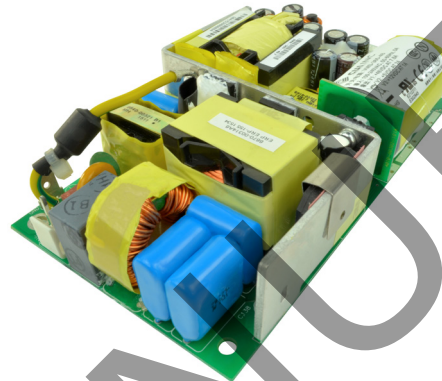


SERIES: VMS-365 | **DESCRIPTION:** AC-DC POWER SUPPLY

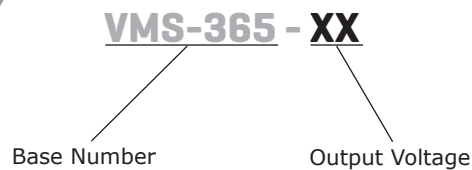
FEATURES

- up to 365 W continuous power
- industry standard 3" x 5" footprint
- 18 W/in³ power density
- universal input (85-264 Vac / 125-373 Vdc)
- single output from 12 to 48 V
- active power correction (98%)
- 12 V auxiliary fan output, 5 V standby
- 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 ¹ | ripple and noise ² | efficiency |
|------------|----------------|----------------|---------------------------|-------------------------------|------------|
| | (Vdc) | max (A) | max (W) | max (mVp-p) | typ (%) |
| VMS-365-12 | 12 | 30.4 | 365 | 120 | 90 |
| VMS-365-24 | 24 | 15.2 | 365 | 240 | 90 |
| VMS-365-48 | 48 | 7.6 | 365 | 480 | 90 |

Notes: 1. Total continuous output power will not exceed 365 W forced air (400 LFM), 200 W without fan
 2. Measured at 20 MHz, twisted pair with 0.47 μ F ceramic and 22 μ F tantalum parallel capacitors

PART NUMBER KEY


INPUT

| parameter | conditions/description | min | typ | max | units |
|----------------|--|-----|------|-----|-------|
| voltage | | 90 | | 264 | Vac |
| | | 125 | | 373 | Vdc |
| frequency | | 47 | | 63 | Hz |
| current | at 90 Vac, cold start | | | 5 | A |
| | at 180 Vac, cold start | | | 2.5 | A |
| inrush current | no damage at 230 Vac, full load, cold start | | | | |
| power factor | measured at full load and 115 Vac/60 Hz and 230 Vac/50 Hz input source, coming impedance will be less than 0.25Ω, compliant to EN61000-3-2 for harmonic currents | 0.9 | 0.98 | | |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|-------------------------|---|-----|------|-----|-------|
| line regulation | low line to high line | | ±1 | | % |
| load regulation | all other outputs | | ±1 | | % |
| | 12 V aux. output | | ±15 | | % |
| | 5 V SB | | ±5 | | % |
| temperature coefficient | | | 0.25 | | mV/°C |
| transient response | 25% I _{max} to I _{max} , 0.1 A/μs slew rate, ±5% max. deviation, 10 ms recovery | | | | |
| start-up time | | 500 | | | ms |
| rise time | | 0.2 | | 20 | ms |
| hold-up time | 115 Vac /60 Hz | | 16.6 | | ms |
| adjustability | | | ±5 | | % |
| fan drive | 12 Vdc / 500 mA for external fan | | | | |
| standby | 5 Vdc, 2A (400 LFM forced air) / 1A (convection) | | | | |

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

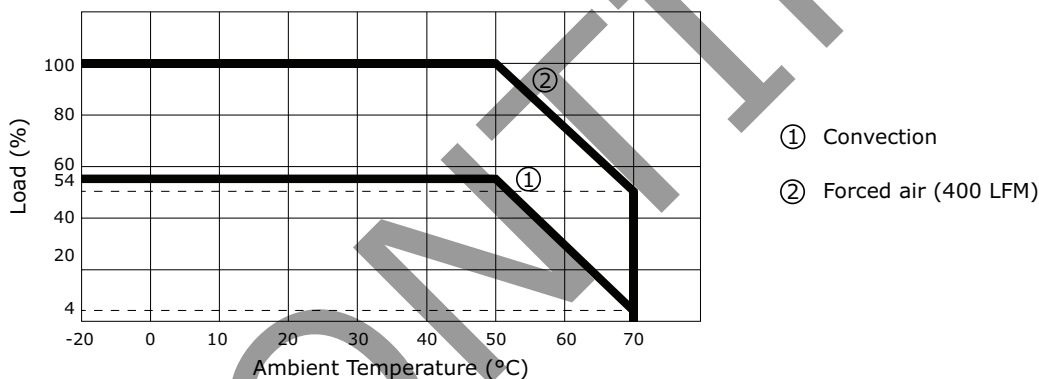
| parameter | conditions/description | min | typ | max | units |
|-------------------|---|-------|---------|-------|-------|
| isolation voltage | primary to secondary (for 1 second): | 5,656 | | | Vdc |
| | primary to earth ground (for 1 second): | 5,656 | | | Vdc |
| safety approvals | UL 60950-1/60601-1, VDE EN60950-1/EN60601-1, | | | | |
| EMI/EMC | EN55022:1998 (CISPR 22 class A conducted), EN61000-3-2: 2000, EN61000-3-3: A1:2001, EN55024 (IEC61000-4-2: 1995, IEC61000-4-3: 1995, IEC61000-4-4: 1995, IEC61000-4-5: 1995, IEC61000-4-6: 1996, IEC61000-4-11: 1994), CE | | | | |
| leakage current | measured per IEC 60950-1, paragraph 5.1, test voltage of 120 Vac/60 Hz | | | 0.110 | mA |
| | test voltage of 230 Vac / 60 Hz | | | 0.275 | mA |
| MTBF | with 400 LFM forced air, MIL-HDBK-217E-1, 75% of rated full load, 25°C ambient | | 300,000 | | hrs |
| RoHS | 2011/65/EU | | | | |

ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|-----------------------|--|-----|-----|-----|-------|
| operating temperature | | -20 | | 50 | °C |
| storage temperature | | -40 | | 80 | °C |
| operating humidity | non-condensing | 8 | | 90 | % |
| storage humidity | | | | 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 CURVES

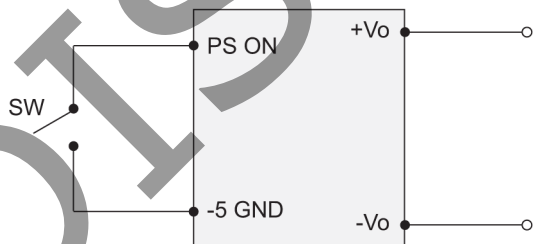
output power vs. ambient temperature



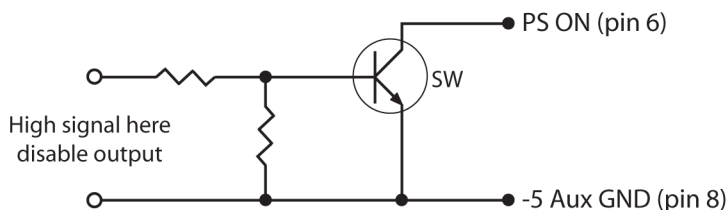
APPLICATION NOTES

1. P/S ON

The supply output can be enabled or disabled through the PS ON pin. The control logic is negative logic. A common control circuit is shown below.



REMOTE ON/OFF CONTROL



REMOTE ON/OFF CONTROL WITH TRANSISTOR SWITCH

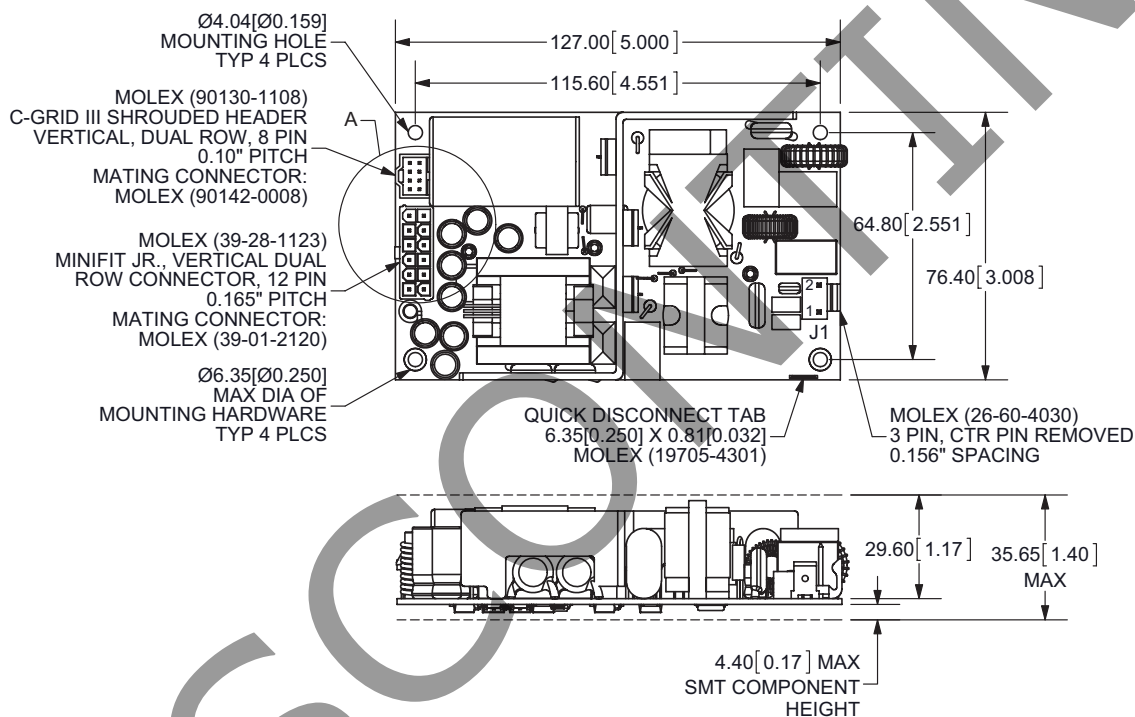
| Logic Table | Negative Logic |
|---|----------------|
| SW Closed ($V_{PSON} < 2.5 V$) | Output on |
| SW Open ($V_{PSON} > 2.5 V$ or Open Circuit) | Output off |

2. Power OK

The POK pin of CN3 shall change from STATE (<400mV) to the high STATE (>4.5V) 100-500 ms after the main outputs are within the regulation limits. Conversely, the POK should be de-asserted to a low state when any of the main output voltages fall below its under-voltage threshold, or when the main power has been removed for a time sufficiently long such that the power supply operation cannot be guaranteed beyond the power-down warning time. The power down warning time must be 1mS minimum. The electrical characteristics for the Power OK output driver are shown below.

| POWER OK SIGNAL CHARACTERISTICS | |
|---------------------------------|--|
| Signal Type | +5 V TTL Compatible |
| Logic Level Low | < 0.4 V while Sinking a maximum of 10 mA |
| Logic Level High | Between 2.4 V and 5 V Output while Sourcing 200 μ A |
| High State Output Impedance | 1 K Pull-Up from +5 Vsb to Termination Point |
| Max. Low Level Surge Current | 56 mA for 5 μ S with a 500 mS on/150 mS off duty cycle |

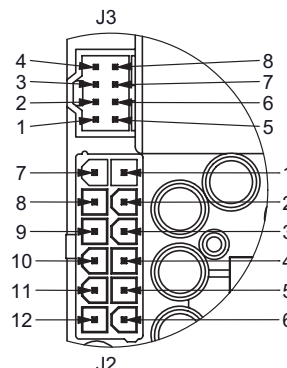
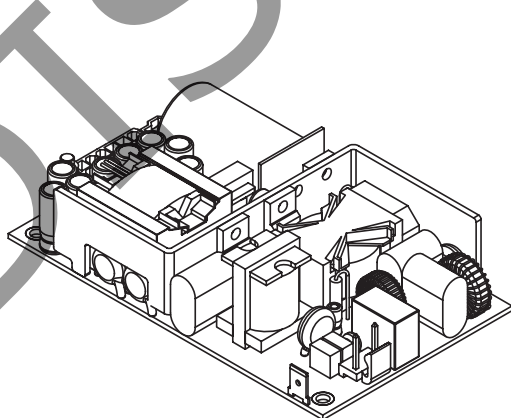
MECHANICAL DRAWING



| CN1 | |
|-----|------------|
| 1 | AC Line |
| 2 | AC Neutral |

| INPUT SPADE CONNECTOR | |
|-----------------------|-----------|
| Gnd | AC Ground |

| CN2 | |
|-----|------------|
| 1 | V1 |
| 2 | V1 |
| 3 | V1 |
| 4 | V1 |
| 5 | V1 |
| 6 | V1 |
| 7 | DC Returns |
| 8 | DC Returns |
| 9 | DC Returns |
| 10 | DC Returns |
| 11 | DC Returns |
| 12 | DC Returns |



DETAIL A
SCALE 1:1

| CN3 | |
|-----|-------------|
| 1 | +5V Aux |
| 2 | FAN- |
| 3 | RS+ |
| 4 | FAN+ |
| 5 | P OK |
| 6 | PS ON |
| 7 | RS- |
| 8 | -5V Aux GND |

REVISION HISTORY

| rev. | description | date |
|------|-----------------------------|------------|
| 1.0 | initial release | 05/13/2011 |
| 1.01 | new template applied | 08/01/2011 |
| 1.02 | V-Infinity branding removed | 08/22/2012 |
| 1.03 | updated drawing | 04/18/2013 |
| 1.04 | added CCC safety approval | 12/16/2013 |
| 1.05 | removed CCC safety approval | 10/21/2018 |

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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