4012	85 ~ 265 VAC	40 WATTS	+ 12 VDC	3400 mA	84%	86%	7000 $\mu$ F
KADN/KAMN4015	85 ~ 265 VAC	40 WATTS	+ 15 VDC	2700 mA	85%	87%	7000 $\mu$ F
KADN/KAMN4024	85 ~ 265 VAC	40 WATTS	+ 24 VDC	1700 mA	85%	87%	3500 $\mu$ F

## SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

GENERAL							
Characteristics	Conditions	min.	typ.	max.	unit		
Switching frequency	Vi nom, Io nom		65		KHz		
Isolation voltage	Input - Output	4,236 / 6,000			VAC/VDC		
Isolation resistance	Input - Output, @ 500VDC	100			M $\Omega$		
Ambient temperature (l)	Operating at Vi nom, Io nom	-40		+ 71	°C		
Case temperature	Operating at Vi nom, Io nom		KAMN40	+ 85	°C		
Derating	Vi nom, +6l to + 71°C			2.5	% / °C		
Storage temperature	Non operational	-40		+100	°C		
Relative humidity	Vi nom, Io nom	20		95	% RH		
Temperature coefficient	Vi nom, Io min			$\pm$ 0.03	% / °C		

NOTE1 : Pls refer to DERATING CURVE.

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AC - DC POWER MODULE

## SPECIFICATION

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### GENERAL

Characteristics	Conditions		min.	typ.	max.	unit
MTBF	Bellcore issue 6 @40°C, GB	5V		606,000		Hours
		12V		615,000		Hours
		15V & 24V		623,000		Hours
Altitude during operation	IEC 60068-2-13				4,850	m
Dimension		KAMN40	L89 x W63.5 x H25			mm
		KADN40	L85.3 x W60.3 x H24.2			mm
Cooling	Free air convection					

### INPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Rated input voltage	Io nom		100		240	VAC
Input voltage range	Ta min ... Ta max, Io nom	AC in	85		265	VAC
		DC in	120		375	VDC
Input current	Vi : 115 / 230 VAC, Io nom			0.75 / 0.45		A
Rated input current	Vi : 100 ~ 240 VAC, Io nom				0.8 - 0.4	A
Line frequency (Note 2)	Vi nom, Io nom		47		63	Hz
Inrush current	Vi : 115 / 230 VAC, Io nom				20/40	A
Leakage current (Note 2)	Normal condition				100	μA
	Single fault condition				300	μA

NOTE 2 : The unit can be worked at 440 Hz of line frequency but the leakage current would be 600μA max. , and output load should be derated under 90%

### OUTPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Output voltage accuracy	Vi nom, Io nom	single output models			± 1	%
Minimum load	Vi nom	single output models	0			%
Line regulation	Io nom, Vi min ... Vi max				± 1	%
Load regulation	Vi nom, Io min ... Io nom	single output models			± 1	%
Hold up time	Vi : 115 / 230 VAC, Io nom		20 / 100			ms
Turn on time	Vi nom, Io nom				1,000	ms
Rise time	Vi nom, Io nom				150	ms
Fall time	Vi nom, Io nom				150	ms
Transient recovery time	Vi nom, I ~ 0.5 Io nom				1	ms
Ripple & noise	Vi nom, Io nom, BW = 20MHz				50	mV
External trim ADJ. Range (Note 3) (for single output only)	Io = 5% ... 100%		-10		+10	%
Efficiency	Vi nom, Io nom, Po / Pi		Up to 87%, See model list and typ efficiency curve			

NOTE 3 : Pls refer to Fig 1 & Table 1 for connection and resistance recommended.

### CONTROL AND PROTECTION

Characteristics	Conditions	min.	typ.	max.	unit
Input fuse		T2A / 250VAC internal			
Internal surge voltage protection	IEC 61000-4-5	Varistor			
Output short circuit		Hiccup mode			
Rated over load protection	Vi nom (see typ current limited curve)	120		160	%

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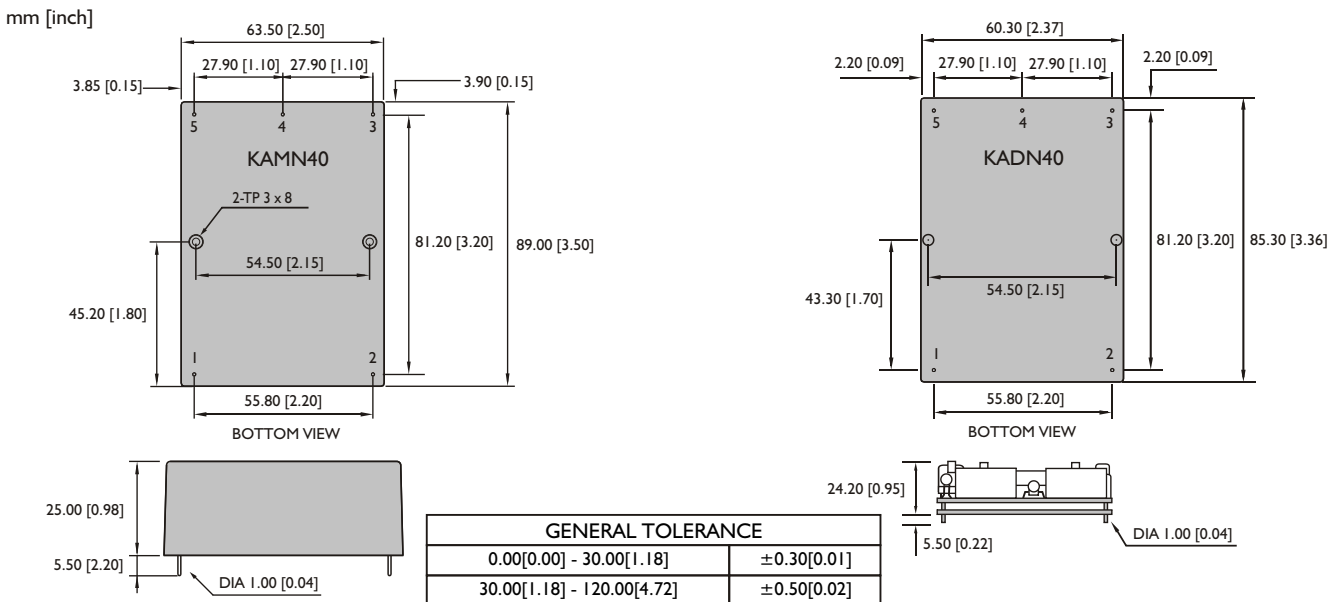
### APPROVALS AND STANDARDS

UL / cUL	UL 60950-1, UL 60601-1 Recognized
TUV	EN 60950-1, EN 60601-1
CE	EN 60601-1-2, EN 55011, EN 61000-6-3, EN 55032 Class B, EN 61000-3-2, EN 61000-3-3 EN 61000-6-2, EN 55024, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5 EN 61000-4-6, EN 61000-4-8, EN 61000-4-11, EN 61204-3
Vibration resistance	meet IEC 60068-2-6 (10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 axes, 6 Faces, 3 times for each Face)

### PHYSICAL CHARACTERISTICS

Case size	KAMN40 : 89 x 63.5 x 25mm ( 3.5 x 2.5 x 0.98 inches)   KADN40 : 85.3 x 60.3 x 24.2mm ( 3.36 x 2.37 x 0.95 inches)
Case material	Plastic case / PCB base
Weight	KAMN40 : 250g   KADN40 : 130g
Potting material	KAMN40 : Epoxy

### MECHANISM & PIN CONFIGURATION



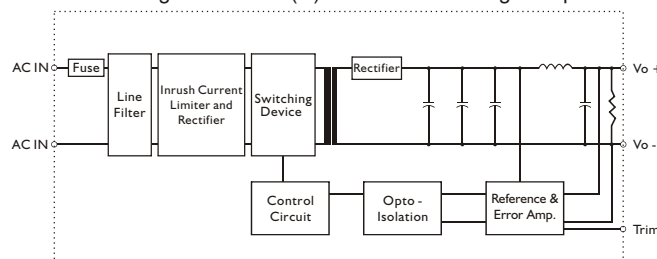
### PIN ASSIGNMENT

#### GENERAL

PIN NO.	1	2	3	4	5
SINGLE	AC IN	AC IN	Vo +	Vo -	Trim

### CIRCUIT SCHEMATIC

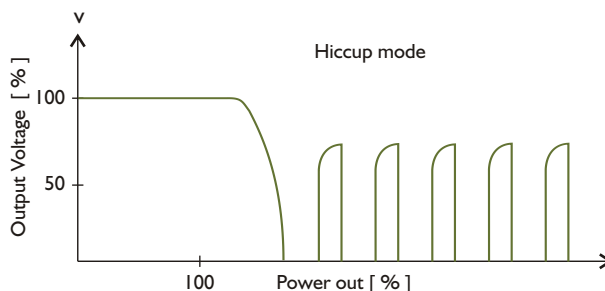
• Block diagram for KAM(D)N40 series with single output



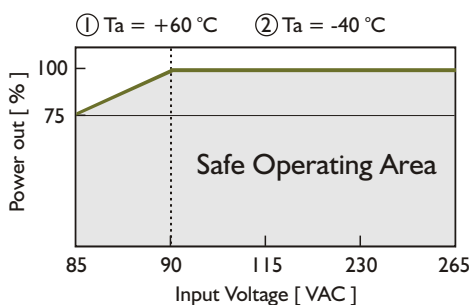
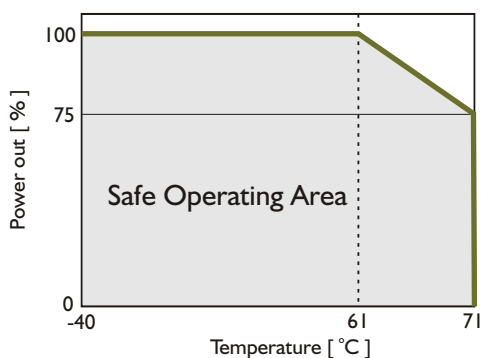
# KADN/KAMN40 SERIES

AC - DC POWER MODULE

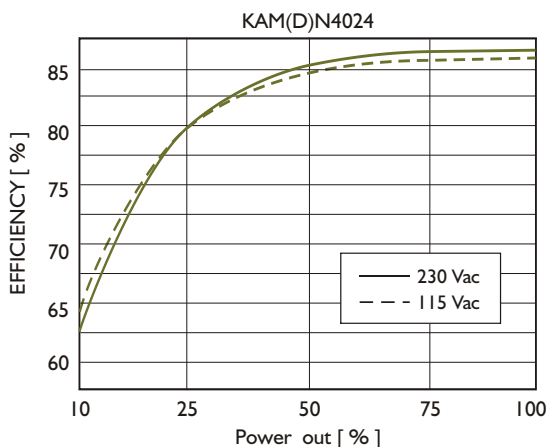
## TYP. CURRENT LIMITED CURVE



## DERATING CURVE



## TYP. EFFICIENCY CURVE



## Fig. 1 Trim connection (For single output only)

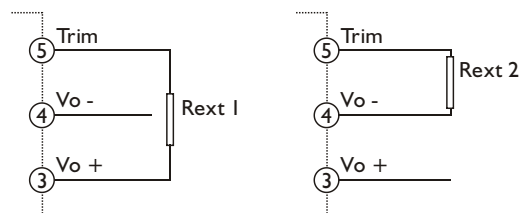


Table 1 Typical resistor values for various output voltage adjustment settings and max continuous power

Type	Rext 1		Rext 2		Max continuous power
	Vo nom -5%	Vo nom -10%	Vo nom +5%	Vo nom +10%	
KAM(D)N4005	5.1KΩ	1KΩ	6.8KΩ	2KΩ	40 W
KAM(D)N4012	39KΩ	20KΩ	10KΩ	0Ω	40.8 W
KAM(D)N4015	180KΩ	56KΩ	30KΩ	5.1KΩ	40.5 W
KAM(D)N4024	150KΩ	51KΩ	8.2KΩ	0Ω	40.8 W