SERIES: VMS-45 | **DESCRIPTION:** AC-DC POWER SUPPLY

FEATURES

- universal input voltage (80 to 264 Vac or 110 to 370 Vdc)
- wide operating temperature (-40°C ~ 85°C)
- meets 2 x MOPP safety certification
- over current, over temperature, and short circuit protections
- input over voltage category III for fixed installations (under 2,000 m altitude)
- certified to EN 60601 safety standards
- suitable for safety class II installations
- meets 5,000m altitude requirements
- low leakage current (< 75μA)
- low standby power consumption (0.3W)

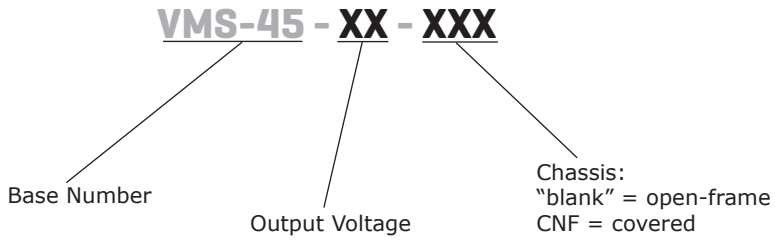


MODEL

MODEL	output voltage		output current	output power	ripple and noise[1]	efficiency[2]
	nom (Vdc)	range (Vdc)	max (A)	max (W)	max (mVp-p)	typ (%)
VMS-45-3	3.3	2.97~3.63	8.0	26.4	100	83
VMS-45-5	5	4.5~5.5	8.0	40.0	100	85
VMS-45-12	12	10.2~13.8	3.75	45.0	100	90
VMS-45-15	15	13.5~18.0	3.0	45.0	100	90
VMS-45-24	24	21.6~28.5	1.875	45.0	120	90
VMS-45-36	36	32.4~39.6	1.25	45.0	150	90
VMS-45-48	48	43.2~52.8	0.94	45.0	150	90

Notes:
1. At full load, nominal input, 20 MHz bandwidth oscilloscope, tip & barrel method, for 3.3V, 5V, 12V & 15V output terminated with 10 μF ceramic capacitor, for 24V output terminated with a 1μF ceramic capacitor, for 36V & 48V with a 0.1 ceramic capacitor. See Application notes.
2. At 230 Vac.
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C humidity<75% with nominal input voltage and rated output load.

PART NUMBER KEY



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INPUT

parameter	conditions/description	min	typ	max	units
voltage	ac input dc input	80 100		264 370	Vac Vdc
frequency		47		63	Hz
current	at 115 Vac at 230 Vac			1.1 0.7	A A
inrush current	at 115 Vac at 230 Vac			40 60	A A
leakage current	at 240 Vac			0.075	mA
no load power consumption				0.3	W

OUTPUT

parameter	conditions/description	min	typ	max	units
output capacitance	3.3 & 5 Vdc output models 12 Vdc output model 15 Vdc output model 24 Vdc output model 36 Vdc output model 48 Vdc output model			20,000 4,000 3,500 1,000 820 330	µF µF µF µF µF µF
initial set point accuracy	0% ~ 100% load 3.3 & 5 Vdc output models all other output models		 ±2 ±1		 % %
line regulation	at rated load 3.3 & 5 Vdc output models all other output models		 ±0.8 ±0.5		 % %
load regulation	at 230 Vac		±1		%
hold-up time	at 115 Vac at 230 Vac	13 65	22 100		ms ms
temperature coefficient			±0.02		%/°C

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection	output voltage hiccup 3.3 Vdc output model 5 Vdc output model 12 Vdc output model 15 Vdc output model 24 Vdc output model 36 Vdc output model 48 Vdc output model			 5.25 7.0 16.0 22.0 32.4 42.4 57.0	 Vdc Vdc Vdc Vdc Vdc Vdc Vdc
over current protection	auto recovery	120			%
short circuit protection	continuous, auto recovery, hiccup				

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SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 minute, 5 mA max input to case (-CNF only) for 1 minute, 5 mA max output to ground for 1 minute, 5 mA max	4,000 2,500 2,500			Vac Vac Vac
safety approvals	EN60601-1 Edition 3.1 CAN/CSA 22.2 No.60601-1:14 Edition 3 EN60601-1-2 Edition 4				
safety class	Class II				
conducted emissions	CISPR32/EN55032/EN55011 CLASS B				
radiated emissions	CISPR32/EN55032/EN55011 CLASS B				
ESD	IEC/EN61000-4-2 Contact ±8KV/ Air ±15KV, perf. Criteria A				
radiated immunity	IEC/EN61000-4-3 20V/m, perf. Criteria A				
EFT/burst	IEC/EN61000-4-4 ±2KV, perf. Criteria A				
surge	IEC/EN61000-4-5 Line to line ±2KV, perf. Criteria A				
conducted immunity	IEC/EN61000-4-6 20 Vr.m.s, perf. Criteria A				
voltage dips and interruptions	IEC/EN61000-4-11 100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods, perf. Criteria B				
MTBF	as per MIL-HDBK-217F at 25°C	300,000			hours
RoHS	yes				

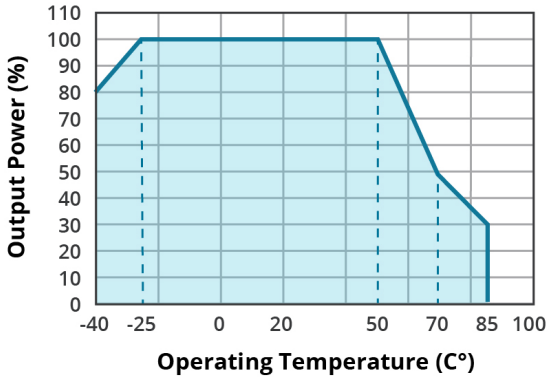
ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	see derating curves	-40		85	°C
storage temperature		-40		85	°C
operating humidity	non-condensing			90	%
altitude				5,000	m

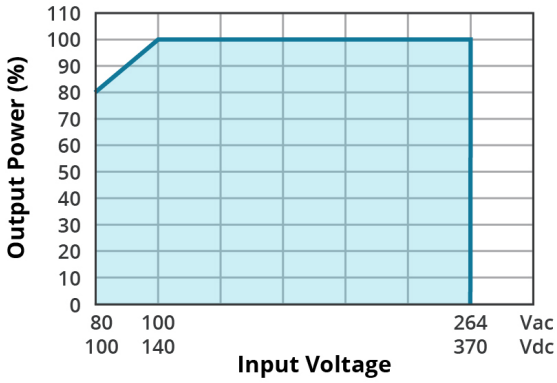
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DERATING CURVES

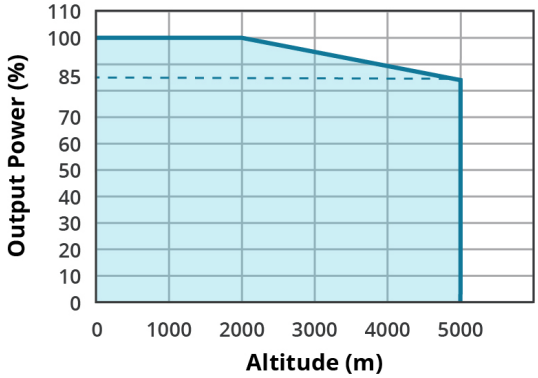
TEMPERATURE DERATING CURVE (at 80~264 Vac / 100~370 Vdc)



INPUT VOLTAGE DERATING CURVE (at 25°C)



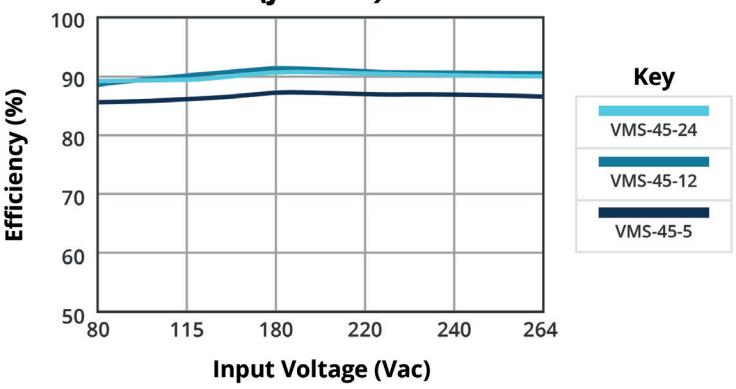
ALTITUDE DERATING CURVE



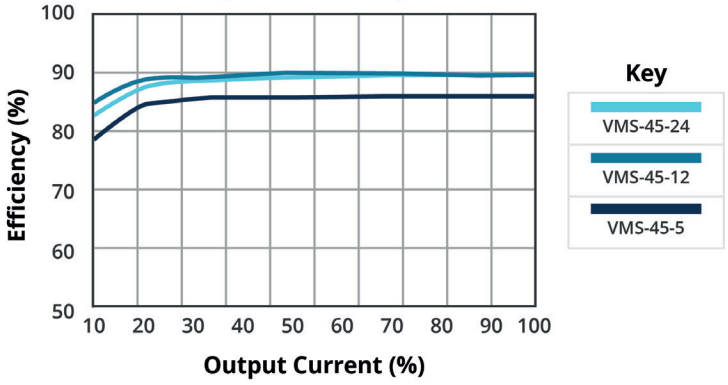
Note: With an AC input between 80-100VAC and a DC input between 100-140VDC, the output power must be derated as per temperature derating curves.

EFFICIENCY CURVES

EFFICIENCY VS INPUT VOLTAGE (full load)



EFFICIENCY VS OUTPUT LOAD (Vin = 230 Vac)



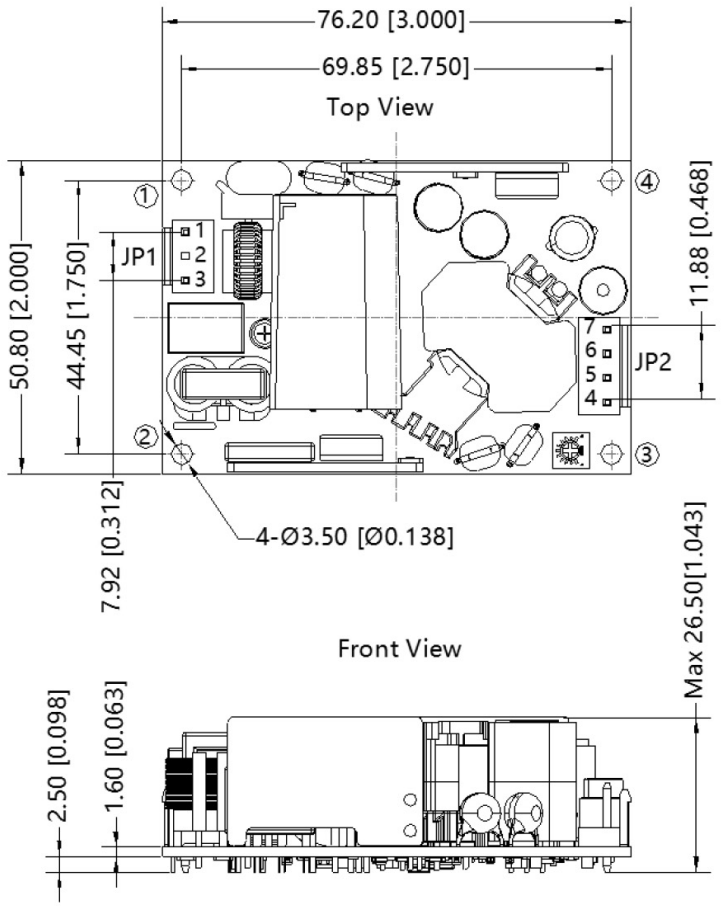
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MECHANICAL

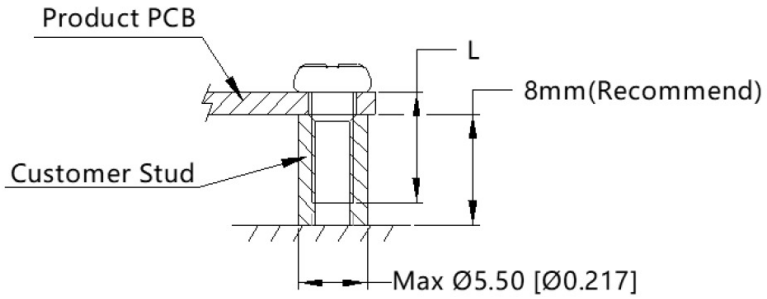
parameter	conditions/description	min	typ	max	units
dimensions	open frame models: 76.20 x 50.80 x 26.50 [3.0 x 2.0 x 1.043 inch] covered models: 91.40 × 60.50 × 33.30 [3.598 x 2.382 x 1.311 inch]				mm mm
weight	open frame models covered models		95 150		g g
cooling	natural convection (no integrated fan)				

MECHANICAL DRAWING

Open-frame
units: mm [inch]
general tolerance: ±0.50 [±0.020]



PIN-OUT			
Connectors	PIN	Function	Client Connector
JP1	1	AC (L)	Housing: JST VHR Contact: JST SVH-21T-P1.1 or equivalent
	2	NC	
	3	AC (N)	
JP2	4	-Vo	Housing: JST VHR Contact: JST SVH-21T-P1.1 or equivalent
	5	-Vo	
	6	+Vo	
	7	+Vo	

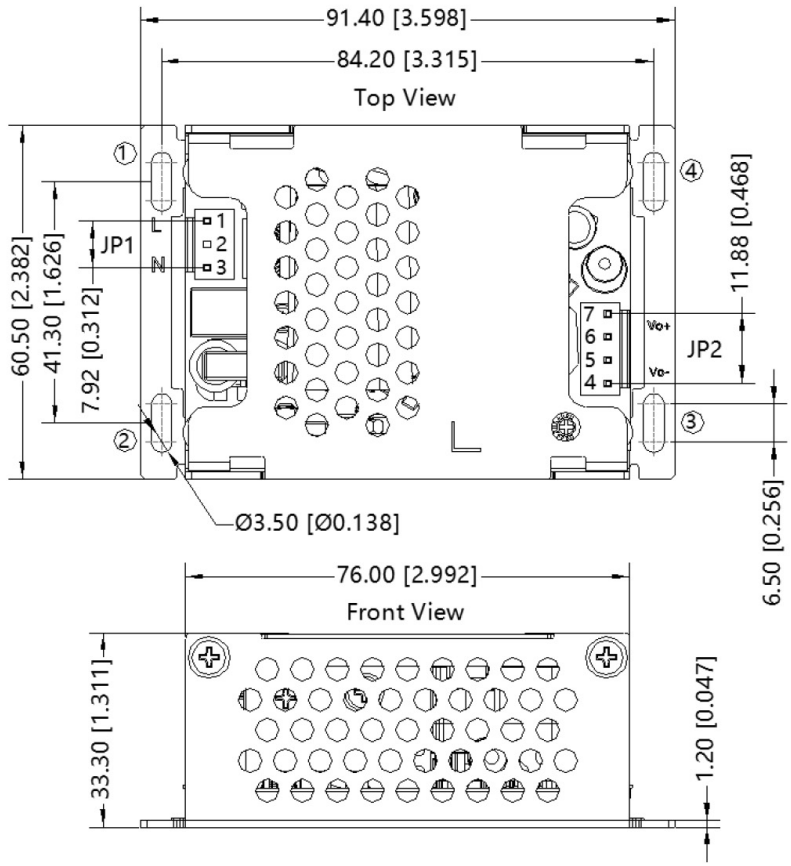


MOUNTING SCREWS			
Position	Screw Spec.	L (recommended)	Torque
①~④	M3	6mm	0.4 N·m

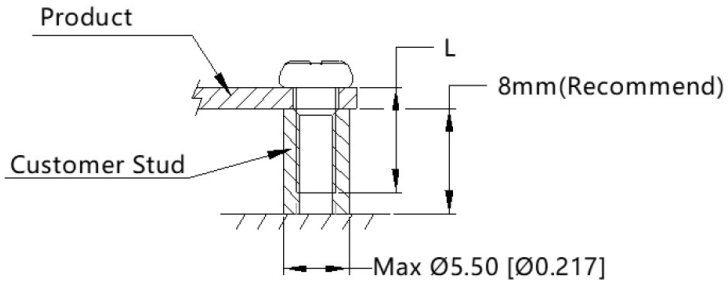
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MECHANICAL DRAWING (CONTINUED)

Covered
units: mm [inch]
general tolerance: ±0.50 [±0.020]



PIN-OUT			
Connectors	PIN	Function	Client Connector
JP1	1	AC (L)	Housing: JST VHR Contact: JST SVH-21T-P1.1 or equivalent
	2	NC	
	3	AC (N)	
JP2	4	-Vo	Housing: JST VHR Contact: JST SVH-21T-P1.1 or equivalent
	5	-Vo	
	6	+Vo	
	7	+Vo	



MOUNTING SCREWS			
Position	Screw Spec.	L (recommended)	Torque
①~④	M3	6mm	0.4 N·m

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REVISION HISTORY

rev.	description	date
1.0	initial release	10/06/2022
1.01	derating curves updated	03/30/2023
1.02	medical icon added	05/04/2023
1.03	features updated	01/09/2024

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

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