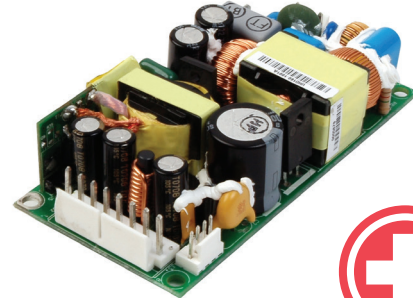


SERIES: VMS-160 | **DESCRIPTION:** AC-DC POWER SUPPLY

FEATURES

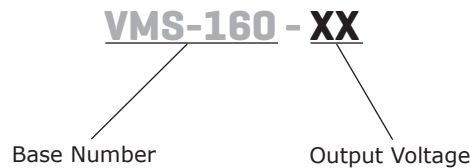
- up to 160 W continuous power
- industry standard 2" x 4" footprint
- 18 W/in³ power density
- universal input (85~264 Vac / 125~373 Vdc)
- single output from 5~48 V
- active power correction (98%)
- 12 V auxiliary fan output
- no minimum load required
- over load, over voltage, and short circuit protections
- full medical and ITE safety approvals
- efficiency up to 90%



| MODEL | output voltage | output current | output power | ripple and noise ⁴ | efficiency |
|------------|----------------|----------------|------------------|-------------------------------|------------|
| | (Vdc) | max (A) | max (W) | max (mVp-p) | typ (%) |
| VMS-160-5 | 5 | 20 | 100 ¹ | 50 | 90 |
| VMS-160-12 | 12 | 13.3 | 160 ³ | 120 | 90 |
| VMS-160-15 | 15 | 8 | 120 ² | 50 | 90 |
| VMS-160-24 | 24 | 6.66 | 160 ³ | 240 | 90 |
| VMS-160-48 | 48 | 3.33 | 160 ³ | 480 | 90 |

- Notes:
1. Total continuous output power will not exceed 100 W forced air (400 LFM), 70 W without fan
 2. Total continuous output power will not exceed 120 W forced air (400 LFM), 90 W without fan
 3. Total continuous output power will not exceed 160 W forced air (400 LFM), 100 W without fan
 4. Measured at 20 MHz, twisted pair with 0.47 μF ceramic and 22 μF tantalum parallel capacitors

PART NUMBER KEY



INPUT

| parameter | conditions/description | min | typ | max | units |
|-------------------------|--|-----------|------|-------------|------------|
| voltage | | 90 125 | | 264 373 | Vac Vdc |
| frequency | | 47 | | 63 | Hz |
| current | at 100 Vac, cold start at 200 Vac, cold start | | | 2.5 1.25 | A A |
| inrush current | at 230 Vac, full load, cold start | | | | |
| power factor correction | measured at full load and 115 Vac/60 Hz and 230 Vac/50 Hz input source input will be less than 0.25 Ω , compliant to EN61000-3-2 for harmonic currents | 0.85 | 0.98 | | |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|-------------------------|--|-----|---------------------|-----|------------------|
| line regulation | low line to high line | | ± 1 | | % |
| load regulation | all other outputs 12 V aux. output | | ± 1 ± 20 | | % % |
| temperature coefficient | | | 0.25 | | mV/ $^{\circ}$ C |
| transient response | 25% I_{max} to I_{max} , 0.1 A/ μ s slew rate, $\pm 5\%$ max. deviation, 1 ms recovery | | | | |
| start-up | | | 1 | | s |
| rise time | | 0.2 | | 20 | ms |
| hold-up | | 16 | | | ms |
| adjustability | | | ± 5 | | % |
| fan drive | 12 Vdc / 500 mA for external fan | | | | |

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|--------------------------|--|-----|-----|-----|-------|
| over voltage protection | | | | 130 | % |
| over current protection | automatically recovers | | | 150 | % |
| short circuit protection | auto recovery with no damage from a short on any output | | | | |

SAFETY & COMPLIANCE

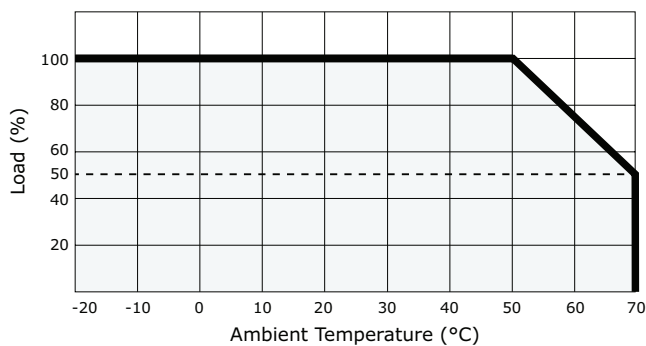
| parameter | conditions/description | min | typ | max | units |
|-------------------|---|----------------|-----|-----|------------|
| isolation voltage | primary to secondary (for 1 second): primary to earth ground (for 1 second): | 5,656 5,656 | | | Vdc Vdc |
| safety approvals | UL 60950-1/60601-1, NEMKO EN 60950-1/EN 60601-1, CE | | | | |
| EMI/EMC | EN 55022:1998 (Class B, conducted), EN 61000-3-2: 2000, EN 61000-3-3: A1:2001, EN 55024 (IEC 61000-4-2: 1995, IEC 61000-4-3: 1995, IEC 61000-4-4: 1995, IEC 61000-4-5: 1995, IEC 61000-4-6: 1996, IEC 61000-4-11: 1994) | | | | |
| leakage current | measured per IEC 60950-1, paragraph 5.1, test voltage of 120 Vac/60 Hz | | | 275 | μ A |
| MTBF | with 400 LFM forced air, MIL-HDBK-217E-1, 75% of rated full load, 25 $^{\circ}$ C ambient | 200,000 | | | hrs |
| RoHS | 2011/65/EU | | | | |

ENVIRONMENTAL

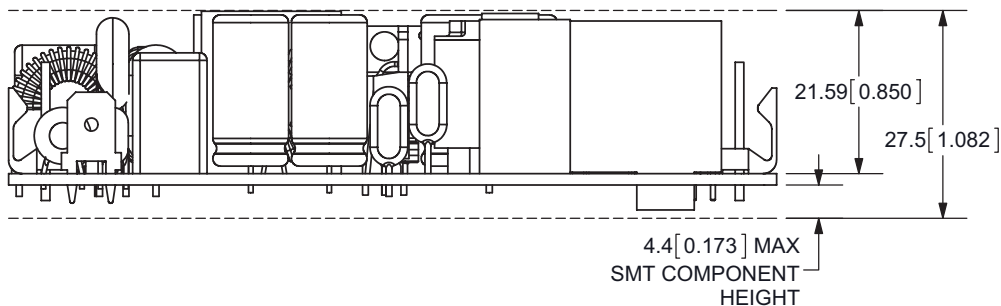
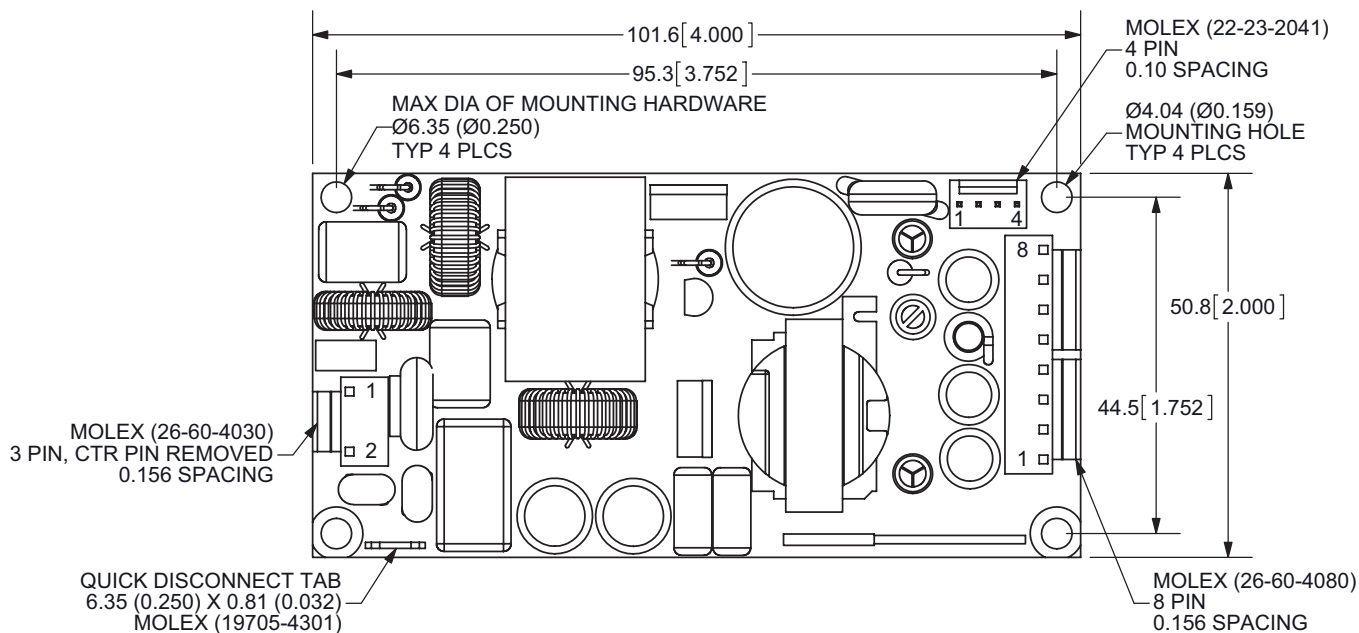
| parameter | conditions/description | min | typ | max | units |
|-----------------------|--|-----|-----|-----|-------|
| operating temperature | see derating curve | -20 | | 70 | °C |
| storage temperature | see derating curve | -40 | | 80 | °C |
| operating humidity | non-condensing | 8 | | 90 | % |
| storage humidity | non-condensing | | | 95 | % |
| shock | operating (11 ms, half sine, for a total of 6 shock inputs) | | 10 | | G |
| | non-operating (2 ms, half sine, for a total of 6 shock inputs) | | 140 | | G |
| vibration | operating (10 ~ 300 Hz, 1 hour per axis, 3 hours total) | | 1 | | Grms |
| | non-operating (10 ~ 500 Hz, 1 hour per axis, 3 hours total) | | 2 | | Grms |

DERATING CURVE

output power vs. ambient temperature



MECHANICAL DRAWING



| CN1 | |
|-----|------------|
| 1 | ac neutral |
| 2 | ac line |

| CN2 | |
|-----|-----------|
| 1 | dc return |
| 2 | dc return |
| 3 | dc return |
| 4 | dc return |
| 5 | V1 |
| 6 | V1 |
| 7 | V1 |
| 8 | V1 |

| CN3 | |
|-----|-----------|
| 1 | GND |
| 2 | GND |
| 3 | 12V (fan) |
| 4 | 12V (fan) |

REVISION HISTORY

| rev. | description | date |
|------|---|------------|
| 1.0 | initial release | 05/5/2009 |
| 1.01 | new template applied | 06/16/2011 |
| 1.02 | V-Infinity branding removed | 08/15/2012 |
| 1.03 | corrected power output data, updated derating curve | 11/02/2012 |
| 1.04 | corrected CN3 connector part number | 12/04/2012 |
| 1.05 | updated EMI/EMC section | 01/30/2014 |
| 1.06 | updated datasheet | 07/01/2016 |

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



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