# SERIES: VUFM-D400-D | DESCRIPTION: MEDICAL AC-DC POWER SUPPLY

## FEATURES

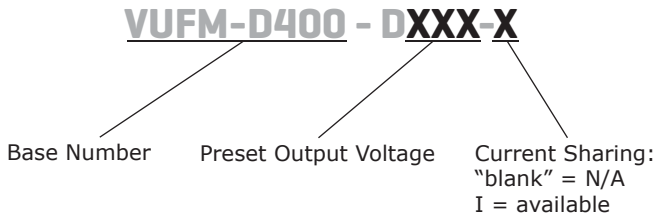
- medical approvals: UL 60601-1, CSA C22.2 No. 60601-1-03
- dual output
- current monitoring and remote voltage adjustments (margin)
- compact 1U size and high power density: 5.56 W/inch$^3$
- power factor corrected to EN 61000-3-2 Class D
- short circuit, overload, over voltage and over temperature protections
- optional IEC320 AC inlet or terminal block
- current sharing



| MODEL | output voltage[1,2,3] (Vdc) | output current max[4] (A) | output current max[5] (A) | ripple and noise[6,7] max (% Vp-p) | efficiency typ (%) |
|---|---|---|---|---|---|
| VUFM-D400-D312 | 3.3<br>12 | 30<br>16.7 | 40<br>25 | ±1 | 75 |
| VUFM-D400-D324 | 3.3<br>24 | 30<br>8.34 | 40<br>12.5 | ±1 | 75 |
| VUFM-D400-D512 | 5<br>12 | 30<br>16.7 | 40<br>25 | ±1 | 75 |
| VUFM-D400-D524 | 5<br>24 | 30<br>8.34 | 40<br>12.5 | ±1 | 75 |
| VUFM-D400-D1242 | 12<br>24 | 16.7<br>8.33 | 25<br>12.5 | ±1 | 75 |

Notes:
1. output is fully isolated
2. output voltage is measured at output power connector
3. provides peak power of 700 W within 500 µs for all models
4. convection cooling
5. 23 CFM cooling
6. 1% minimum load is required to maintain the ripple and regulation
7. Ripple and noise is measured from 10 KHz to 20 MHz at output terminals with a 0.1 µF ceramic capacitor and a 22 µF electrolytic capacitor in parallel

## PART NUMBER KEY






Please read our datasheet & drawing disclaimer here.

## INPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| voltage | | 90 | | 264 | Vac |
| frequency | | 47 | | 63 | Hz |
| current | at 90 Vac, full load | | | 6.35 | A |
| inrush current | at 230 Vac, full load, cold start | | | 35 | A |
| input fuse | built-in ac fuse. A blown fuse usually indicates permanent damage to the power supply serviceable by factory only. | | | | |
| active power correction | meets EN 61000-3-2 Class D | | | | |

## OUTPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| total regulation | | | ±1 | | % |
| transient response | output voltage returns to within 1% in less than 2.5 ms for a 50% load change, peak transient does not exceed 5%. | | | | |
| overshoot | turn-on and turn-off overshoot shall not exceed 5% over nominal voltage. | | | | |
| turn-on delay | at 230 Vac | | | 1 | s |
| hold-up time | at 80% load | 20 | | | ms |
| adjustment range | output user adjustable | | ±5 | | % |
| switching frequency | | | 30 | | kHz |
| remote sense | designated as RS+ and RS- on CN3. Total voltage compensation for cable losses with respect to the main output. | | | | |
| remote on/off | defined RSW on CN3, requiring a low signal to inhibit output. | | | | |
| LED display (LED 1) | green - the power supply is operating normally.<br>orange - when any protection occurs or RSW is low. | | | | |
| power good | designated as PG on CN3. This signal goes high 100~500 ms after the output reaches regulation. It goes low at least 1 ms before loss of regulation. | | | | |
| current sharing | designated as CSH on CN3, optional single wired for forced surrent sharing function and parallel up to 4 units within 10% accuracy at full load. | | | | |
| current monitor | designated as CMN on CN3 for for current sense for 0.5~3 Vdc to represent 0~100% output current. | | | | |
| AC fail (optional)[2] | designated as ACF on CN3 to monitor the input voltage when input goes under 80 ±5 Vac the signal will go low (0 V) and then go high (+5 V) once it reappears over 86 Vac. | | | | |

Notes: 1. 1% minimum load is required to maintain ripple and regulation
2. Not available for current sharing models
3. Input voltage protection must be disabled when AC Fail is enabled

## PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| input under voltage protection | Power supply shuts down when ac input is under 80 ±5 Vac. When ac line reappears over 86 ±5 Vac, the power supply restarts automatically. | | | | |
| over voltage protection | shutdown and latches, ac input reset required to restart | | | 130 | % |
| over current protection | auto recovery | 110 | | 140 | %Io |
| short circuit protection | continuous, auto recovery upon removal of short | | | | |
| over temperature protection | shutdown | 85 | | | °C |

## SAFETY & COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| isolation voltage | primary to secondary at 2 mA for 3 seconds<br>primary to transformer core at 2 mA for 3 seconds<br>primary to earth ground at 2 mA for 3 seconds | 4,000<br>1,500<br>1,500 | | | Vac<br>Vac<br>Vac |
| safety approvals | UL 60601-1, CSA C22.2 No. 601.1-M90, TUV 60601-1, CE Mark (LVD)<br>EN 61204-3/60601-1-2/61000-3-(2,3) & IEC 61000-4 Series Regulations, CB | | | | |
| EMI/EMC | FCC Part 15, CISPR22 Class B, conducted | | | | |
| leakage current | | | | 300 | µA |
| grounding test | allowable resistance measured when 40 A current is applied from the ground pin of the three prong plug to the farthest earthed connection point. | | | 0.1 | Ω |
| RoHS compliant | yes | | | | |
| MTBF | according to MIL-HBK-217F at 30°C | 100,000 | | | hours |

## ENVIRONMENTAL

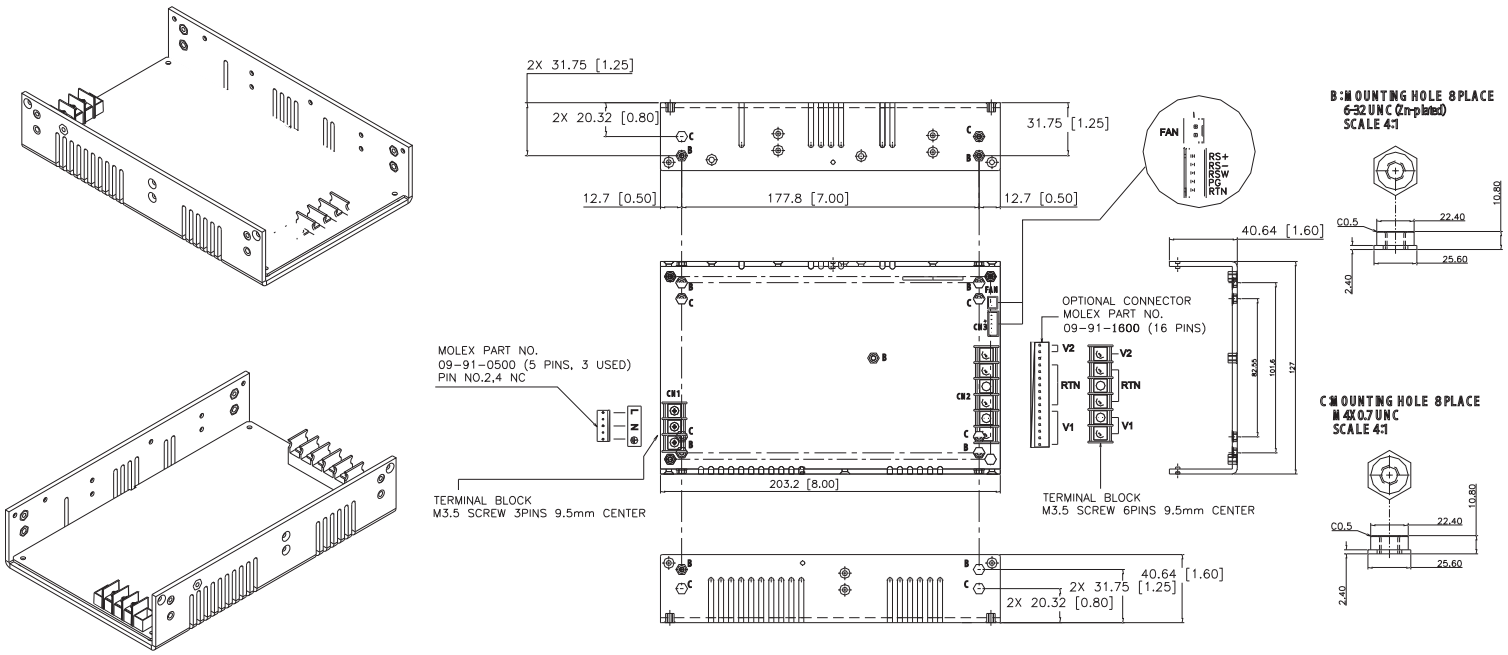
| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| operating temperature | derating linearly at 2.5% from 50~70°C | 0 | | 70 | °C |
| storage temperature | | -20 | | 85 | °C |
| operating humidity | non-condensing | 5 | | 90 | %RH |
| storage humidity | non-condensing | 5 | | 95 | %RH |

## MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| dimensions | 8 x 5 x 1.6 (203.2 x 127 x 40.64 mm) | | | | inch |
| weight | | | | 1.3 | kg |
| Mounting screws | 6-32, 1/4" or shorter | | | | |

## MECHANICAL DRAWING

units: inches (mm)
tolerance: inches: x.xx = ±0.02
mm: x.xx = ±0.5




| INPUT CONNECTOR (CN1) | |
|---|---|
| Howder HD-121-3P (option 1) | Molex Part No. 26-48-1071 or similar. (option 2) |
| | Suggested mating plug Molex Part No. 09-91-0700 |

| OUTPUT CONNECTOR (CN2) | | | |
|---|---|---|---|
| Howder HD-121-6P (option 1) | | Molex 26-48-1161 or similar. (option 2) | |
| Suggested mating connector Molex 19198-0045 or similar | | Suggested mating connector Molex 09-91-1600 | |
| PIN | FUNCTION | PIN | FUNCTION |
| 1~2 | +Vo | 1~6 | +Vo |
| 3~5 | RTN | 7~13 | RTN |
| 6 | -Vo | 14~16 | -Vo |

| LOGIC CONNECTOR (CN3) | |
|---|---|
| JS B5B-XH-A | |
| Suggested mating connector JST XHP-5 or equivalent Contact: SXH-002T-P0.6 | |
| PIN | FUNCTION |
| 1 | RTN - return |
| 2 | PG - power good signal |
| 3 | RSW - remore on/off |
| 4 | RS- - remote sense (-) |
| 5 | RS+ - remote sense (+) |

| FAN |
|---|
| JS B2B-XH-A |
| Suggested mating connector JST XHP-2 or equivalent, Contact: SXH-001T-P0.6 |

## REVISION HISTORY

| rev. | description | date |
|---|---|---|
| 1.0 | initial release | 07/11/2006 |
| 1.04 | new template applied, V-Infinity branding removed | 08/28/2012 |

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

CUI INC®

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

Fax 503.612.2383
**cui**.com
techsupport@cui.com

CUI offers a two (2) year limited warranty. Complete warranty information is listed on our website.

CUI reserves the right to make changes to the product at any time without notice. Information provided by CUI is believed to be accurate and reliable. However, no responsibility is assumed by CUI for its use, nor for any infringements of patents or other rights of third parties which may result from its use.

CUI products are not authorized or warranted for use as critical components in equipment that requires an extremely high level of reliability. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.