

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

**FEATURES**

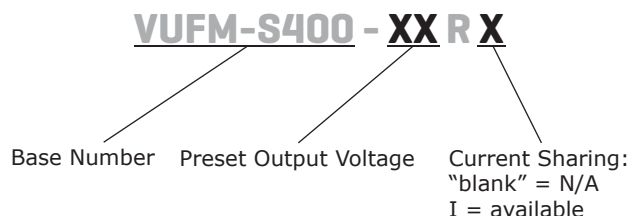
- up to 400 W continuous power
- compact 1U size
- 5.56 W/inch<sup>3</sup> power density
- universal input (90~264 Vac)
- single output from 3.3~48V
- short circuit, over voltage and over temperature protections
- full medical approvals
- built-in active PFC function
- built-in remote sense function
- efficiency up to 83%



MODEL	output voltage	output current	output power	ripple and noise <sup>4</sup>	efficiency
	(Vdc)	max (A)	max (W)	max (mVp-p)	typ (%)
VUFM-S400-03R	3.3	60	200 <sup>1</sup>	33	70
VUFM-S400-05R	5	60	300 <sup>2</sup>	50	75
VUFM-S400-12R	12	33.34	400 <sup>3</sup>	120	80
VUFM-S400-18R	18	25	400 <sup>3</sup>	180	83
VUFM-S400-24R	24	18.19	400 <sup>3</sup>	240	83
VUFM-S400-36R	36	12.9	400 <sup>3</sup>	360	83
VUFM-S400-48R	48	9.53	400 <sup>3</sup>	480	83

- Notes:
1. total continuous output power will not exceed 200 W forced air (23 CFM), 150 W without fan
  2. total continuous output power will not exceed 300 W forced air (23 CFM), 225 W without fan
  3. total continuous output power will not exceed 400 W forced air (23 CFM), 250 W without fan
  4. 1% minimum load is required to maintain the ripple and regulation

**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%.				
start-up time	at 120 Vac			1	s
hold-up time	at 120 Vac, 80% load	20			ms
adjustability	output user adjustable			±5	%
switching frequency			30		kHz
overshoot	Turn-on and turn-off overshoot shall not exceed 5% over nominal voltage.				
remote sense <sup>1</sup>	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)	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. Not available for current sharing models

## 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	85			°C

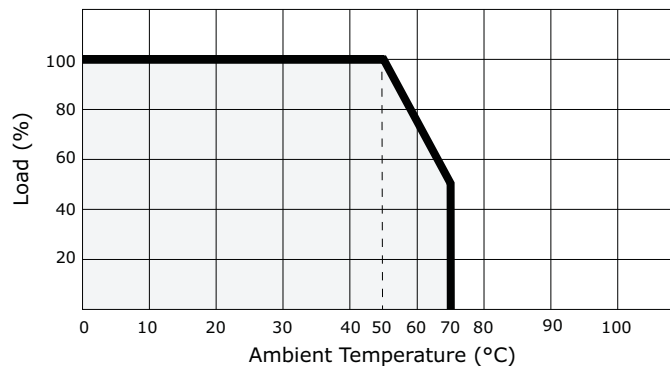
## SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	primary to secondary at 2 mA for 3 seconds	4,000			Vac
	primary to transformer core at 2 mA for 3 seconds	1,500			Vac
	primary to earth ground at 2 mA for 3 seconds	1,500			Vac
isolation resistance	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
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, CISPR22 Class B, conducted				
leakage current				300	μA
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
vibration	5 ~ 50 Hz, per axis		±7.35		m/s <sup>2</sup>

## DERATING CURVE

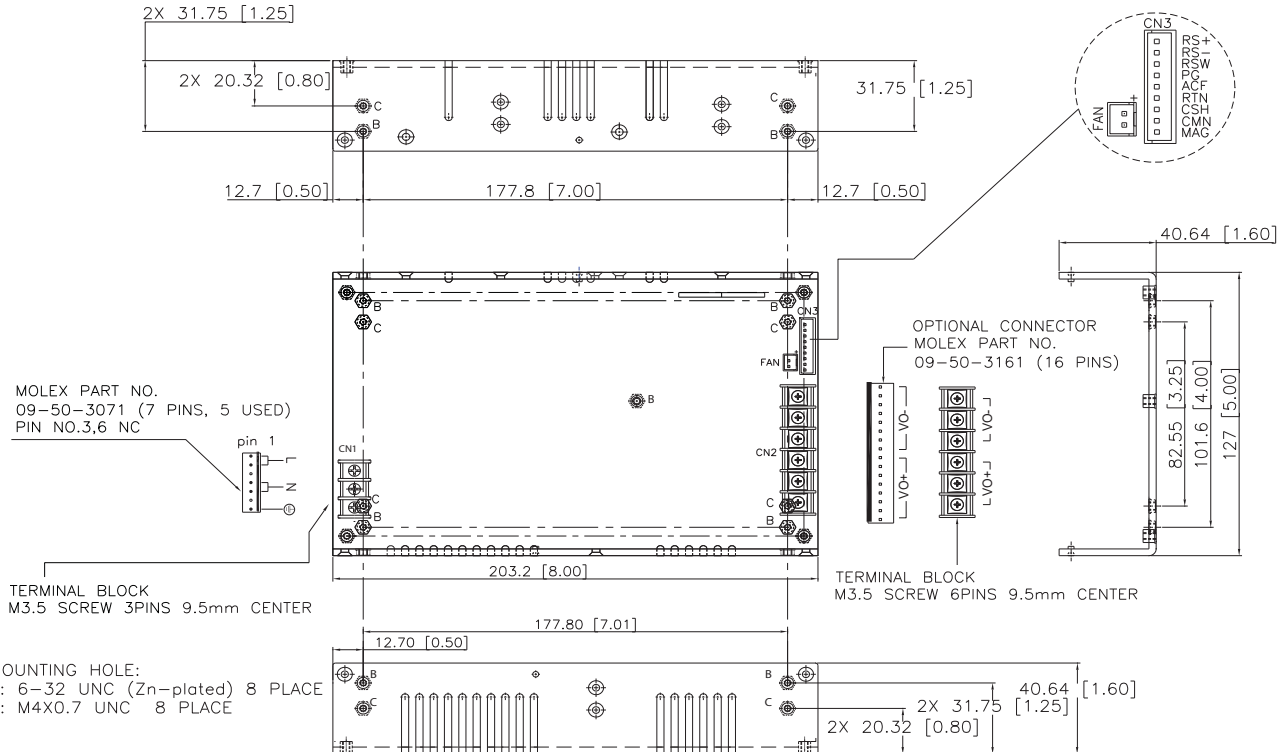
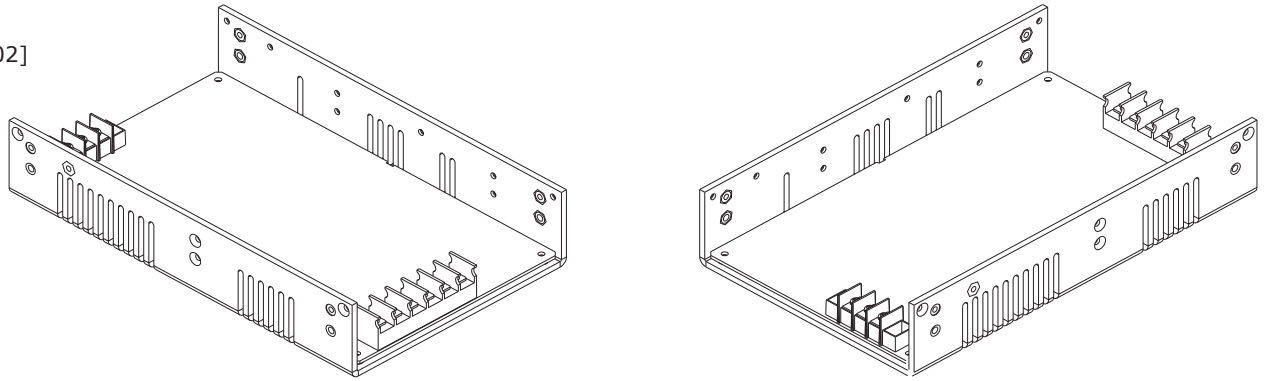


## MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	203.2 x 127 x 40.64 (8 x 5 x 1.6 inch)				mm
weight				1.3	kg

## MECHANICAL DRAWING

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



INPUT CONNECTOR [CN1]				LOGIC CONNECTOR [CN3]				FAN	
Howder terminal block HD-121-3P (option 1)		Molex 09-50-3071 (7 pins, 5 used) (option 2)		Suggested mating connector --- or equivalent Contact: SXH-002T-P0.6				---	
<b>OUTPUT CONNECTOR [CN2]</b>				PIN	FUNCTION	PIN	FUNCTION	Suggested mating connector --- or equivalent, Contact: SXH-002T-P0.6	
Howder terminal block HD-121-6P (option 1)		Molex 09-50-3161 (16 pins) (option 2)		1	MAG - margin	6	PG - power good signal		
PIN	FUNCTION	PIN	FUNCTION	2	CMN - current monitoring	7	RSW - remove on/off		
1~3	+Vo	1~8	+Vo	3	CSH - current sharing	8	RS- - remote sense (-)		
4~6	-Vo	9~16	-Vo	4	RTN - return	9	RS+ - remote sense (+)		
				5	ACF - AC fail				

Note: 1. Bottom mounting holes have a maximum screw depth of 3.8mm. Side mounting holes have a maximum screw depth of 6.3mm.

## REVISION HISTORY

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rev.	description	date
1.0	initial release	07/06/2006
1.01	updated features, added preset voltage data	12/27/2006
1.02	updated connector data and drawing	12/12/2007
1.03	new template applied	05/11/2012
1.04	V-Infinity branding removed	08/28/2012
1.05	added derating curve	10/30/2012
1.06	updated spec, Molex connectors changed	01/21/2014

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



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