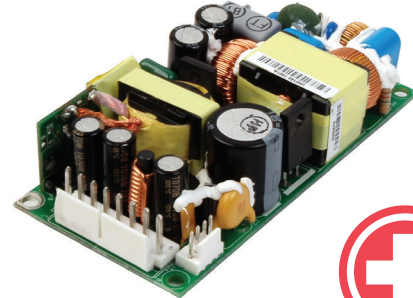



**SERIES:** VMS-160 | **DESCRIPTION:** AC-DC POWER SUPPLY

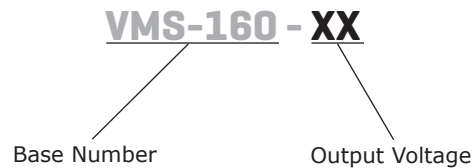
**FEATURES**

- up to 160 W continuous power
- industry standard 2" x 4" footprint
- 18 W/in<sup>3</sup> 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 <sup>4</sup> | efficiency |
|------------|----------------|----------------|------------------|-------------------------------|------------|
|            | (Vdc)          | max (A)        | max (W)          | max (mVp-p)                   | typ (%)    |
| VMS-160-5  | 5              | 20             | 100 <sup>1</sup> | 50                            | 90         |
| VMS-160-12 | 12             | 13.3           | 160 <sup>3</sup> | 120                           | 90         |
| VMS-160-15 | 15             | 8              | 120 <sup>2</sup> | 50                            | 90         |
| VMS-160-24 | 24             | 6.66           | 160 <sup>3</sup> | 240                           | 90         |
| VMS-160-48 | 48             | 3.33           | 160 <sup>3</sup> | 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  $\mu$ F ceramic and 22  $\mu$ F tantalum parallel capacitors

**PART NUMBER KEY**


## INPUT

| parameter               | conditions/description  | min       | typ  | max         | units      |
|-------------------------|---|-----------|------|-------------|------------|
| voltage                 |   | 90<br>125 |      | 264<br>373  | Vac<br>Vdc |
| frequency               |   | 47        |      | 63          | Hz         |
| current                 | at 100 Vac, cold start<br>at 200 Vac, cold start  |           |      | 2.5<br>1.25 | A<br>A     |
| inrush current          | at 230 Vac, full load, cold start   |           |      |             |            |
| power factor correction | measured at full load and 115 Vac/60 Hz and<br>230 Vac/50 Hz input source input will be less than<br>0.25Ω, compliant to EN61000-3-2 for harmonic<br>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<br>12 V aux. output  |     | ±1<br>±20 |     | %<br>% |
| temperature coefficient |  |     | 0.25      |     | mV/°C  |
| transient response      | 25% I <sub>max</sub> to I <sub>max</sub> , 0.1 A/μs slew rate, ±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<br>output |     |     |     |       |

## SAFETY & COMPLIANCE

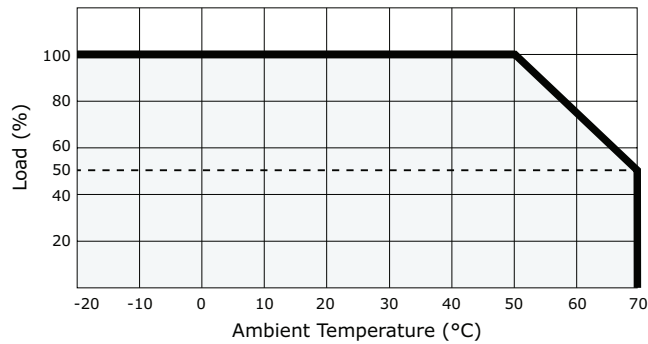
| parameter         | conditions/description  | min            | typ | max | units      |
|-------------------|---|----------------|-----|-----|------------|
| isolation voltage | primary to secondary (for 1 second):<br>primary to earth ground (for 1 second):   | 5,656<br>5,656 |     |     | Vdc<br>Vdc |
| 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<br>61000-4-2: 1995, IEC 61000-4-3: 1995, IEC 61000-4-4: 1995, IEC 61000-4-5: 1995, IEC 61000-4-6:<br>1996, IEC 61000-4-11: 1994) |                |     |     |            |
| leakage current   | measured per IEC 60950-1, paragraph 5.1,<br>test voltage of 120 Vac/60 Hz   |                |     | 275 | μA         |
| MTBF              | with 400 LFM forced air, MIL-HDBK-217E-1, 75%<br>of rated full load, 25°C ambient   | 200,000        |     |     | hrs        |
| RoHS              | 2011/65/EU  |                |     |     |            |

## ENVIRONMENTAL

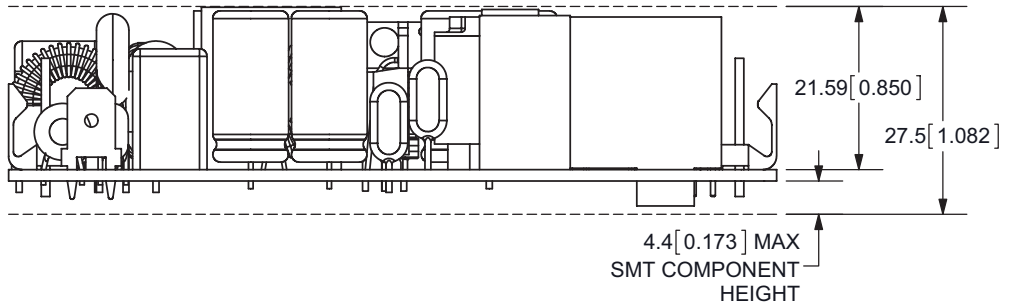
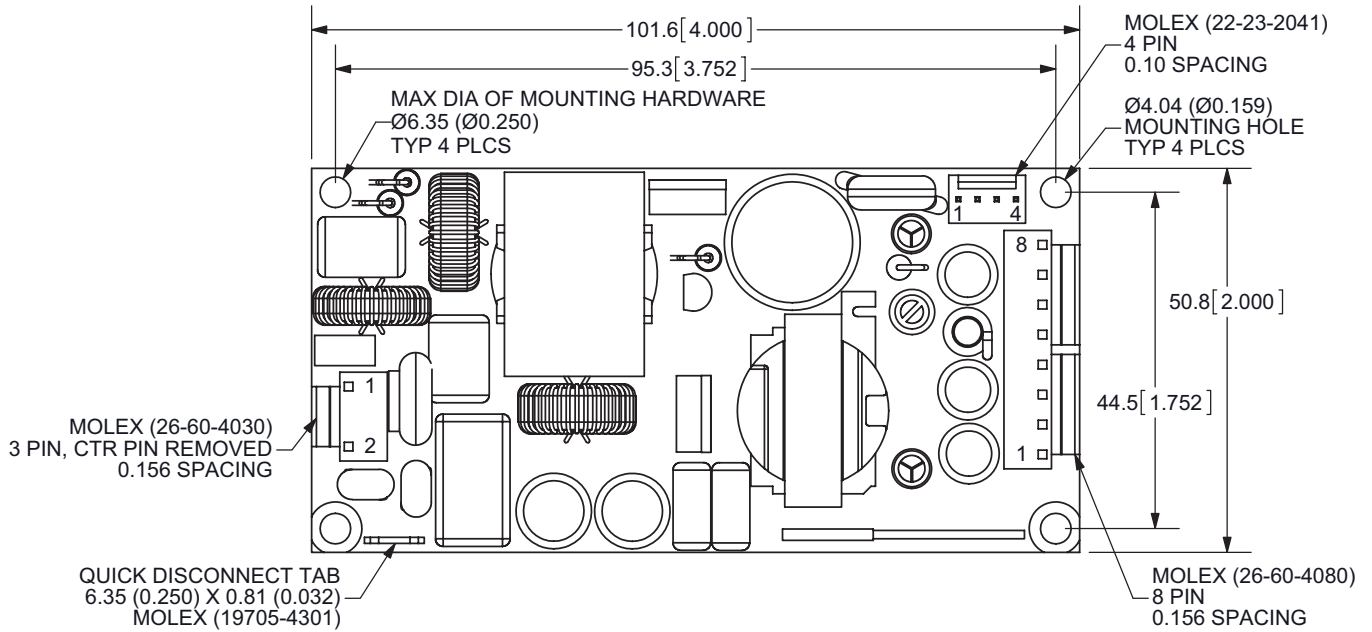
| parameter             | conditions/description   | min | typ | max | units |
|-----------------------|--|-----|-----|-----|-------|
| operating temperature | see derating curve   | -20 |     | 70  | °C    |
| storage temperature   | see derating curve   | -40 |     | 80  | °C    |
| operating humidity    | 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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