

**SERIES: VGS-150D | DESCRIPTION: INTERNAL AC-DC POWER SUPPLY**
**FEATURES**

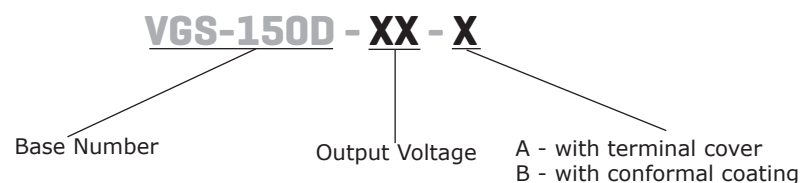
- wide input range (85 ~ 305 VAC)
- available with conformal coating or terminal cover options
- active Power Factor Correction (PFC)
- certified to IEC/EN/UL 62368
- designed to meet IEC/EN 61558, IEC/EN 60335, and GB4943
- output over voltage, over current, over temperature, short circuit protection
- CISPR/EN55032 Class B radiated/conducted emissions
- input over voltage category III for fixed installations
- 300 VAC surge resilience (5 seconds)


**MODEL**

|             | output voltage |                          | output current max (A) | output power max (W) | ripple and noise <sup>2</sup> max (mVp-p) | efficiency <sup>3</sup> typ (%) |
|-------------|----------------|--------------------------|------------------------|----------------------|-------------------------------------------|---------------------------------|
|             | (Vdc)          | range <sup>1</sup> (Vdc) |                        |                      |                                           |                                 |
| VGS-150D-12 | 12             | 10.2 ~ 13.8              | 12.5                   | 150.0                | 100                                       | 85.5                            |
| VGS-150D-15 | 15             | 13.5 ~ 18.0              | 10.0                   | 150.0                | 100                                       | 86.0                            |
| VGS-150D-24 | 24             | 21.6 ~ 28.8              | 6.3                    | 151.2                | 150                                       | 87.0                            |
| VGS-150D-48 | 48             | 45.6 ~ 55.2              | 3.2                    | 153.6                | 250                                       | 88.0                            |

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  $\mu$ F aluminum electrolytic capacitor and 0.1  $\mu$ F ceramic capacitor on the output.
3. Measured at 230 Vac

**PART NUMBER KEY**


## INPUT

| parameter       | conditions/description | min  | typ | max | units |
|-----------------|------------------------|------|-----|-----|-------|
| voltage         | ac input               | 85   |     | 305 | Vac   |
|                 | dc input               | 120  |     | 430 | Vdc   |
| frequency       |                        | 47   |     | 63  | Hz    |
| current         | at 85 Vac              |      |     | 2.5 | A     |
|                 | at 115 Vac             |      |     | 2.0 | A     |
|                 | at 230 Vac             |      |     | 1.0 | A     |
| inrush current  | at 115 Vac, cold start |      |     | 30  | 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  | 0.91 |     |     |       |

## OUTPUT

| parameter                  | conditions/description | min | typ   | max   | units |
|----------------------------|------------------------|-----|-------|-------|-------|
| capacitive load            | 12 Vdc output          |     |       | 5,000 | μF    |
|                            | 15 Vdc output          |     |       | 5,000 | μF    |
|                            | 24 Vdc output          |     |       | 5,000 | μF    |
|                            | 48 Vdc output          |     |       | 3,000 | μF    |
| initial set point accuracy | at full load           |     |       |       |       |
|                            | 12 & 15 Vdc output     |     | ±2    |       | %     |
|                            | 24 & 48 Vdc output     |     | ±1    |       | %     |
| line regulation            |                        |     | ±0.5  |       | %     |
| load regulation            | 0%~100% load           |     | ±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                  | 12 Vdc output model, output shutdown, latch |     |     | 16.8 | Vdc   |
|                                          | 15 Vdc output model, output shutdown, latch |     |     | 24.5 | Vdc   |
|                                          | 24 Vdc output model, output shutdown, latch |     |     | 33.6 | Vdc   |
|                                          | 48 Vdc output model, output shutdown, latch |     |     | 60.0 | Vdc   |
| over current protection                  | constant current, auto-recovery             | 105 |     | 150  | %     |
| over temperature protection <sup>1</sup> | 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<br>designed to meet 60335: EN<br>designed to meet 61558: EN<br>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 CLASS A                                                                                                |         |     |     |       |
| voltage flicker                | IEC/EN61000-3-3                                                                                                        |         |     |     |       |
| 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    |
| storage humidity      | non-condensing         | 10  |     | 95  | %     |

## MECHANICAL

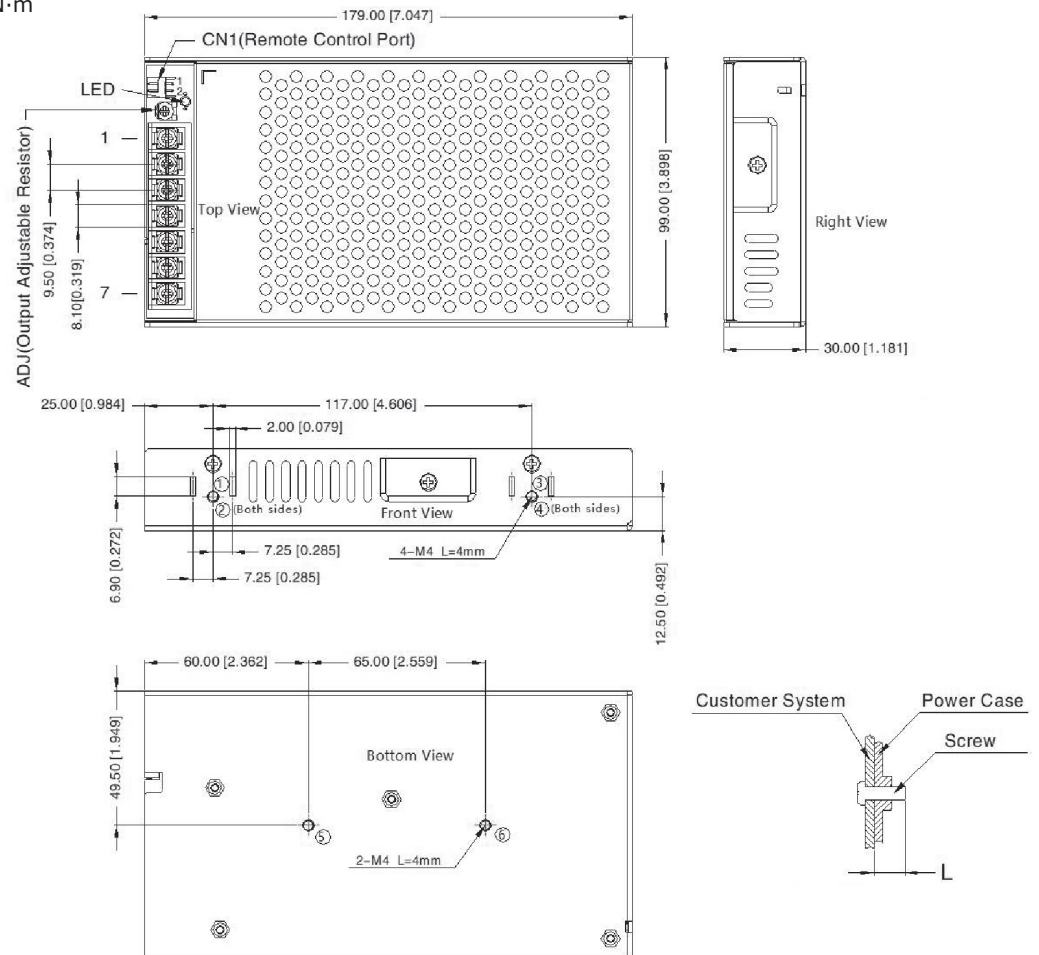
| parameter     | conditions/description | min | typ | max | units |
|---------------|------------------------|-----|-----|-----|-------|
| dimensions    | 179 × 99 × 30          |     |     |     | mm    |
| weight        |                        |     | 500 |     | g     |
| cooling       | natural convection     |     |     |     |       |
| case material | metal (AL1100, SGCC)   |     |     |     |       |

## MECHANICAL DRAWING

units: mm [inch]  
 tolerance:  $\pm 1.0$  [ $\pm 0.039$ ]  
 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)                                                                             |

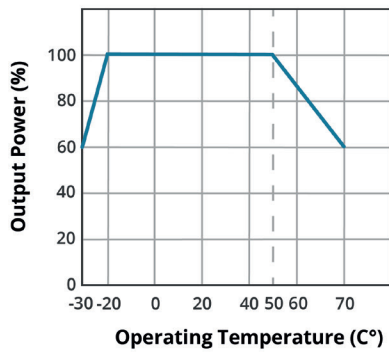
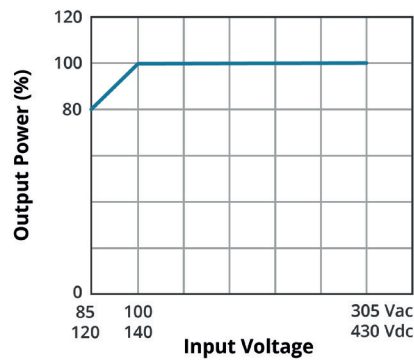
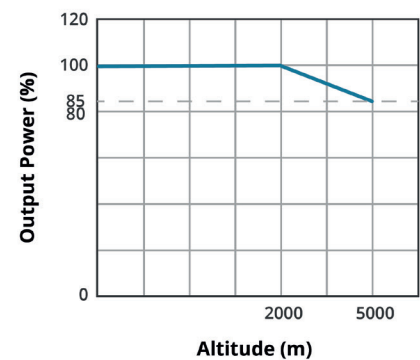
Note: At least one hole position, ①~⑥, must be securely connected to Protective Earth (PE). ④



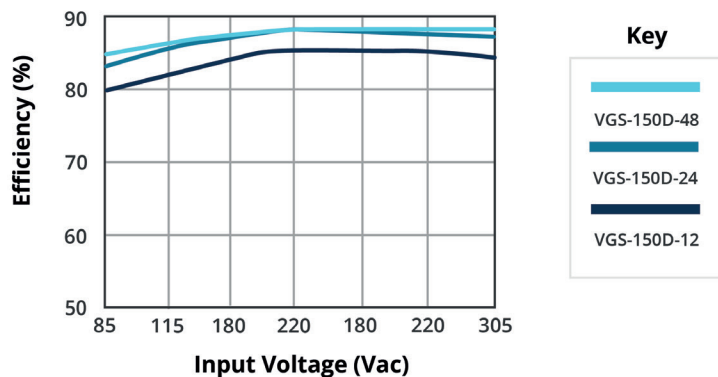
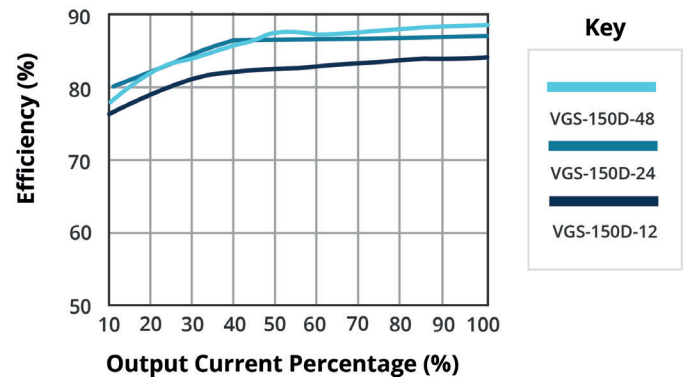
| CN1: KANGDAO TJC3-NAWD-2P |          |                     |                   |
|---------------------------|----------|---------------------|-------------------|
| PIN                       | FUNCTION | CONNECTOR           | TERMINAL          |
| 1                         | RC+      | KANGDAO XI-25001-2Y | KANGDAO XH2.54-TE |
| 2                         | RC-      |                     |                   |

| POSITION | SCREW SPEC | L (MAX) | TORQUE (MAX) |
|----------|------------|---------|--------------|
| ①~⑥      | M4         | 4mm     | 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 | 12/09/2020 |

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



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