

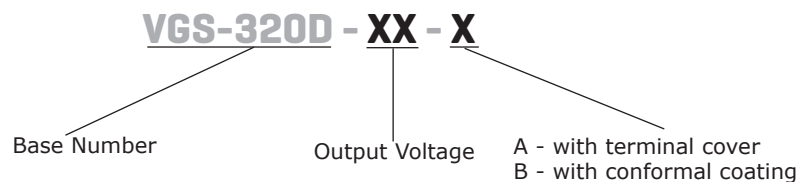
SERIES: VGS-320D | DESCRIPTION: INTERNAL AC-DC POWER SUPPLY
FEATURES

- 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 and GB4943
- output over voltage, over current, over temperature, short circuit protection
- CISPR/EN55032 Class B radiated/conducted emissions



| MODEL | output voltage | | output current max (A) | output power max (W) | ripple and noise ² max (mVp-p) | efficiency ³ typ (%) |
|-------------|----------------|-----------------------------|------------------------------|----------------------------|---|---------------------------------------|
| | (Vdc) | range ¹ (Vdc) | | | | |
| VGS-320D-5 | 5 | 4.5 ~ 5.5 | 60.0 | 300.0 | 150 | 84.0 |
| VGS-320D-12 | 12 | 10.0 ~ 13.2 | 26.7 | 320.4 | 150 | 86.5 |
| VGS-320D-15 | 15 | 13.5 ~ 18.0 | 21.4 | 321.0 | 150 | 89.0 |
| VGS-320D-24 | 24 | 20.0 ~ 26.4 | 13.4 | 321.6 | 150 | 88.5 |
| VGS-320D-48 | 48 | 41.0 ~ 56.0 | 6.7 | 321.6 | 200 | 89.0 |

- 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 µF aluminum electrolytic capacitor and 0.1 µF 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 115 Vac | | | 4.2 | A |
| | at 230 Vac | | | 2.1 | A |
| inrush current | at 115 Vac, cold start | | 35 | | A |
| | at 230 Vac, cold start | | 65 | | A |
| power factor | at 115 Vac, full load | 0.98 | | | |
| | at 230 Vac, full load | 0.95 | | | |

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 | | | 5,000 | μF |
| | 48 Vdc output | | | 5,000 | μF |
| initial set point accuracy | at full load | | | | |
| | 5 Vdc output model | | ±2 | | % |
| | other Vdc output models | | ±1 | | % |
| line regulation | 5 Vdc output model | | ±0.5 | | % |
| | 12 & 15 Vdc output model | | ±0.3 | | % |
| | 24 & 48 Vdc output model | | ±0.2 | | % |
| load regulation | 0%~100% load | | | | |
| | 5 Vdc output model | | ±1 | | % |
| | other output models | | ±0.5 | | % |
| hold-up time | at 230 Vac | | 12 | | ms |
| temperature coefficient | | | ±0.03 | | %/°C |

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|--|--|-----|-----|------|-------|
| over voltage protection | 5 Vdc output model, auto-recovery, hiccup | | | 7.0 | Vdc |
| | 12 Vdc output model, auto-recovery, hiccup | | | 16.2 | Vdc |
| | 15 Vdc output model, auto-recovery, hiccup | | | 21.8 | Vdc |
| | 24 Vdc output model, auto-recovery, hiccup | | | 32.4 | Vdc |
| | 48 Vdc output model, auto-recovery, hiccup | | | 60.0 | Vdc |
| over current protection | auto-recovery, hiccup | 105 | | 150 | % |
| over temperature protection ¹ | over temperature protection activation | | | 85 | °C |
| | over temperature protection deactivation | 50 | | | °C |
| short circuit protection | continuous, auto-recovery, hiccup | | | | |

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, <10mA | 500 | | | Vac |
| safety approvals | certified to 62368: IEC, EN, UL 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 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 10V/m perf. Criteria A | | | | |
| 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 | 250,000 | | | 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

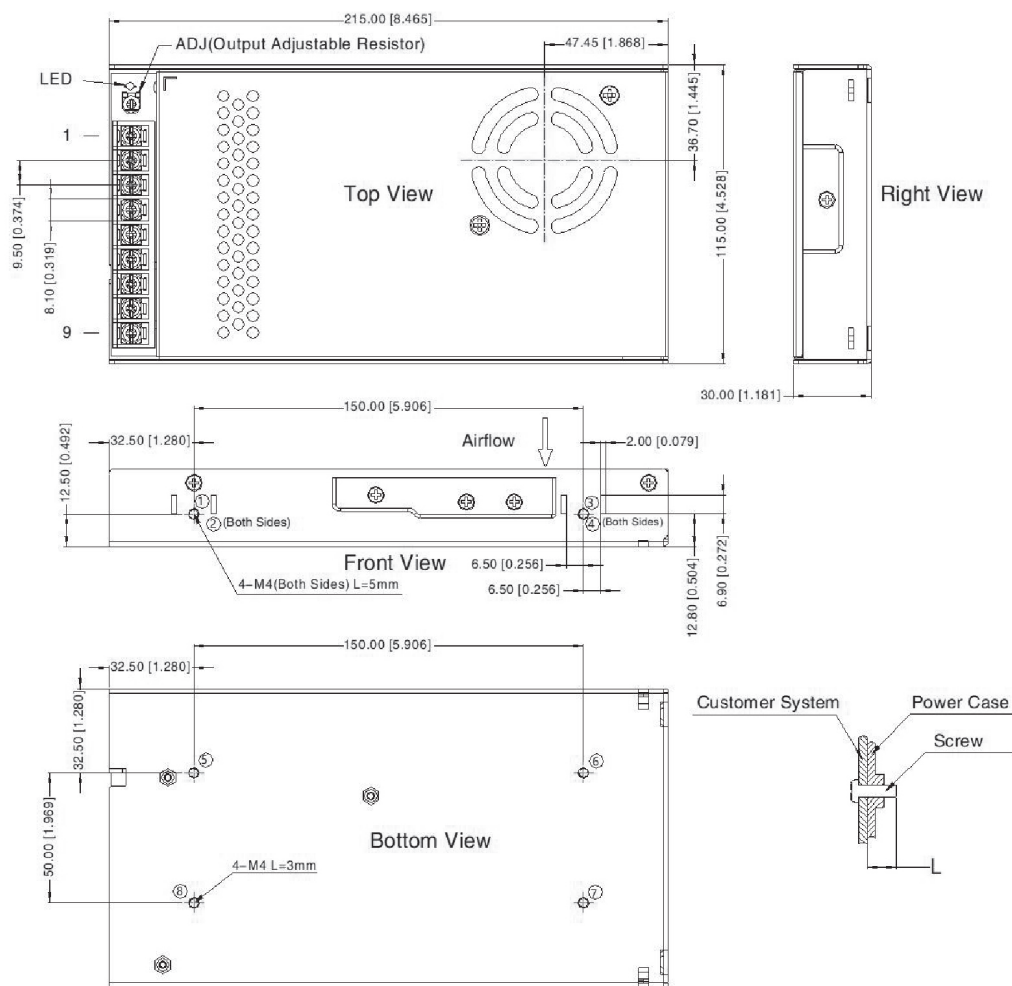
| parameter | conditions/description | min | typ | max | units |
|---------------|------------------------|-----|-----|-----|-------|
| dimensions | 215 x 115 x 30 | | | | mm |
| weight | | | 750 | | g |
| cooling | forced air cooling | | | | |
| case material | metal (AL1100, SGCC) | | | | |

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 | -Vo |
| 6 | -Vo |
| 7 | ⏏ |
| 8 | AC(N) |
| 9 | AC(L) |

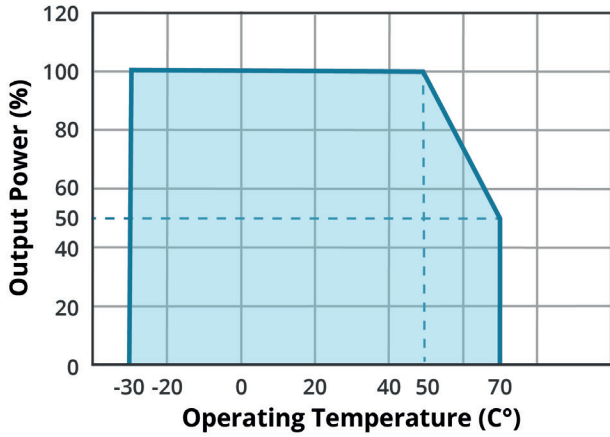
Note: At least one hole position, ①~⑧, must be securely connected to Protective Earth (PE). ⑨



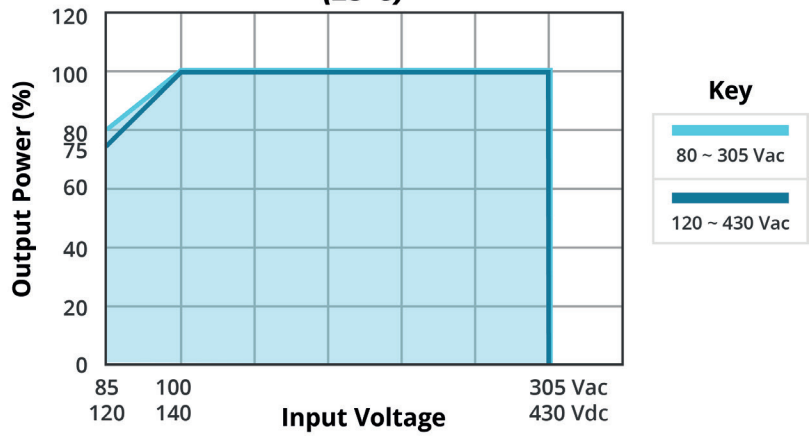
| POSITION | SCREW SPEC | L (MAX) | TORQUE (MAX) |
|----------|------------|---------|--------------|
| ①~④ | M4 | 5mm | 0.9N·m |
| ⑤~⑧ | M4 | 3mm | 0.9N·m |

DERATING CURVE

TEMPERATURE DERATING CURVE

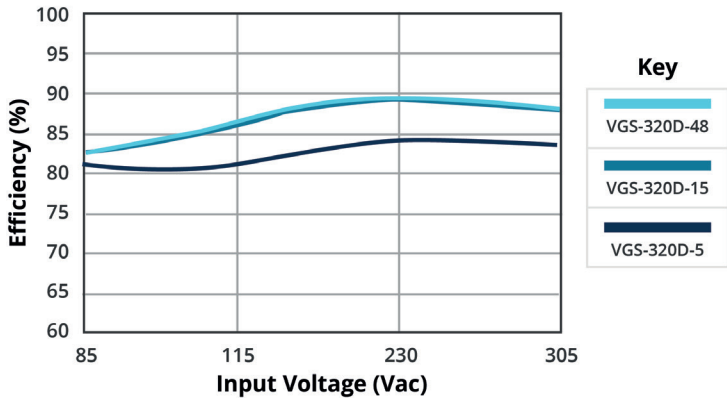


INPUT VOLTAGE DERATING CURVE (25°C)

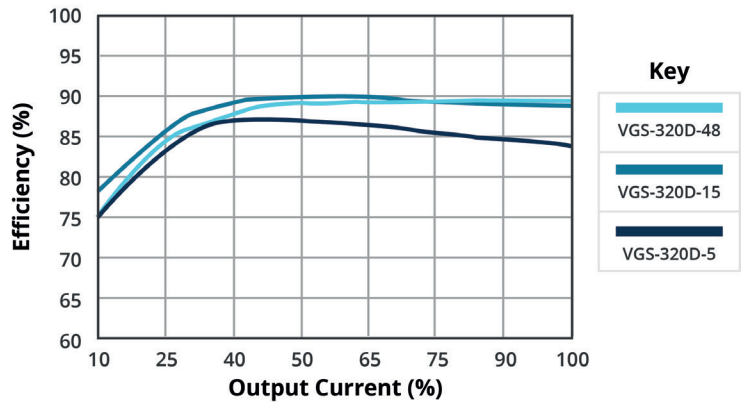


EFFICIENCY CURVES

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 | 01/28/2022 |
| 1.02 | UKCA mark added | 06/10/2022 |

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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