

SERIES: VGS-100D | DESCRIPTION: INTERNAL AC-DC POWER SUPPLY

FEATURES

- wide input range (85 ~ 305 VAC)
- available with conformal coating or terminal cover options
- active Power Factor Correction (PFC)
- certified to IEC/EN/UL 62368
- designed to meet IEC/EN 61558, IEC/EN 60335, and GB4943
- output over voltage, over current, over temperature, short circuit protection
- CISPR/EN55032 Class B radiated/conducted emissions
- input over voltage category III for fixed installations

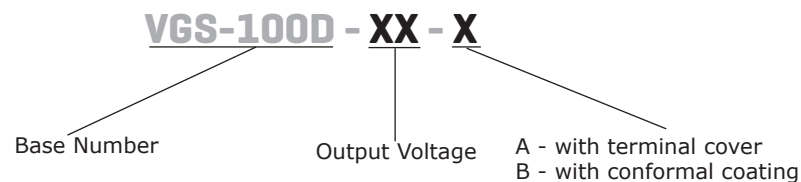


| MODEL | output voltage | | output current | output power | ripple and noise ² | efficiency ³ |
|-------------|----------------|-----------------------------|----------------|--------------|-------------------------------|-------------------------|
| | (Vdc) | range ¹ (Vdc) | max (A) | max (W) | max (mVp-p) | typ (%) |
| VGS-100D-5* | 5 | 4.75 ~ 5.5 | 20.0 | 100.0 | 100 | 86 |
| VGS-100D-12 | 12 | 11.4 ~ 13.8 | 8.5 | 102.0 | 100 | 85 |
| VGS-100D-15 | 15 | 14.3 ~ 16.5 | 6.7 | 100.5 | 100 | 86 |
| VGS-100D-24 | 24 | 22.8 ~ 27.6 | 4.2 | 100.8 | 150 | 86 |
| VGS-100D-48 | 48 | 45.6 ~ 55.2 | 2.1 | 100.8 | 250 | 87 |

Notes:

1. Output adjustable via built-in trimpot. The actual adjustment range may extend beyond the values listed and care should be taken to ensure the output voltage and output power do not exceed stated limits.
2. Ripple & noise are measured at 20 MHz BW with 47 μ F aluminum electrolytic capacitor and 0.1 μ F ceramic capacitor on the output.
3. Measured at 230 Vac
4. * Discontinued model.

PART NUMBER KEY



INPUT

| parameter | conditions/description | min | typ | max | units |
|-----------------|-------------------------|-----------|-----|------------|------------|
| voltage | 5 Vdc output model | 85 120 | | 264 373 | Vac Vdc |
| | all other output models | 85 120 | | 305 430 | Vac Vdc |
| frequency | | 47 | | 63 | Hz |
| current | at 85 Vac | | | 1.7 | A |
| | at 115 Vac | | | 1.3 | A |
| | at 230 Vac | | | 0.7 | A |
| inrush current | at 115 Vac, cold start | | 25 | | A |
| | at 230 Vac, cold start | | 45 | | A |
| leakage current | at 240 Vac | | | 2 | mA |
| power factor | at 115 Vac, full load | 0.97 | | | |
| | at 230 Vac, full load | 0.92 | | | |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|----------------------------|--|-----|-------|-------|-------|
| capacitive load | 5 Vdc output | | | 5,000 | μF |
| | 12 Vdc output | | | 5,000 | μF |
| | 15 Vdc output | | | 5,000 | μF |
| | 24 Vdc output | | | 4,200 | μF |
| | 48 Vdc output | | | 2,200 | μF |
| initial set point accuracy | at full load | | | | |
| | 5, 12 & 15 Vdc output | | ±2 | | % |
| | 24 & 48 Vdc output | | ±1 | | % |
| line regulation | | | ±0.5 | | % |
| load regulation | 0%~100% load | | | | |
| | 5 Vdc output model | | ±1.0 | | % |
| | all other output models | | ±0.5 | | % |
| hold-up time | at 230 Vac | 16 | | | ms |
| temperature coefficient | | | ±0.05 | | %/°C |
| remote on/off (CTRL) | turn on (0 ~ 0.8 Vdc) turn off (4 ~ 10 Vdc) | | | | |

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|--|---|-----|-----|-------|-------|
| over voltage protection | 5 Vdc output model, hiccup | | | 7.5 | Vdc |
| | 12 Vdc output model, hiccup | | | 16.8 | Vdc |
| | 15 Vdc output model, hiccup | | | 20.25 | Vdc |
| | 24 Vdc output model, hiccup | | | 32.4 | Vdc |
| | 48 Vdc output model, hiccup | | | 60.0 | Vdc |
| over current protection | constant current, auto-recovery | 105 | | 150 | % |
| over temperature protection ¹ | over temperature protection activation | | | 85 | °C |
| | over temperature protection deactivation | | 50 | | °C |
| short circuit protection | constant current, continuous, auto-recovery | | | | |

Note: 1. Over temperature protection thresholds under full load conditions.

SAFETY & COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|--------------------------------|--|---------|-----|-----|-------|
| isolation voltage | input to ground, 1 min, <10mA | 2,000 | | | Vac |
| | input to output, 1 min, <10mA | 4,000 | | | Vac |
| | output to ground, 1 min, <5mA | 500 | | | Vac |
| safety approvals | certified to 62368: IEC, EN, UL designed to meet 60335: EN designed to meet 61558: EN designed to meet GB4943 | | | | |
| safety class | Class I | | | | |
| conducted emissions | CISPR32/EN55032 CLASS B | | | | |
| radiated emissions | CISPR32/EN55032 CLASS B | | | | |
| harmonic current | IEC/EN61000-3-2 | | | | |
| voltage flicker | IEC/EN 61000-3-3 | | | | |
| ESD | IEC/EN 61000-4-2 Contact ±6KV/Air ±8KV perf. Criteria A | | | | |
| radiated immunity | IEC/EN61000-4-3 3V/m perf. Criteria B | | | | |
| EFT/burst | IEC/EN61000-4-4 ±2KV perf. Criteria A | | | | |
| surge | IEC/EN61000-4-5 line to line ±1kV/line to ground ±2kV perf. Criteria A | | | | |
| conducted immunity | IEC/EN61000-4-6 10Vr.m.s perf. Criteria A | | | | |
| voltage dips and interruptions | IEC/EN61000-4-11 0%, 70% perf. Criteria B | | | | |
| MTBF | as per MIL-HDBK-217F at 25°C | 300,000 | | | hours |
| RoHS | yes | | | | |

ENVIRONMENTAL


| parameter | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|-----|-------|
| operating temperature | see derating curve | -30 | | 70 | °C |
| storage temperature | | -40 | | 85 | °C |
| operating humidity | non-condensing | 20 | | 90 | % |
| storage humidity | non-condensing | 10 | | 95 | % |

MECHANICAL

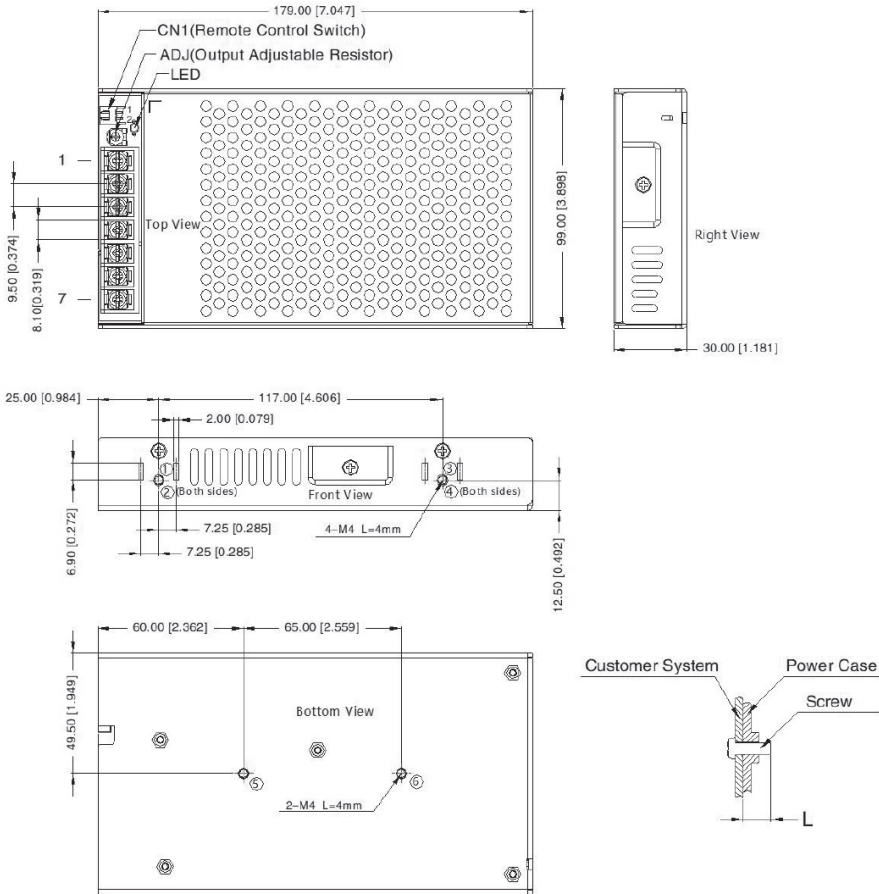
| parameter | conditions/description | min | typ | max | units |
|---------------|--|-----|------------|-----|--------|
| dimensions | 179 × 99 × 30 | | | | mm |
| weight | 5 Vdc output model all other models | | 530 460 | | g g |
| cooling | natural convection | | | | |
| case material | metal (AL1100, SGCC) | | | | |

MECHANICAL DRAWING

units: mm [inch]
tolerance: ±1.0 [±0.039]
wire range: 22-12 AWG
connector tightening torque: M3.5, 0.8 N·m

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

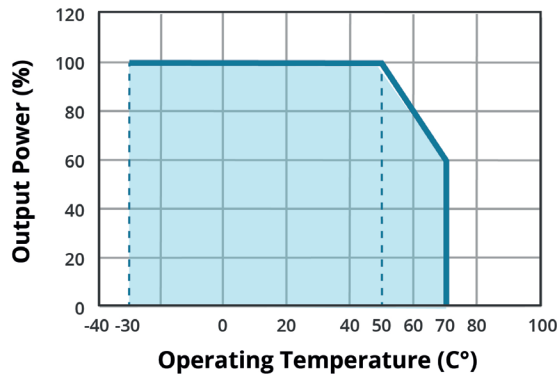
Note: At least one hole position, ①~⑥, must be securely connected to Protective Earth (PE). ⊕



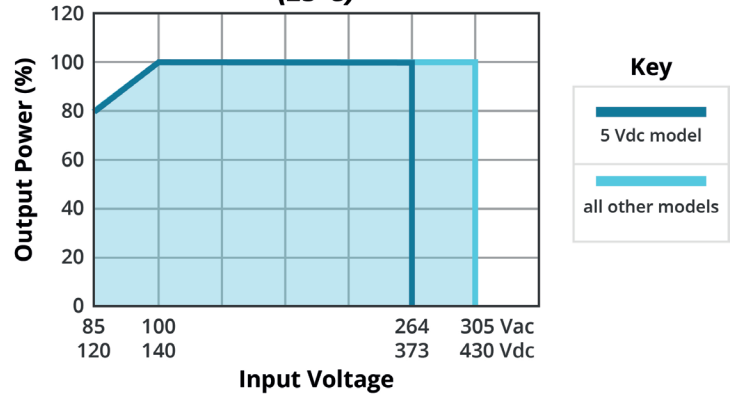
| CN1: KANGDAO TJC3-NAWD-2P | | | |
|---------------------------|------------|---------------------|-------------------|
| PIN | FUNCTION | CONNECTOR | TERMINAL |
| 1 | RC+ | KANGDAO XI-25001-2Y | KANGDAO XH2.54-TE |
| 2 | RC- | | |
| POSITION | SCREW SPEC | L (MAX) | TORQUE (MAX) |
| ①~⑥ | M4 | 3mm | 0.9N·m |

DERATING CURVE

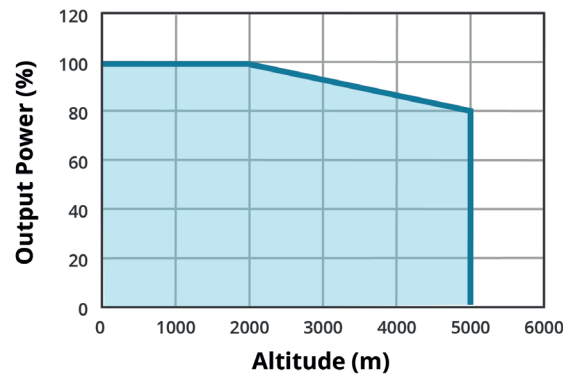
TEMPERATURE DERATING CURVE



INPUT VOLTAGE DERATING CURVE (25°C)

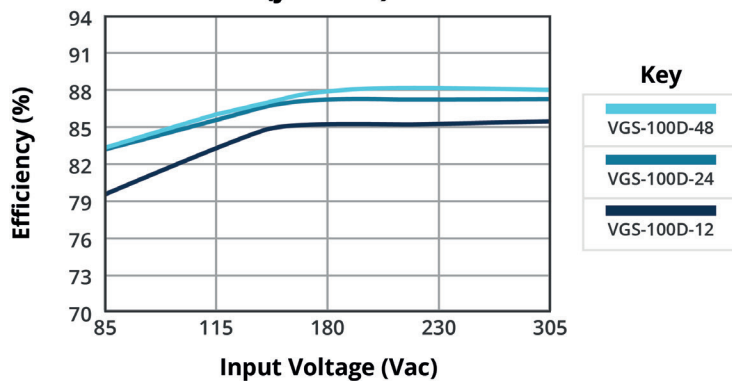


ALTITUDE DERATING CURVE

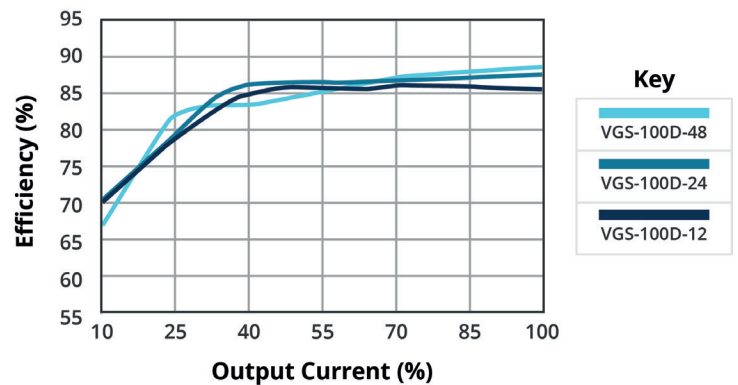


EFFICIENCY CURVES

EFFICIENCY VS INPUT VOLTAGE (full load)



EFFICIENCY VS OUTPUT LOAD



REVISION HISTORY

| rev. | description | date |
|------|--|------------|
| 1.0 | initial release | 12/14/2020 |
| 1.01 | derating and efficiency curves updated | 02/08/2022 |
| 1.02 | UKCA mark added | 06/10/2022 |
| 1.03 | max screw depth updated | 03/21/2023 |
| 1.04 | discontinued model VGS-100D-5 | 01/12/2024 |

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



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