



PHI-CON

30 W AC-DC Power Supply PACO30A-Series

- 80 ... 264 V_{AC} / 100 ... 370 V_{DC} universal input
- Continuous short circuit-, over current-, over voltage protection
- 4 kV_{AC} input/output isolation
- EN 62368-1, Safety class II
- Designed to meet EN 61558-1 Over-voltage class III
- Designed to meet medical equipment
- 0.25 W no load power consumption
- Small outlines 76.2 x 50.8 x 24 mm



Model guide

Type	Output voltage		Output Current [A]	Output Power [W]	Efficiency@ full load & Vin 230 V _{AC} [%] typ.	Capacitive load [μF] max.
	[V _{DC}] nom.	Adjust-range [V _{DC}]				
PACO30A03S	3.3	2.97..3.63	6	19.8	82	20000
PACO30A05S	5	4.5..5.5	6	30	85	20000
PACO30A12S	12	10.2..13.8	2.5	30	88	8000
PACO30A15S	15	13.5..18	2	30	89	7000
PACO30A19S	19	17.1..20.9	1.58	30	88	2500
PACO30A24S	24	21.6..28.5	1.25	30	89	1500
PACO30A36S	36	32.4..39.6	0.833	30	90	1000
PACO30A48S	48	43.2..52.8	0.625	30	90	470

Specifications

Input		
Voltage range	80 .. 264 V _{AC} or 120 .. 370 V _{DC} Power derating see diagram	
Frequency	47 ..63 Hz	
Full load input current	≤ 1 A @ 115 V _{AC} ≤ 0.5 A @ 230 V _{AC}	
Inrush current	30 A typ. @ 115 V _{AC} 60 A typ. @ 230 V _{AC}	
Standby power @ 230 V _{AC}	PACO30A03S PACO30A05S PACO30A12S PACO30A15S	≤ 0.15 W
	All others	≤ 0.25 W
Hot plug	Not possible	
Isolation I/O		
Isolation voltage	4000 V _{AC} (1 Minute, < 5 mA)	
Isolation resistance	100 MΩ @ 500 V _{DC}	
Leakage current	≤ 75 μA @ 240 V _{AC} , 60 Hz,	
Clearance distance	7.4 mm	
Creepage distance	8 mm	
Output		
Voltage tolerance, 0 to 100 % load change	PACO30A24S PACO30A36S PACO30A48S	± 1 %, max.
	All others	± 2 %, max.
Line regulation@ rated load	± 0.5 %, max.	
Load regulation @ 230 V _{AC}	± 1 %, max.	
Minimum load	Not required	
Ripple & noise (BW 20 MHz)	PACO30A03S PACO30A05S	≤ 80 mVp-p
	All others	≤ 100 mVp-p
Hold up time	115 V _{AC}	≥ 16 ms
	230 V _{AC}	≥ 30 ms
Temperature coefficient	0.03 % / °C	
Protection		
Short circuit	Continuous, hiccup, auto restart	
Over current	115 % of rated current	

Over voltage protection (Output voltage hiccup)	PACO30A03S	≤ 5.25 V	
	PACO30A05S	≤ 7 V	
	PACO30A12S	≤ 16 V	
	PACO30A15S	≤ 22 V	
	PACO30A19S	≤ 28 V	
	PACO30A24S PACO30A36S PACO30A48S	≤ 32.4 V ≤ 42.4 V ≤ 60 V	
Safety standard	EN 62368-1		
Safety designed to meet	IEC 62368-1, UL 62368-1, EN 60335-1, IEC 60335-1, EN 61558-1		
Safety Class	Class II		
EMC			
CE	EN 55032, EN 55011, CISPR 32	Class B	
RE	EN 55032, EN 55011, CISPR 32	Class B	
HC	EN, IEC 61000-3-2	Class B	
ESD	EN-, IEC 61000-4-2	Contact ±8 kV Air ±15 kV	Perf. Crit. A Perf. Crit. A
RS	EN-, IEC 61000-4-3	10 V/m	Perf. Crit. A
EFT	EN-, IEC 61000-4-4	±2 kV	Perf. Crit. A
Surge	EN-, IEC 61000-4-5	Line to line ±2 kV	Perf. Crit. A
CS	EN-, IEC 61000-4-6	10 Vrms	Perf. Crit. A
Voltage dips, short interruptions and voltage variations immunity EN-, IEC 61000-4-11	100 % dip 1 periods, 30 % dip 25 periods, 100 % interruptions 250 periods Perf. Crit. B		
General			
Reliability MTBF MIL-HDBK-217 @ 25 °C	> 300000 h		
Environmental			
Operating ambient temperature	-30 ... 85 °C		
Storage temperature	-40 ... 85 °C		
Power derating	see diagram		
Storage humidity	≤ 95 %		
Cooling (see derating diagram)	Free air convection		
Physical			
Dimensions	76.2 x 50.8 x 24 mm		
Weight	80 g, typ.		
Case material	Non (Open frame)		

Note: All specifications were measured at Ta 25 °C, humidity < 75 %, nominal input voltage (230 V_{AC}) and rated output load unless otherwise specified.

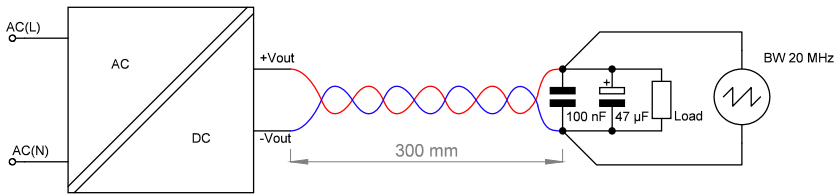


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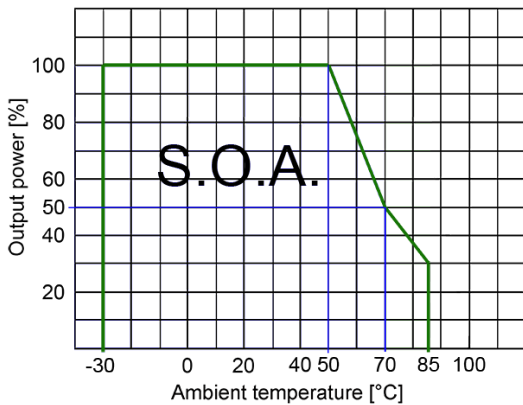
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Part number information										
PHI-CON	AC/DC-Converter open Frame	Output Power		Series	Output voltage		Rev.	Output		Option
P	ACO	30	30 W	B	03	3.3 V	-	S	single	Metal cover version is also available. P/N: PACC30AxxS
					05	5 V				
					12	12 V				
					15	15 V				
					19	19 V				
					24	24 V				
					36	36 V				
					48	48 V				
Example:	PACO30A12S	PHI-CON AC/DC Converter, open frame, Pout: 30 W, Vout: 12 V, single output,								

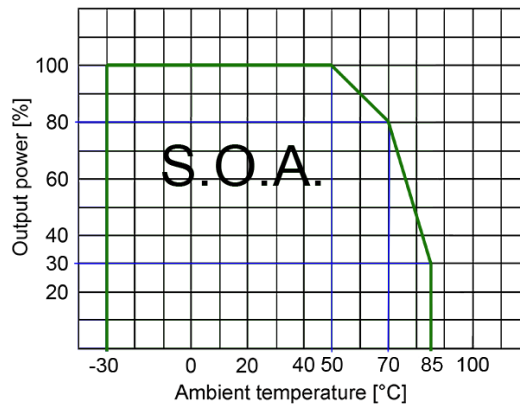
Figure 1 Output ripple and noise measure circuit



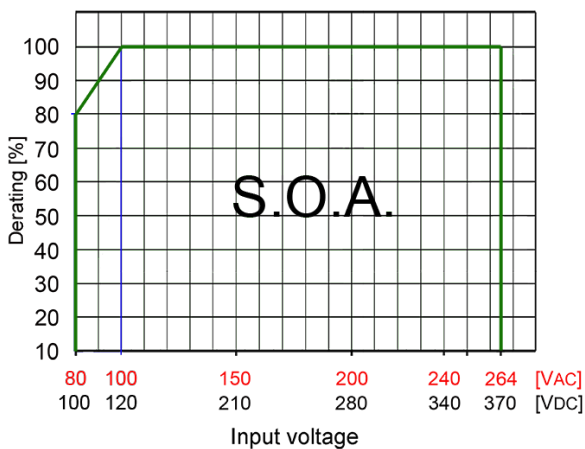
PACO30A03S PACO30A05S PACO30A12S PACO30A15S
PACO30A19S Temperature vs output current
derating diagram at Vin 85..264 V_{AC}



PACO30A24S PACO30A36S PACO30A48S
Temperature vs output current
derating diagram at Vin 85..264 V_{AC}



Derating vs input voltage at Ta 25 °C



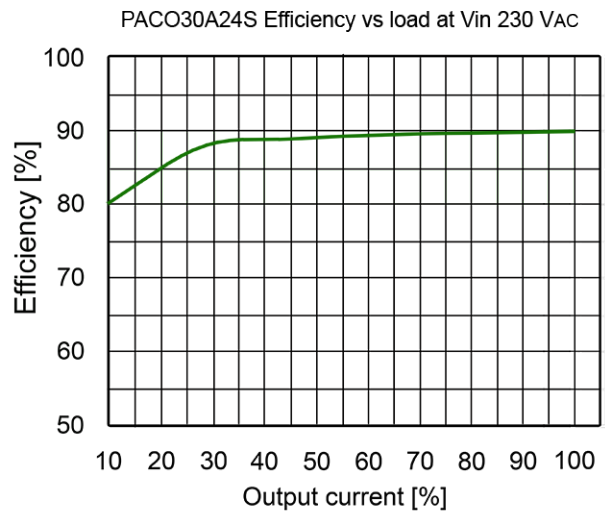
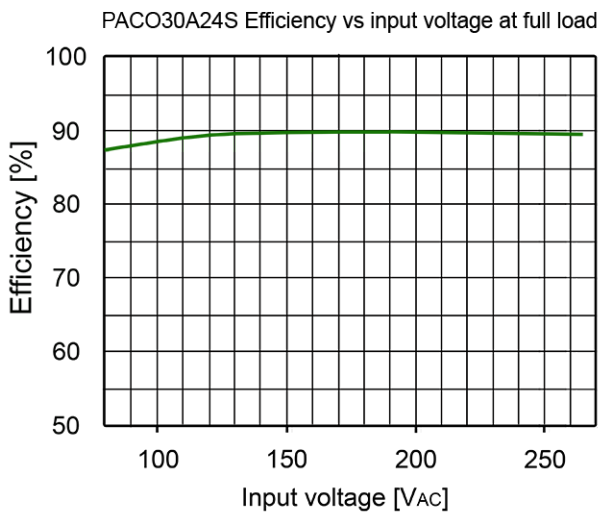
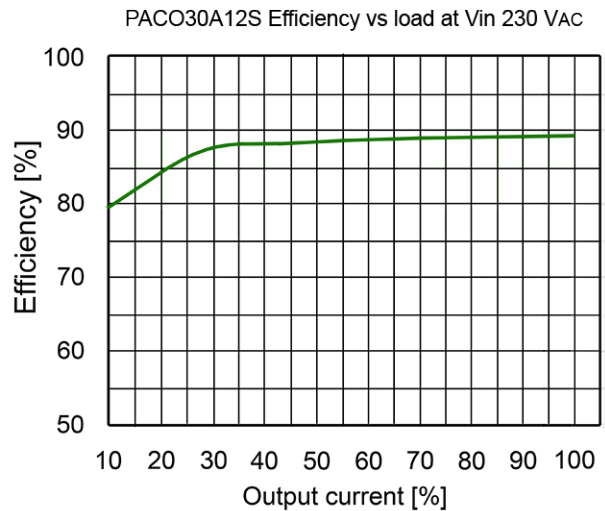
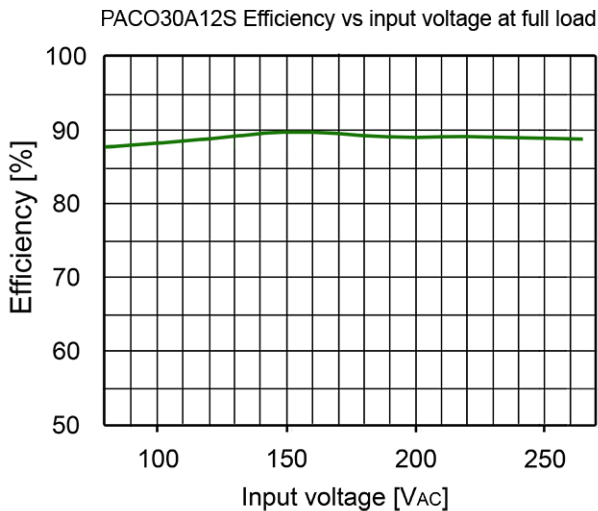
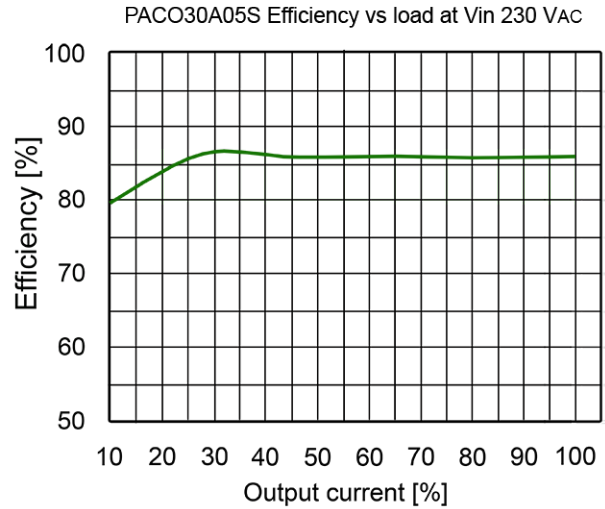
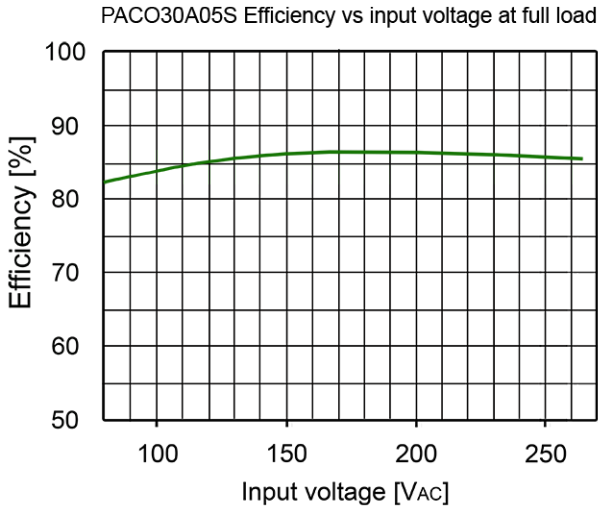
Note:

1. With an AC input between 80...100 V_{AC} and a DC input between 100...120 V_{DC}, the output power must be derated as per temperature derating curves.
2. This product is suitable for applications using free air convection cooling

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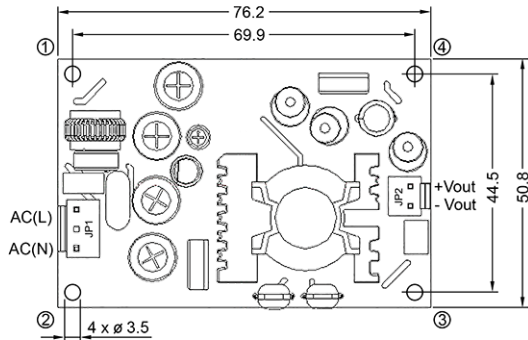




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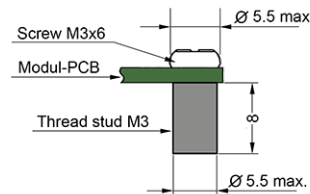
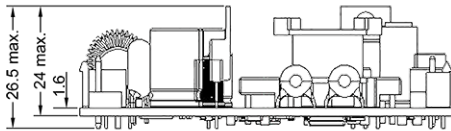
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Mechanical dimensions



Connector pin assignment		
Connector	Modul connector	User connector
JP1	B3P-VH	Housing: VHR-3M Terminals: SVH-21T-P1.1
JP2	B2P-VH	Housing: VHR-2N Terminals: SVH-21T-P1.1
All connectors JST (Japan Solderless Terminals) or equivalent		

Unit in mm
General tolerances ± 0.5 mm



Note:

1. The layout of the device is for reference only, please refer to the actual product.
2. The recommended safety distance between the edge of the PCB and the user components should be ≥ 10 mm.

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