

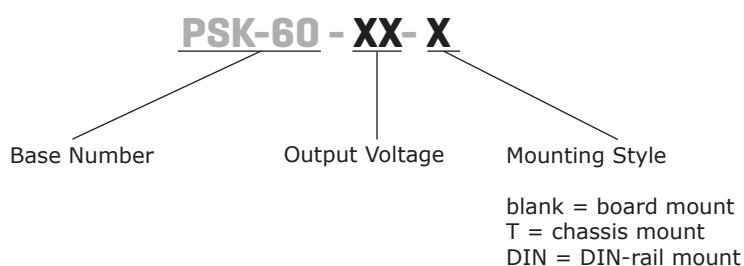
SERIES: PSK-60 | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY

FEATURES

- universal input voltage range (85~264 VAC)
- IEC/EN/UL 62368 certified
- meets CISPR32/EN 55032 Class B without external components
- 4,000 VAC isolation rating
- short-circuit, over-current, over-voltage protections



| MODEL | output voltage | output current | output power | ripple and noise | efficiency |
|-----------|----------------|----------------|--------------|------------------|------------|
| | (Vdc) | max (A) | max (W) | max (mVp-p) | typ (%) |
| PSK-60-5 | 5 | 10.0 | 50 | 120 | 84 |
| PSK-60-12 | 12 | 5.0 | 60 | 120 | 87 |
| PSK-60-15 | 15 | 4.0 | 60 | 120 | 88 |
| PSK-60-24 | 24 | 2.5 | 60 | 120 | 89 |
| PSK-60-48 | 48 | 1.25 | 60 | 120 | 90 |

PART NUMBER KEY


INPUT

| parameter | conditions/description | min | typ | max | units |
|---------------------------|--------------------------|-----|----------|-----|-------|
| voltage | ac input | 85 | | 264 | Vac |
| | dc input | 100 | | 370 | Vdc |
| frequency | | 47 | | 63 | Hz |
| current | at 115 Vac | | | 1.8 | A |
| | at 230 Vac | | | 1.0 | A |
| inrush current | at 115 Vac at 230 Vac | | 45 90 | | A |
| no load power consumption | at 230 Vac | | | 0.5 | W |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|----------------------------|------------------------|-----|-------|--------|-------|
| capacitive load | 5 Vdc output | | | 20,000 | μF |
| | 12 Vdc output | | | 4,000 | |
| | 15 Vdc output | | | 3,000 | |
| | 24 Vdc output | | | 1,800 | |
| | 48 Vdc output | | | 470 | |
| initial set point accuracy | at full load | | ±2 | | % |
| line regulation | rated load | | ±0.5 | | % |
| load regulation | 0%~100% load | | ±1.0 | | % |
| hold-up time | at 115 Vac | | 8 | | ms |
| | at 230 Vac | | 65 | | |
| temperature coefficient | | | ±0.02 | | %/°C |

PROTECTIONS

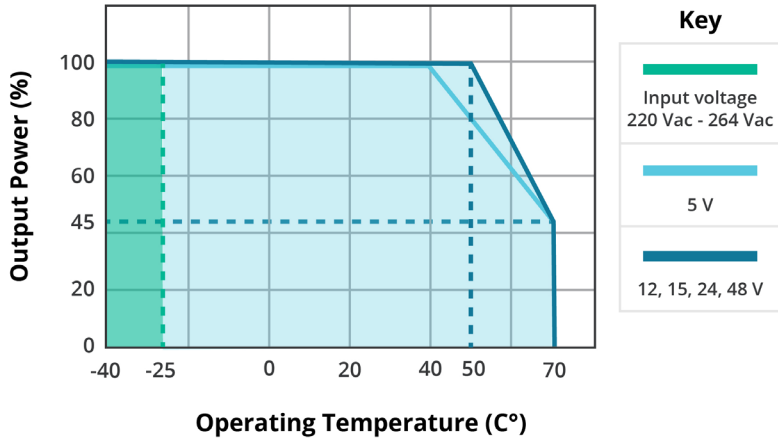
| parameter | conditions/description | min | typ | max | units |
|--------------------------|-----------------------------------|-----|-----|-----|-------|
| over voltage protection | 5 Vdc output, clamp or hiccup | | | 9 | Vdc |
| | 12 Vdc output, clamp or hiccup | | | 16 | |
| | 15 Vdc output, clamp or hiccup | | | 25 | |
| | 24 Vdc output, clamp or hiccup | | | 35 | |
| | 48 Vdc output, clamp or hiccup | | | 60 | |
| over current protection | auto recovery | 110 | | | % |
| short circuit protection | hiccup, continuous, auto recovery | | | | |

SAFETY & COMPLIANCE

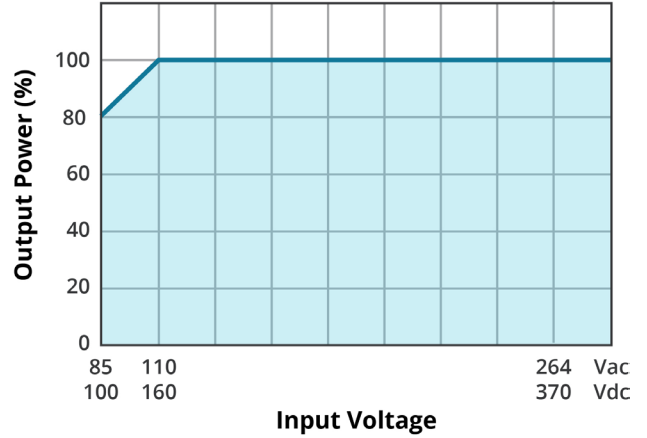
| parameter | conditions/description | min | typ | max | units |
|-------------------------------|--|---------|-----|-----|-------|
| isolation voltage | input to output | 4,000 | | | Vac |
| safety approvals | UL/cUL, EN, IEC 62368 | | | | |
| safety class | Class II | | | | |
| EMI/EMC | CISPR 32/EN 55032 Class B | | | | |
| ESD | IEC/EN 61000-4-2 Contact ±6KV/Air ±8KV, perf. Criteria B | | | | |
| radiated immunity | IEC/EN 61000-4-3 10 V/m, perf. Criteria A | | | | |
| EFT/burst | IEC/EN 61000-4-4 ±4KV, perf. Criteria B | | | | |
| surge | IEC/EN 61000-4-5 line to line ±2KV/line to ground ±4KV, perf. Criteria B (see recommended EMC circuit) | | | | |
| | IEC/EN 61000-4-5 ±1KV line to line, perf. Criteria B | | | | |
| conducted immunity | IEC/EN 61000-4-6 10 Vr.m.s, perf. Criteria A | | | | |
| voltage dips and interruption | IEC/EN 61000-4-11 0%, 70%, perf. Criterial B | | | | |
| MTBF | per MIL-HDBK-217F at 25 °C | 300,000 | | | hours |
| RoHS | yes | | | | |

DERATING CURVES

TEMPERATURE DERATING CURVE

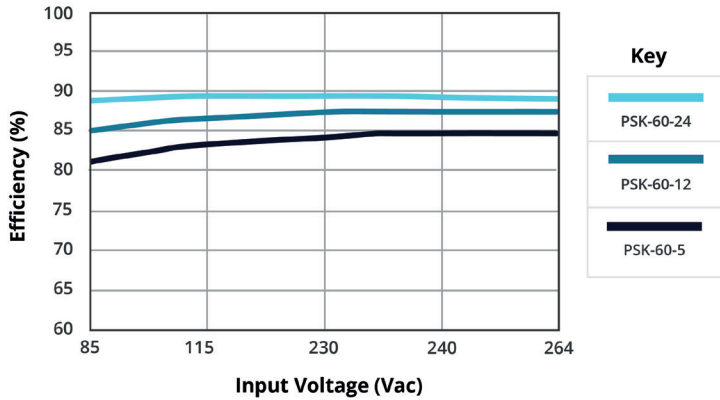


INPUT VOLTAGE DERATING CURVE (25 °C)

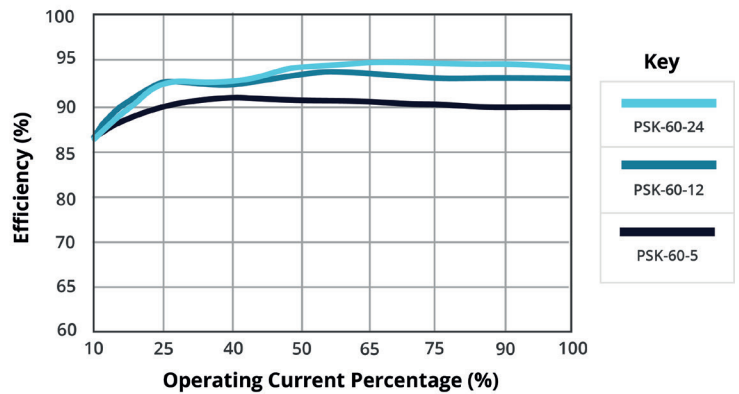


EFFICIENCY CURVES

EFFICIENCY VS INPUT VOLTAGE (Full load)



EFFICIENCY VS OUTPUT LOAD (Vin = 230 Vac)



ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|-----|-------|
| operating temperature | | -40 | | 70 | °C |
| storage temperature | | -40 | | 85 | °C |
| storage humidity | | 0 | | 95 | % |

SOLDERABILITY

| parameter | conditions/description | min | typ | max | units |
|----------------|----------------------------|-----|-----|-----|-------|
| wave soldering | 5~10 seconds (± 5 °C) | | | 260 | °C |
| manual welding | 3~5 seconds (± 10 °C) | | | 360 | °C |

MECHANICAL

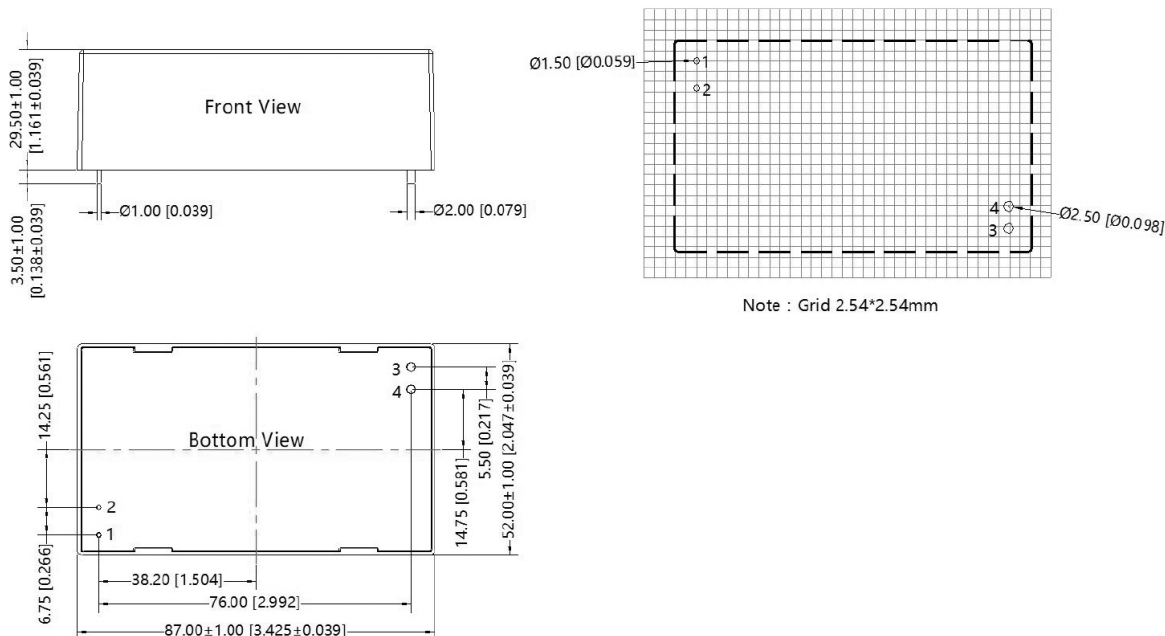
| parameter | conditions/description | min | typ | max | units |
|---------------|---|-----|-----|-----|-------|
| dimensions | 87.00 x 52.00 x 29.50 (board mount) | | | | mm |
| | 135.00 x 70.00 x 37.90 (chassis mount) | | | | mm |
| | 137.00 x 70.00 x 42.40 (DIN-rail) | | | | mm |
| weight | board mount | | 210 | | g |
| | chassis mount | | 290 | | g |
| | DIN-rail | | 360 | | g |
| cooling | free air convection | | | | |
| case material | black plastic, flame-retardant and heat-resistant (UL94V-0) | | | | |

MECHANICAL DRAWING (BOARD MOUNT)

units: mm [inch]

pin diameter tolerance: ± 0.1 [± 0.004]

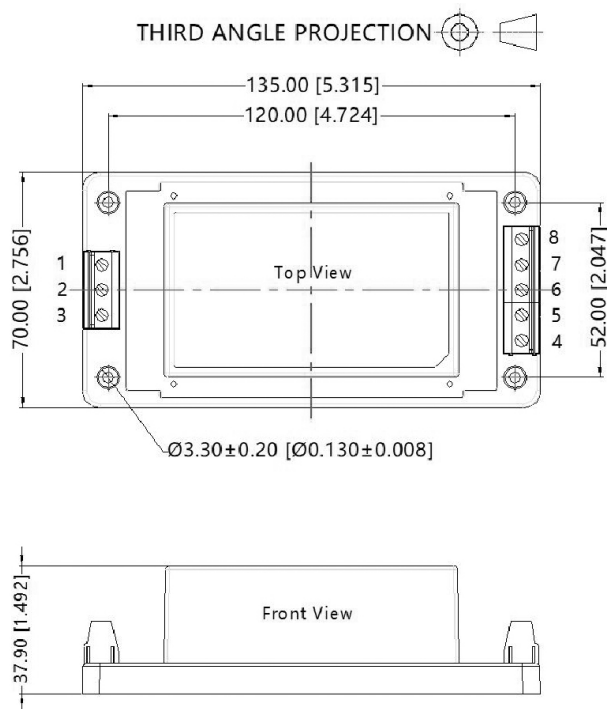
| PIN CONNECTIONS | |
|-----------------|----------|
| PIN | Function |
| 1 | AC(L) |
| 2 | AC(N) |
| 3 | +Vo |
| 4 | -Vo |



MECHANICAL DRAWING (CHASSIS MOUNT)

units: mm [inch]
 tolerance: ± 1.00 [± 0.040]
 wire range: 24 - 12 AWG
 tightening torque: 0.4 N·m

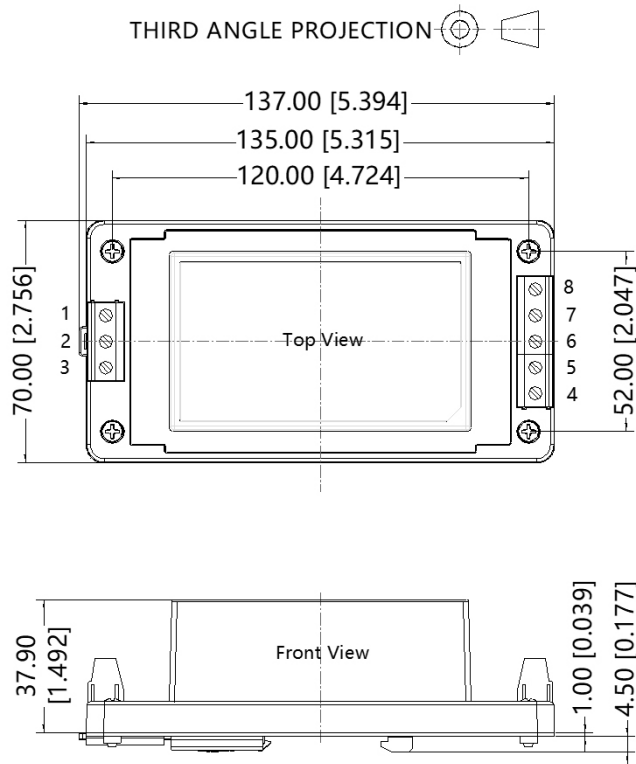
| PIN CONNECTIONS | |
|-----------------|----------|
| PIN | Function |
| 1 | AC(L) |
| 2 | NC |
| 3 | AC(N) |
| 4 | +Vo |
| 5 | -Vo |
| 6 | NC |
| 7 | NC |
| 8 | NC |



MECHANICAL DRAWING (DIN-RAIL MOUNT)

units: mm [inch]
 tolerance: ± 1.00 [± 0.040]
 wire range: 24 - 12 AWG
 tightening torque: 0.4 N·m
 installed on DIN-RAIL TS35

| PIN CONNECTIONS | |
|-----------------|----------|
| PIN | Function |
| 1 | AC(L) |
| 2 | NC |
| 3 | AC(N) |
| 4 | +Vo |
| 5 | -Vo |
| 6 | NC |
| 7 | NC |
| 8 | NC |



APPLICATION CIRCUIT

Figure 1

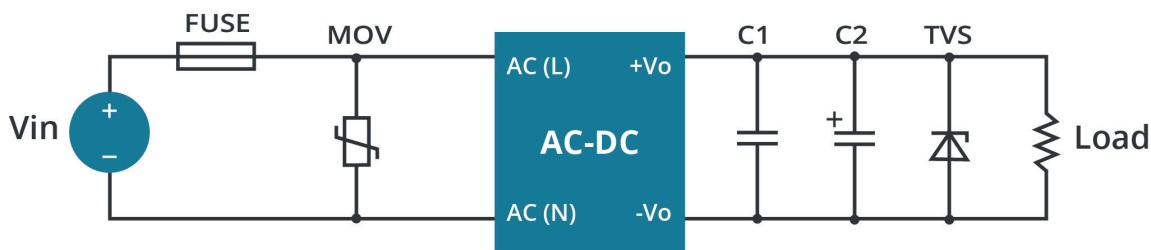


Table 1

| Recommended External Circuit Components | | | | | |
|---|-----------|-------------|-----------------------|---------|----------|
| Part no. | C1 | C2 | FUSE | MOV | TVS |
| PSK-60-5 | 1 μ F | 680 μ F | 3.15A/250V, slow-blow | S10K300 | SMBJ7.0A |
| PSK-60-12 | | 330 μ F | | | SMBJ20A |
| PSK-60-15 | | 330 μ F | | | SMBJ20A |
| PSK-60-24 | | 200 μ F | | | SMBJ30A |
| PSK-60-48 | | 100 μ F | | | SMBJ64A |

EMC RECOMMENDED CIRCUIT

Figure 2

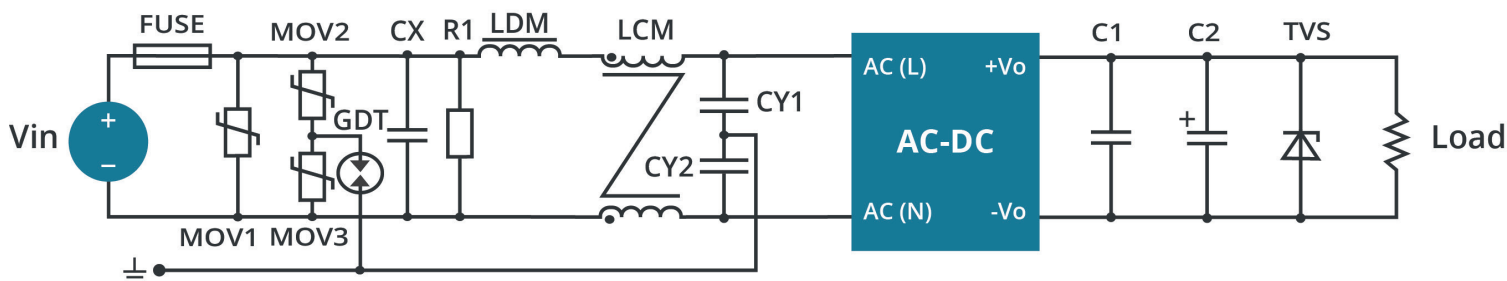


Table 2

| Component | Reccomended value |
|-----------|---------------------------------|
| FUSE | 3.15A/250V, slow-blow, required |
| MOV1 | S20K300 |
| MOV2/MOV3 | S10K300 |
| GDT | EM3600XS |
| CX | 0.22 μ F / 275 Vac |
| CY1, CY2 | 1 nF / 400 Vac |
| R1 | 1 M Ω / 2 W |
| LDM | 4.7 μ H |
| LCM | 2 mH |

REVISION HISTORY

| rev. | description | date |
|------|-------------------------------------|------------|
| 1.0 | initial release | 07/14/2020 |
| 1.01 | din-rail mechanical drawing updated | 03/12/2021 |
| 1.02 | figure and circuit drawings updated | 03/25/2021 |

The revision history provided is for informational purposes only and is believed to be accurate.



Headquarters
20050 SW 112th Ave.
Tualatin, OR 97062
800.275.4899

Fax 503.612.2383
cui.com
techsupport@cui.com

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