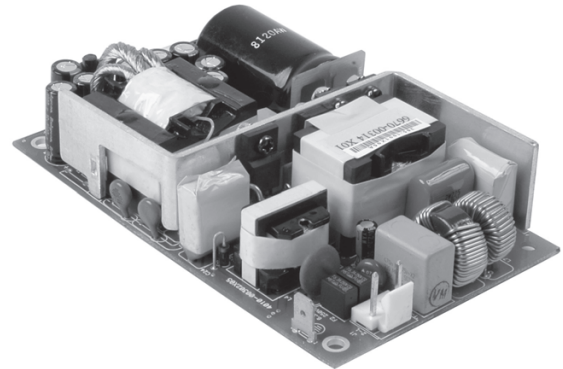


**SERIES:** VMS-365

**DESCRIPTION:** open frame switching power supply

**features**

- industry standard 3x5" footprint
- 19 W/in<sup>3</sup> power density
- universal input: 90~264 V ac
- active PFC
- 90% typical efficiency
- 12 V auxillary fan output
- full medical and ITE safety approvals
- meets the requirements (80+) of the Energy Star 4.0 documents and the anticipated 90+ requirement for 2010



MODEL	output voltage	current max. <sup>1</sup> (convection)	current max. <sup>1,3</sup> (400 LFM forced air)	ripple & noise <sup>2</sup> (mVp-p max.)	initial voltage set-point
VMS-365-12	12 V dc	16.6 A	30.4 A	120 mV	±3%
VMS-365-24	24 V dc	8.3 A	15.2 A	240 mV	±3%
VMS-365-48	48 V dc	4.16 A	7.6 A	480 mV	±3%
ALL 12 V fan aux.	12 V dc	0.5 A	1 A	240 mV	±15%
5 V standby	5 V dc	1 A	2 A	50 mV	±5%

notes:

1. total continuous output power will not exceed 365 W forced air, 200 W without fan
2. measured at 20MHz, twisted pair with 0.47μF ceramic and 22μF tantalum parallel capacitors
3. forced air will be sufficient to keep heat sink temperatures below 110°C at 50°C ambient operation

**INPUT**

parameter	conditions/description	min	nom	max	units
input frequency		47		63	Hz
input voltage		90	100~240	264	V ac
		125		373	V dc
input current	AC input of 90 VAC			5	A
	AC input of 180 VAC			2.5	A
inrush current	no damage at 230 V ac cold start				
power factor	when measured at full rated load and at 115 V ac / 60 Hz and 230 V ac / 50 Hz input source input will be less than 25 Ω compliant to EN61000-3-2 for harmonic currents		0.98		
leakage current	when measured per IEC 60950-1, paragraph 5.1				
	test voltage of 120 V ac / 60 Hz			110	μA
	test voltage of 230 V ac / 60 Hz			275	μA

**OUTPUT**

parameter	conditions/description	min	nom	max	units
minimum loading		0			A
efficiency	at 20% and 100% of max. rated load	88			%
	at 50% of max. rated load	90			%
line regulation	at 90~264 V ac		±1		%
load regulation <sup>4</sup>	12, 24, or 48 V outputs		±1		%
	12 V aux. output		±15		%
transient response	25% I <sub>max</sub> to I <sub>max</sub> , 0.1A/μs slew rate, ±5% max. deviation, 10 ms recovery				
start up time		500			mS
rise		200μ		5m	S
hold up time			16		mS

notes:

4. RS+ must be connected to positive output and RS- connected to negative output

**SERIES:** VMS-365

**DESCRIPTION:** open frame switching power supply

## RELIABILITY

parameter	conditions/description
MTBF	235K hours min convection, 300K hours typical with 400 LFM forced air (MIL-HDBK-217E-1, 75% of rated full load, 25°C ambient)

## PROTECTION CIRCUITS

parameter	conditions/description
over current	150% max., auto recovery
output over-voltage	125% max. (for 12, 24, 48 V)
short circuit	the power supply will auto recover with no damage from a short on any output.

## GENERAL & SAFETY

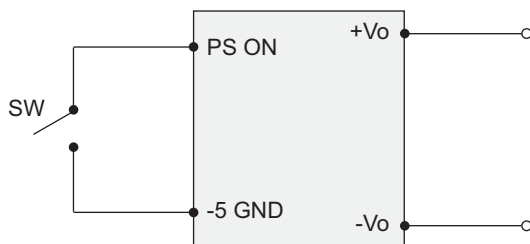
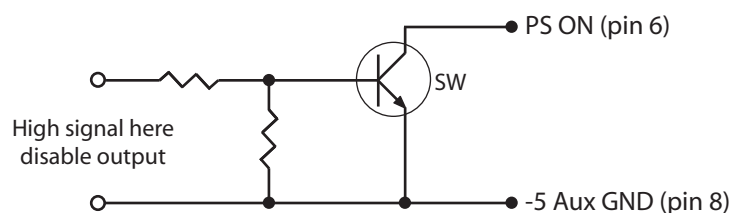
parameter	conditions/description	min	nom	max	units
(HI-POT)	primary to secondary: primary to earth ground:	4250 5656			V dc V dc
EMI/EMC	EN55022:1998 (CISPR 22 class B conducted), EN61000-3-2: 2000, EN61000-3-3: A1:2001, EN55024 (IEC61000-4-2: 1995, IEC61000-4-3: 1995, IEC61000-4-4: 1995, IEC61000-4-5: 1995, IEC61000-4-6: 1996, IEC61000-4-11: 1994),				
safety	CSA C 22.2 No. 60950-1/60601-1, CB EN60950-1/EN60601-1, CE, UL 60950-1/60601-1				
RoHS	yes				
warranty	standard warranty length			2	years

## ENVIRONMENTAL

parameter	conditions/description	min	nom	max	units
operating temperature	derate linearly to 50% load at 70°C	-20		50	°C
storage temperature		-40		80	°C
relative humidity	non-condensing operating non-condensing non-operating	8		90 95	% %
temperature coefficient			0.25		mV/°C
shock	operating (11mS, half sine, for a total of 6 shock inputs) non-operating (2mS, half sine, for a total of 6 shock inputs)		10 140		G G
vibration	operating (10~300Hz, 1 hour per axis, 3 hours total) non-operating (10~500Hz, 1 hour per axis, 3 hours total)		1 2		Grms Grms

## 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 ( $V_{PSON} < 2.5\text{ V}$ )	Output on
SW Open ( $V_{PSON} > 2.5\text{ V}$ or Open Circuit)	Output off

**SERIES:** VMS-365

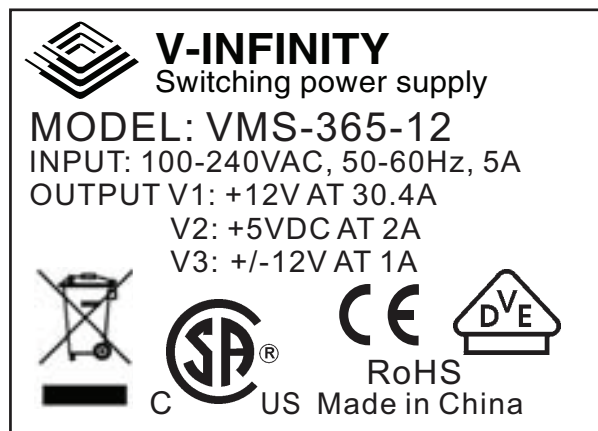
**DESCRIPTION:** open frame switching power supply

## POWER OK

The POK pin of J3 shall change from the low 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 $\mu$ A
High-State Output Impedance	1 K Pull-Up From +5 Vsb To Termination Point
Max. Low Level Surge Current	56 mA for 5 $\mu$ S with a 500 mS on/150 mS off duty cycle

## LABEL



**SERIES:** VMS-365

**DESCRIPTION:** open frame switching power supply

**MECHANICAL DRAWING**

