

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.) |
|-----------------------------|---------------|----------------|----------------|----------------|-------------|-------------|-----------------------|
| Single Output Models | | | | | | | |
| KADN/KAMN4003 | 85 ~ 265 VAC | 28 WATTS | + 3.3 VDC | 8500 mA | 76% | 78% | 7000 μ F |
| KADN/KAMN4005 | 85 ~ 265 VAC | 40 WATTS | + 5 VDC | 8000 mA | 80% | 82% | 7000 μ F |
| KADN/KAMN4012 | 85 ~ 265 VAC | 40 WATTS | + 12 VDC | 3400 mA | 84% | 86% | 7000 μ F |
| KADN/KAMN4015 | 85 ~ 265 VAC | 40 WATTS | + 15 VDC | 2700 mA | 85% | 87% | 7000 μ F |
| KADN/KAMN4024 | 85 ~ 265 VAC | 40 WATTS | + 24 VDC | 1700 mA | 85% | 87% | 3500 μ F |
| Dual Output Models | | | | | | | |
| KADN/KAMN4012D | 85 ~ 265 VAC | 40 WATTS | \pm 12 VDC | \pm 1700 mA | 83% | 85% | \pm 7000 μ F |
| KADN/KAMN4015D | 85 ~ 265 VAC | 40 WATTS | \pm 15 VDC | \pm 1350 mA | 84% | 86% | \pm 7000 μ F |
| KADN/KAMN40512D | 85 ~ 265 VAC | 40 WATTS | +5 / + 12 VDC | +5A / + 1.25A | 81% | 83% | 7000 μ F |
| KADN/KAMN40524D | 85 ~ 265 VAC | 39 WATTS | +5 / + 24 VDC | +3A / + 1A | 81% | 83% | 7000 μ F |

SPECIFICATION

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

| GENERAL | | | | | | |
|-------------------------|-------------------------------------|---------------|------|------------|------------------|--|
| Characteristics | Conditions | min. | typ. | max. | unit | |
| Switching frequency | V_i nom, I_o nom | | 65 | | KHz | |
| Isolation voltage | Input - Output | 4,236 / 6,000 | | | VAC/VDC | |
| Isolation resistance | Input - Output, @ 500VDC | 100 | | | M Ω | |
| Ambient temperature (I) | Operating at V_i nom, I_o nom | -40 | | + 71 | $^{\circ}$ C | |
| Case temperature | Operating at V_i nom, I_o nom | | | + 85 | $^{\circ}$ C | |
| Derating | V_i nom, +61 to + 71 $^{\circ}$ C | | | 2.5 | % / $^{\circ}$ C | |
| Storage temperature | Non operational | -40 | | +100 | $^{\circ}$ C | |
| Relative humidity | V_i nom, I_o nom | 20 | | 95 | % RH | |
| Temperature coefficient | V_i nom, I_o min | | | \pm 0.03 | % / $^{\circ}$ C | |

NOTE1 : Pls refer to DERATING CURVE.

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CHINFA ELECTRONICS IND. CO., LTD.
ISO 9001 Certified

PI

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AC - DC POWER MODULE

SPECIFICATION

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

GENERAL

| Characteristics | Conditions | | min. | typ. | max. | unit |
|---------------------------|----------------------------|------------------------|-----------------------|---------|-------|-------|
| MTBF | Bellcore issue 6 @40°C, GB | 3.3V, 5V, 5 I2D & 524D | | 606,000 | | Hours |
| | | 12V, 12D & 15D | | 615,000 | | Hours |
| | | 15V & 24V | | 623,000 | | Hours |
| Altitude during operation | IEC 60068-2-13 | | | | 4,850 | m |
| Dimension | | KAMN30 | L89 x W63.5 x H25 | | | mm |
| | | KADN30 | 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 | % |
| | | dual output models | | | ± 2 | % |
| | | 524D model | | | ± 4 | % |
| Minimum load | Vi nom | single output models | 0 | | | % |
| | | dual output models (each output) | 20 | | | % |
| Line regulation | Io nom, Vi min ... Vi max | | | | ± 1 | % |
| Load regulation | Vi nom, Io min ... Io nom | single output models | | | ± 1 | % |
| | | dual output models | | | ± 2 | % |
| Cross regulation (Dual model) | Asymmetrical load 20% / 100% FL | | | | ± 6 | % |
| 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.

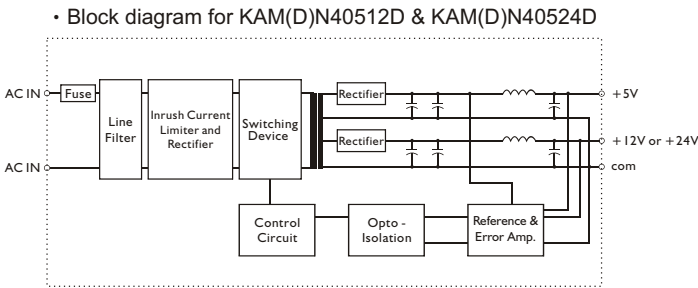
CONTROL AND PROTECTION

| 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 | % |

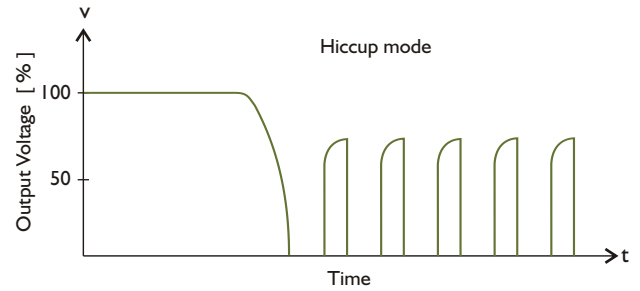
KADN/KAMN40 SERIES

AC - DC POWER MODULE

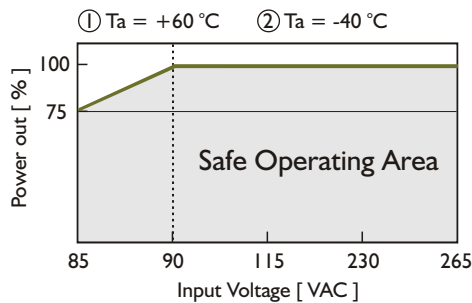
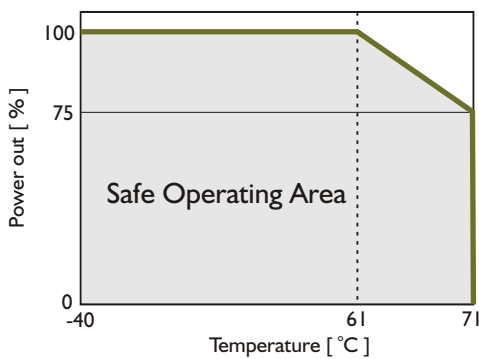
CIRCUIT SCHEMATIC



TYP. CURRENT LIMITED CURVE



DERATING CURVE



TYP. EFFICIENCY CURVE

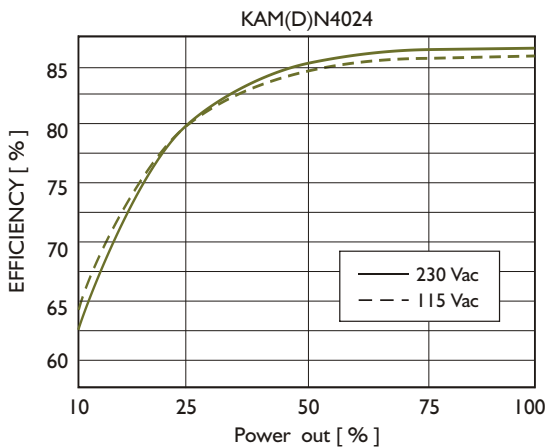


Fig. 1 Trim connection
(For single output only)

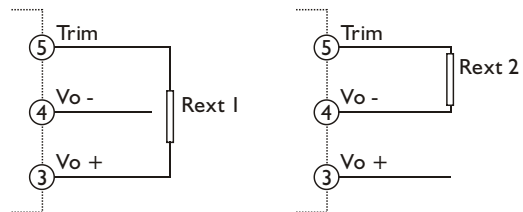


Table I Typical resistor values for various output voltage adjustment settings and max continuous power

| Type | Rext 1 | | Rext 2 | | Max continuous power |
|-------------|------------|-------------|------------|-------------|----------------------|
| | Vo nom -5% | Vo nom -10% | Vo nom +5% | Vo nom +10% | |
| KAM(D)N4003 | 20KΩ | 5.1KΩ | 3KΩ | 1KΩ | 28 W |
| 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 |