

20W, AC/DC Power Converter

SAP20H

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Introduction

SAP20H series are compact size AC/DC power converters, featuring universal input voltage range, low stand by power consumption, high efficiency. Designed for high reliability industrial applications, these converters are encapsulated to protect from dust and moisture. They are certified to IEC/EN/UL62368-1, OVC III, EN60335-1, EN61558-1, FCC, UKCA and EMC performance meets CISPR32, EN55032 Class B without support from any external components, ideally suitable for industrial, and critical commercial applications.

Features

- Rated power: 20W Max
- Universal input: 85~305VAC, 47~63Hz
- Regulated single output
- Isolation voltage 4000VAC
- Typical efficiency 81 ... 87%
- Energy saving, standby power only less than 0.1W
- Operating temperature range: -40~+85°C
- RoHS compliance
- No external components required for operating
- Over voltage, over current and short circuit protection
- Certified to IEC/EN/UL62368-1, OVC III, EN60335-1, EN61558-1, FCC, UKCA, CISPR32, EN55032 Class B with NO externals
- 3 year warranty

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Part numbers

Model Number	Input Voltage (VAC)	Output Voltage (VDC)	Output Current (mA) Max	Efficiency (%) Typ.	Capacitive Load (uF) Max.
SAP20H033	85~305VAC 100~430VDC	3.3	6000	85	6600
SAP20H050		5	6000	86	6600
SAP20H090		9	3400	88	4400
SAP20H120		12	2500	90	4400
SAP20H150		15	2000	90	3300
SAP20H240		24	1300	88	1000

* Only typical models are listed, other models may be available, upon request.

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Electrical characteristics

Unless otherwise indicated, specifications are measured at TA=25°C, humidity <75%, nominal input voltage and rated output load.

Parameter	Condition	Min.	Type	Max.	Unit	Note
Input Voltage Range	AC in	85	-	305	VAC	
	DC in	100	-	430	VDC	
Input Frequency		47	-	63	Hz	
Nominal Input Voltage		100	-	277	VAC	
Input current	115VAC	-	-	0.5	A	
	230VAC	-	-	0.3		
Inrush current Cold start	115VAC	-	20	-	A	
	230VAC	-	50	-		
Leakage current	277VAC, 50Hz	-	-	0.1	mA RMS	
Output voltage accuracy		-	±3	-	%	
Line regulation	Full load	-	±0.5	-	%	
Load regulation IOUT=0%~100% of IOUT, rated		-	±1.0	-	%	
Ripple and noise 20MHz band- width, peak to peak		-	100	150	mV	
Temperature coefficient		-	±0.03	-	%/ °C	
Standby power consumption		-	0.1	-	W	

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Hold up time	115VAC 230VAC	-	10	-	mS	
Full load			50			
Over voltage protection Hiccup or clamping by Zener diode	Vout=3.3V, 5V Vout =9V Vout = 12V, 15V Vout =24V	-	-	7.5 15 20 30	VDC	
Over current protection	Automatic recovery	110	-	-	% Iout	
Short circuit protection		Continuous, hiccup mode, automatic recovery				
Built in fuse		3.15A, 300V slow blow				
Minimum load		No minimum load is required				

* Ripple and noise measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 1uF ceramic capacitor and a 10uF electrolytic capacitor in parallel.

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General Specifications

Parameters	Condition	Min.	Typ.	Max.	Unit
Isolation voltage Tested for 1 minute	I/P to O/P	4000	-	-	VAC
Isolation resistance 500VDC, 25°C, 70%RH	I/P to O/P	100	-	-	M Ohm
Switching frequency		-	65	-	KHz
Operating temperature range	See "Derating Curve"	-40	-	85	°C
Storage temperature		-40	-	105	°C
Storage humidity		10	-	95	%RH
Maximum case temperature		-	-	95	°C
Operating altitude	See "Derating Curve"	-	-	5000	m
Soldering temperature	5 seconds	-	260	-	°C
Case material		Black plastic UL94-V0			
Cooling method		Free air convection			
Vibration		10Hz to 55Hz, 5G, 30 minutes along X, Y and Z axis			
Class II power		Yes, no FG			
MTBF	MIL-HDBK-217F	> 1,000,000 Hours, 25°C			

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Design based on standards		RoHS & REACH directives, IEC/EN/UL 62368, OVC III, FCC, UKCA, IEC EN 60335, IEC EN 61558
Safety certifications		IEC/EN/UL 62368, OVC III, FCC, UKCA, IEC EN 60335, IEC EN 61558
EMC	CE	CISPR32, EN55032 Class B with "NO External Circuit"
	ESD	IEC/EN61000-4-2, Contact $\pm 6\text{kV}$, Air $\pm 8\text{kV}$, Criteria B
	RS	IEC/EN61000-4-3, 10V/m, Criteria A
	EFT	IEC/EN61000-4-4, $\pm 2\text{kV}$, Criteria B
	Surge	IEC/EN61000-4-5, Line to Line $\pm 2\text{kV}$, Criteria B
	CS	IEC/EN61000-4-6, 10Vrms, Criteria A
	DIP	IEC/EN61000-4-11, 0%, 70%, Criteria B
Size, and Weight		52.4x27.2x24mm, 55g
Packing		200pcs/Carton, size: 335x345x210mm, 11.5Kg G.W.

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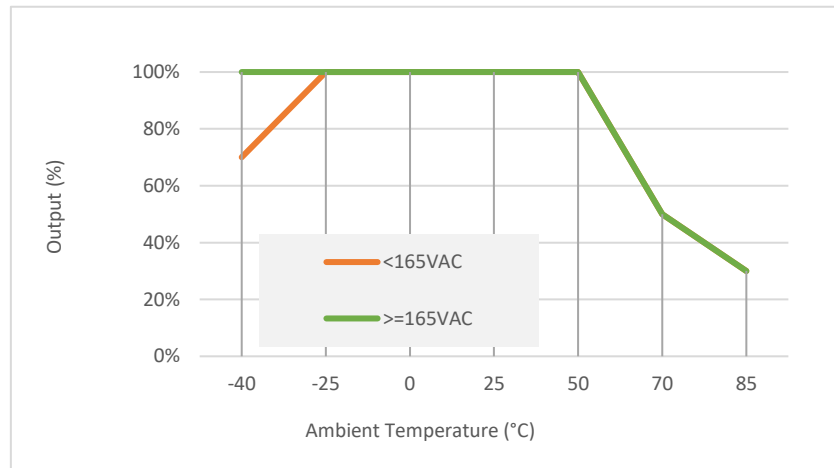
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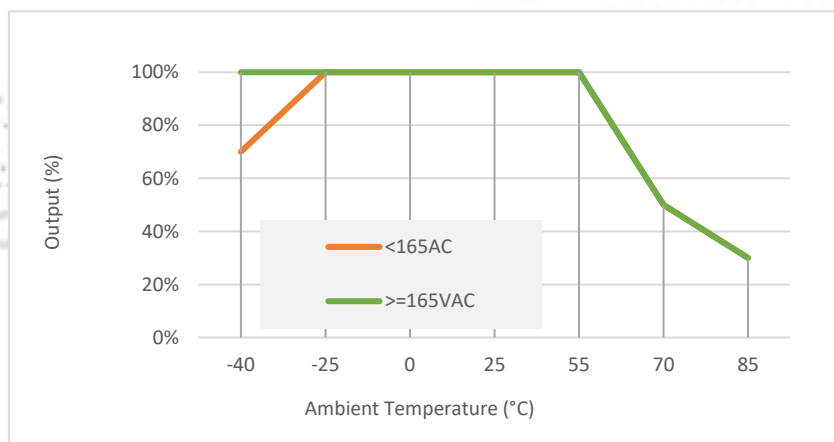
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



$V_{OUT}=3.3 \dots 9V$



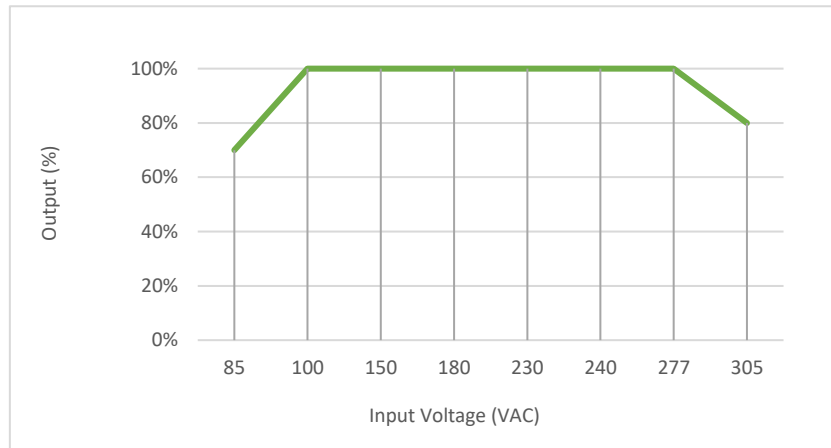
$V_{OUT}=12 \dots 24V$

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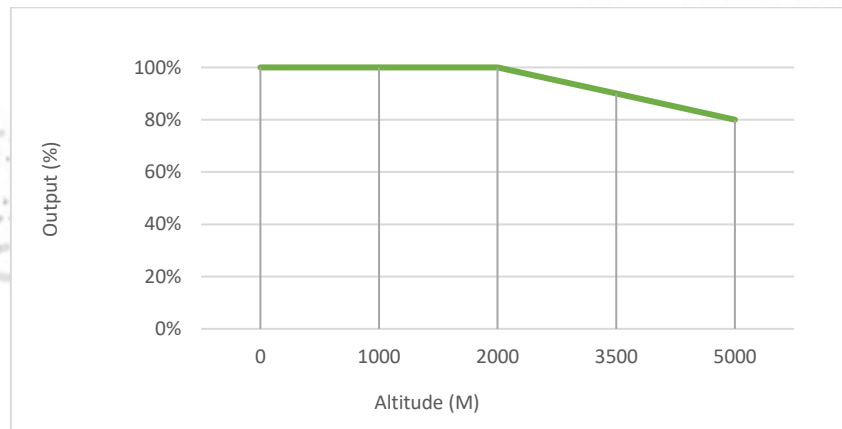
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Output vs Input Voltage



Output vs Altitude



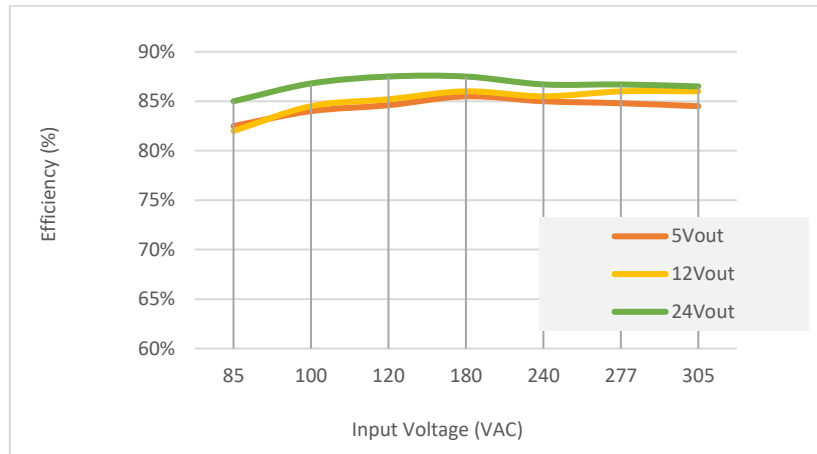
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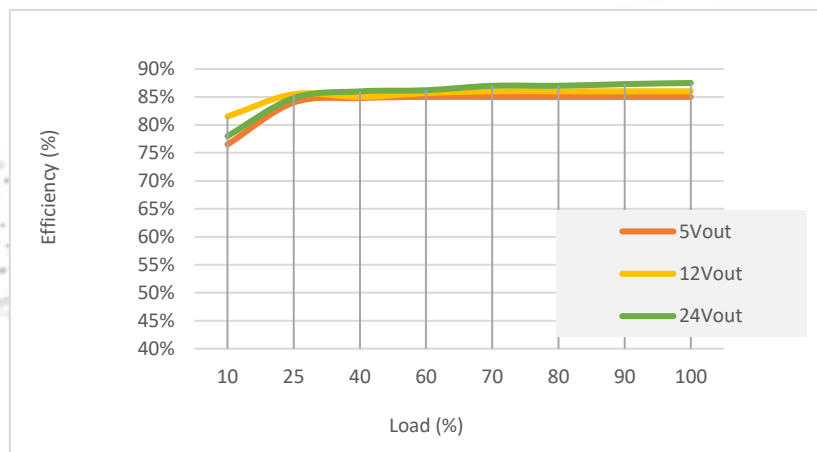


Efficiency Curves

Efficiency vs Input Voltage



Efficiency vs Load

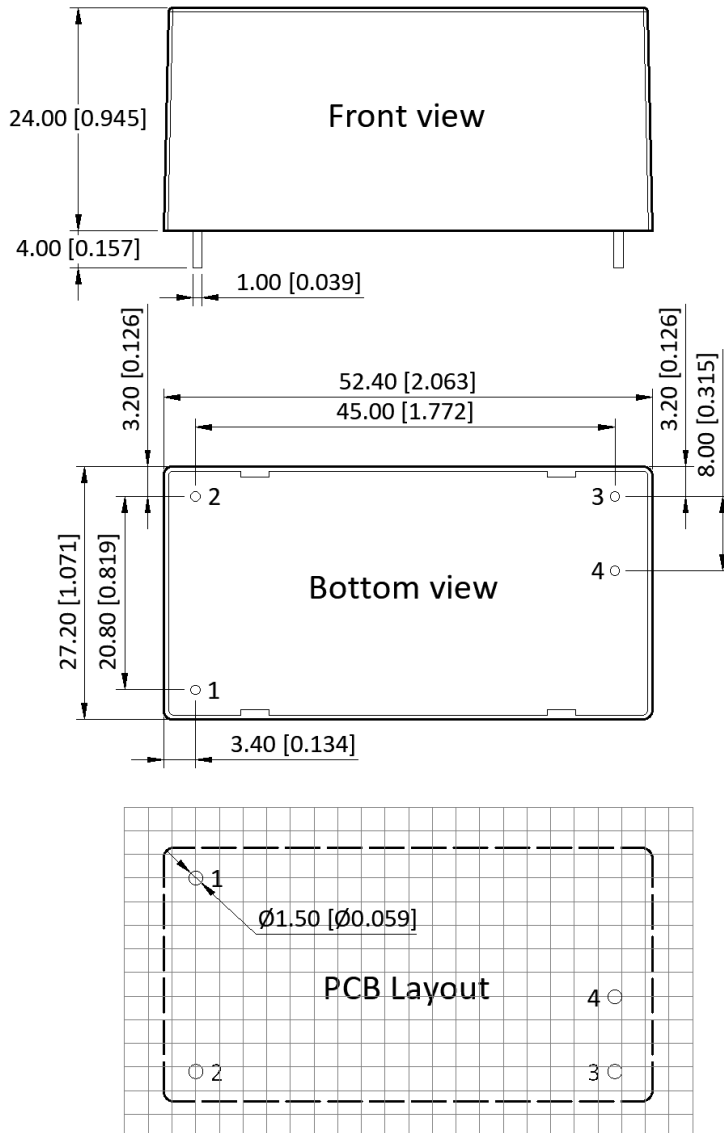


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Mechanical Specifications



Pin Definition

Pin #	Single Out	
1	AC (L)	
2	AC (N)	
3	-V _{OUT}	
4	+V _{OUT}	

* Unless otherwise specified
unit: mm [inch]

* General tolerance: ± 1.00
[± 0.040]

* Pin thickness: ± 0.15 [± 0.006]

* Pin distance: ± 0.50 [± 0.020]

* Footprint grid 2.54 x 2.54 mm

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Ordering information

Ordering can be done via www.summit-electronics.com or via info@summit-electronics.com. Please contact us for more information. Customisation of the product is available on request.

Technical support

For all product questions please contact us via info@summit-electronics.com

Document revision

Rev	Date	Changes
2025v0.1	26-08-2025	First issue of document