

SERIES: VUMM-S400-XXR | **DESCRIPTION:** MEDICAL AC-DC POWER SUPPLY

FEATURES

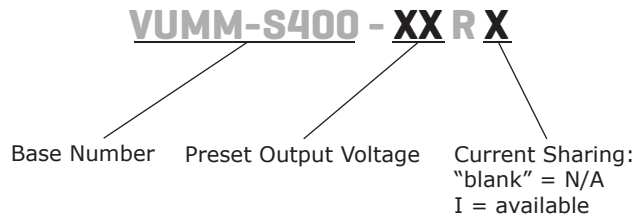
- medical approvals: UL 60601-1, CSA C22.2 No. 601.1
- universal input (90~264 Vac)
- current monitoring and remote voltage adjustments (margin)
- compact 1U size and high power density: 5.56 W/inch³
- power factor corrected to EN 61000-3-2 Class D
- metal-enclosed
- short circuit, overload, over voltage and over temperature protections
- optional IEC 320 AC inlet or terminal block
- optional current sharing



| MODEL | preset voltage (Vdc) | output voltage ^{1,2,3,4} | | output current ⁵ max (A) | ripple and noise ^{6,7} max (% Vp-p) | efficiency typ (%) |
|---------------|-------------------------|-----------------------------------|--------------|---|--|--------------------------|
| | | min (Vdc) | max (Vdc) | | | |
| VUMM-S400-03R | 3.3 | 2 | 3.3 | 60 | ±1 | 70 |
| VUMM-S400-5R | 5 | 5 | 6 | 60 | ±1 | 75 |
| VUMM-S400-12R | 12 | 12 | 15 | 33.34 | ±1 | 80 |
| VUMM-S400-18R | 18 | 16 | 21 | 25 | ±1 | 83 |
| VUMM-S400-24R | 24 | 22 | 30 | 18.19 | ±1 | 83 |
| VUMM-S400-36R | 36 | 31 | 41 | 12.9 | ±1 | 83 |
| VUMM-S400-48R | 48 | 42 | 58 | 9.53 | ±1 | 83 |

- Notes:
1. customer must specify output voltage
 2. output is fully isolated
 3. output voltage is measured at output power connector
 4. provides peak power of 700 W within 500 μs for all models
 5. must use external forced airflow min. 23 CFM to achieve maximum current
 6. 1% minimum load is required to maintain the ripple and regulation
 7. Ripple & noise are measured at 20 MHz BW with 0.1 μF ceramic cap and a 22 μF electrolytic capacitors on the output

PART NUMBER KEY



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. | | | | |
| power factor 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 | | | | |
| start-up time | at 120 Vac | | | 1 | s |
| hold-up time | at 80% load | 20 | | | ms |
| adjustment range | output user adjustable | | ±5 | | % |
| remote sense ² | 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. 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 current 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 | auto recovery upon removal of short | | | | |
| over temperature protection | shutdown, auto recovery | 85 | | | °C |

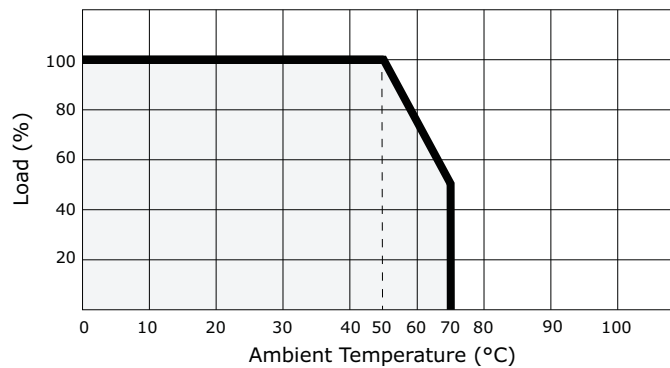
SAFETY & COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|-------------------|--|---------|-----|-----|-------|
| isolation voltage | primary to secondary at 2 mA for 3 seconds | 4,000 | | | Vac |
| | primary to transformer at 2 mA core for 3 seconds | 1,500 | | | Vac |
| | primary to earth ground at 2 mA for 3 seconds | 1,500 | | | Vac |
| safety approvals | UL 60601-1, CSA C22.2 No. 601.1-M90, TUV EN 60601-1, CE Mark (LVD) EN 61204-3/60601-1-2/61000-3-(2,3) & IEC 61000-4 Series Regulations, CB | | | | |
| EMI/EMC | FCC Part 15, CISPR 22 Class B, conducted, EN 60601-1-2 (E302945) | | | | |
| leakage current | at 264 Vac | | | 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 |

DERATING CURVE

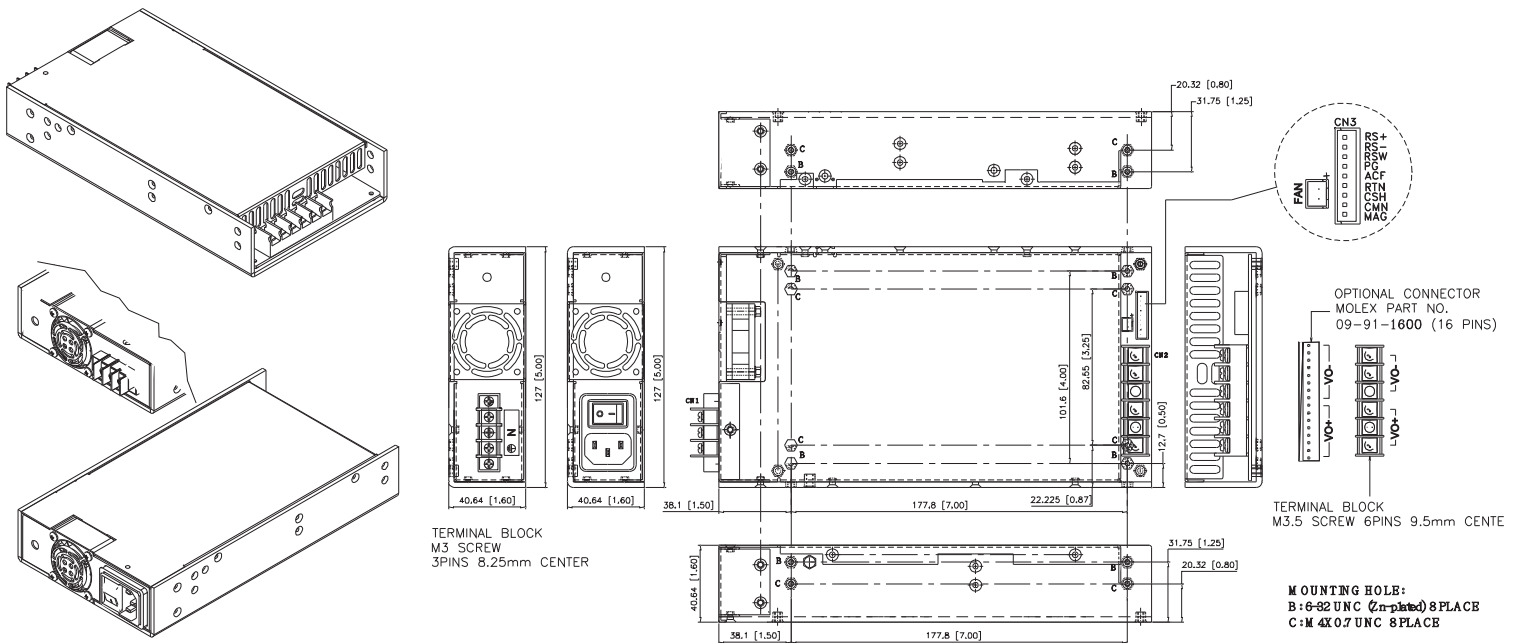


MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|----------------|---|-----|-----|-----|-------|
| dimensions | 9 x 5 x 1.6 (228.6 x 127 x 40.64 mm) | | | | inch |
| weight | | | | 1.6 | kg |
| Mounting holes | Two sets of 8 threaded mounting holes available on the enclosure. B: 6-32, maximum insertion depth of 0.2 inches. C: M4, maximum insertion depth of 0.2 inches. | | | | |

MECHANICAL DRAWING

units: inches [mm]
tolerance: inches: ±0.02
mm: ±0.5



| INPUT CONNECTOR [CN1] | |
|---|--|
| IEC320 or equivalent snap-in mounting type (option 1) | DINKLE DT-35-A02W-03 (option 2) |
| Suggested mating plug IEC320 | Suggested mating connector Molex 19198-0016 or similar |

| OUTPUT CONNECTOR [CN2] | | | |
|-----------------------------|----------|-----------------------------|----------|
| Molex 09-91-1600 (option 1) | | Howard HD-121-6P (option 2) | |
| PIN | FUNCTION | PIN | FUNCTION |
| 1~8 | +Vo | 1~3 | +Vo |
| 9~16 | -Vo | 4~6 | -Vo |

| LOGIC CONNECTOR [CN3] | | FAN |
|--|--------------------------|---|
| JS B5B-XH-A | | JS B2B-XH-A |
| Suggested mating connector JST XHP-5 or equivalent Contact: SXH-002T-P0.6 | | Suggested mating connector JST XHP-2 or equivalent, Contact: SXH-001T-P0.6 |
| PIN | FUNCTION | |
| 1 | MAG - margin | |
| 2 | CMN - current monitoring | |
| 3 | CSH - current sharing | |
| 4 | RTN - return | |
| 5 | ACF - AC fail | |
| 6 | PG - power good signal | |
| 7 | RSW - remote on/off | |
| 8 | RS- - remote sense (-) | |
| 9 | RS+ - remote sense (+) | |

REVISION HISTORY

| rev. | description | date |
|------|---|------------|
| 1.0 | initial release | 07/06/2007 |
| 1.01 | new template applied, V-Infinity branding removed | 08/28/2012 |
| 1.02 | updated CN2 data | 09/25/2012 |
| 1.03 | added derating curve | 10/30/2012 |

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



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