65 W AC-DC Power Supply PACO65B-Series

PHI-CON

- 85 … 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
- 0.3 W no load power consumption
- Small outlines 76.2 x 50.8 x 26.5 mm

CE

Model guide

Type	Output voltage		Output Current	Output Power	Efficiency@ full load & Vin 230 V_{AC}	Capacitive load
	[V_{DC}] nom.	Adjust-range [V_{DC}]	[A]	[W]	[%] typ.	[µF] max.
PACO65B03S	3.3	2.97..3.63	10	33	84	20000
PACO65B05S	5	4.5..5.5	10	50	85	20000
PACO65B12S	12	10.2..13.8	5.42	65	89	8000
PACO65B15S	15	13.5..18	4.34	65	90	7000
PACO65B24S	24	21.6..28.5	2.71	65	90	1500
PACO65B36S	36	32.4..39.6	1.81	65	91	1000
PACO65B48S	48	43.2..52.8	1.36	65	91	470

Specifications

Input			
Voltage range		85 .. 264 V_{AC} or 120 .. 370 V_{DC} Power derating see diagram	
Frequency		47 ..63 Hz	
Full load input current		≤ 1.65 A @ 115 V_{AC} ≤ 0.95 A @ 230 V_{AC}	
Inrush current		40 A typ. @ 115 V_{AC} 60 A typ. @ 230 V_{AC}	
Standby power @ 230 V_{AC}		≤ 0.3 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		7.6 mm	
Creepage distance		8 mm	
Output			
Voltage tolerance		PACO65B03S PACO65B05S	± 2 %, typ.
		All others	± 1 %, typ.
Line regulation		PACO65B03S PACO65B05S	± 0.8 %, typ
		All others	± 0.5 %, typ
Load regulation @ 0 to 100 % load change		± 1 %, typ.	
Minimum load		Not required	
Ripple & noise (BW 20 MHz)	PACO65B03S, PACO65B05S, PACO65B12S, PACO65B15S		≤ 100 mVp-p
	PACO65B24S		≤ 120 mVp-p
	PACO65B36S, PACO65B48S		≤ 150 mVp-p
Hold up time	115 V_{AC}	≥ 10 ms	
	230 V_{AC}	≥ 45 ms	
Temperature coefficient		0.02 % / °C	
Protection			
Short circuit		Continuous, auto recovery time <3s after the short circuit disappear	
Over current		120 % of rated current	

Over voltage protection (Output voltage turn off, re-power on for recover	PACO65B03S	≤ 5.25 V	
	PACO65B05S	≤ 7 V	
	PACO65B12S	≤ 16 V	
	PACO65B15S	≤ 22 V	
	PACO65B24S	≤ 32.4 V	
	PACO65B36S	≤ 42.4 V	
	PACO65B48S	≤ 57 V	
Safety standard		EN 62368-1	
Safety designed to meet		EN 60335-1, EN 61558-1, IEC 62368-1, UL 62368-1	
Safety Class		Class II	
EMC			
CE	EN 55032, EN 55011, CISPR 32		Class B
RE	EN 55032, EN 55011, CISPR 32		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	20 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	20 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		-40 … 70 °C	
Storage temperature		-40 … 70 °C	
Power derating		see diagram	
Storage humidity		≤ 90 %	
Altitude operating & storage		5000 m	
Cooling (see derating diagram)		Free air convection	
Physical			
Dimensions		76.2 x 50.8 x 26.5 mm	
Weight		95 g	
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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65 W AC-DC Power Supply PACO65B-Series

PHI-CON

Part number information											
PHI-CON	AC/DC-Converter open Frame	Output Power		Series	Output voltage		Rev.	Output		Option	
P	ACO	65	65 W	B	03	3.3 V	-	S	single	Metal cover version is also available. P/N: PACC65BxxS	
					05	5 V					
					12	12 V					
					15	15 V					
					24	24 V					
					36	36 V					
					48	48 V					
Example:	PACO65B12S	PHI-CON AC/DC Converter, open frame, Pout: 65 W, Vout: 12 V, single output,									

Figure 1 Output ripple and noise measure circuit

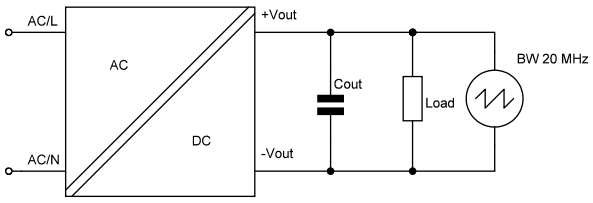
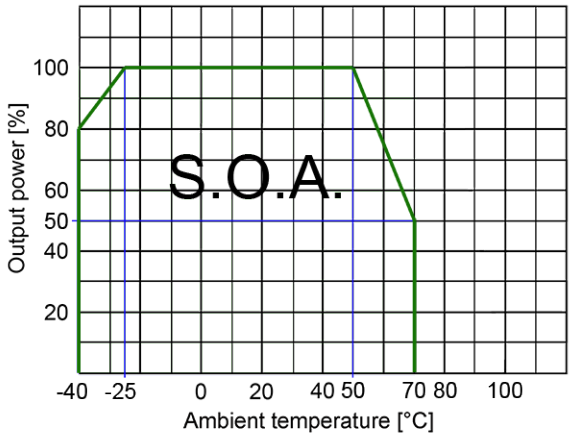
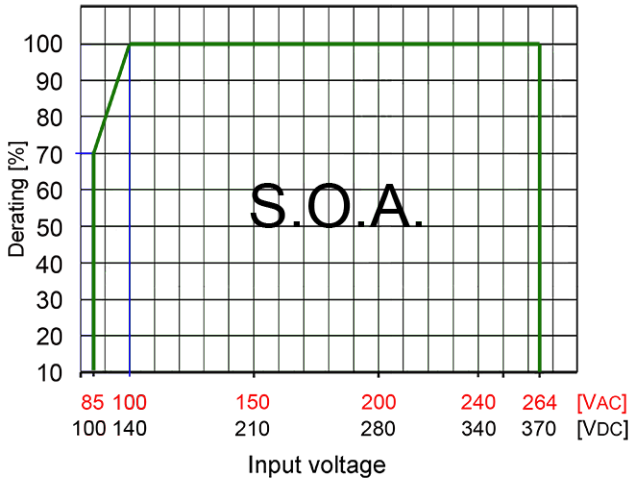


Table for Figure 1	
Type	Cout (MLCC)
PACO65B03S	10 µF
PACO65B05S	10 µF
PACO65B12S	10 µF
PACO65B15S	10 µF
PACO65B24S	1 µF
PACO65B36S	0.1 µF
PACO65B48S	0.1 µF

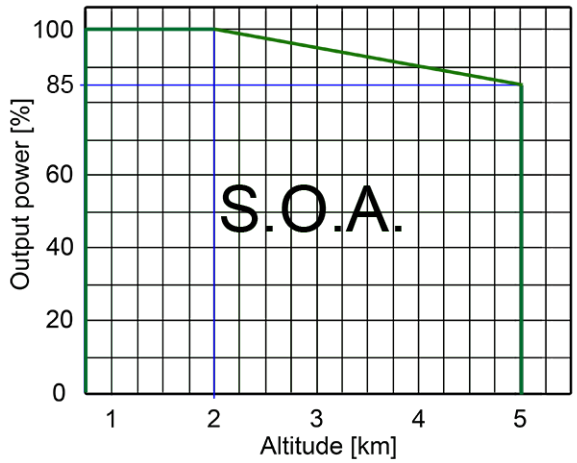
PACO65BxxS Temperature vs output current derating diagram at Vin 85..264 VAC



Derating vs input voltage



Altitude vs output power derating



Note:

1. With an AC input between 85…100 V_{AC} and a DC input between 100…140 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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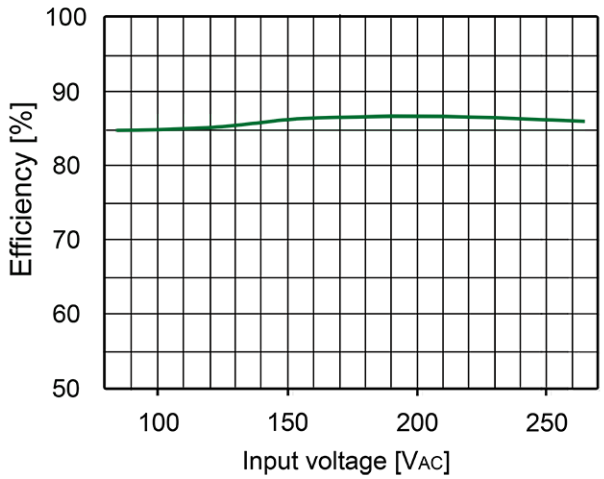
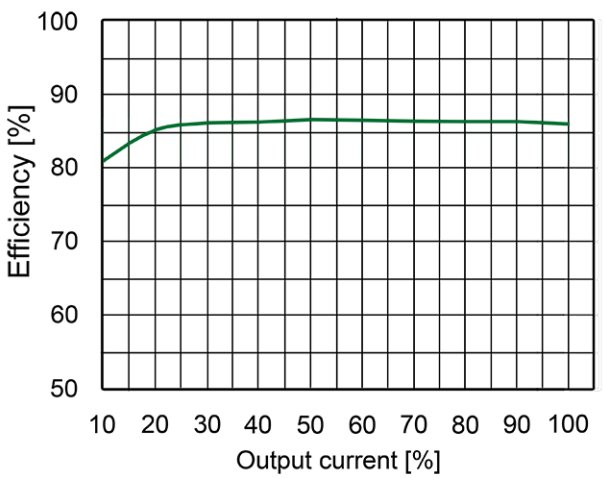
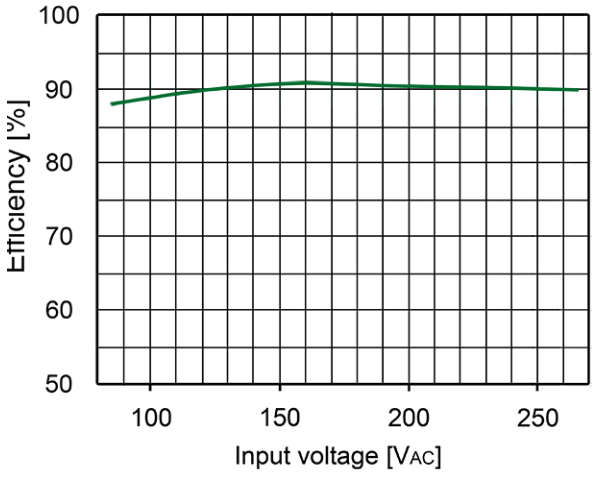
PACO65B05S Efficiency vs input voltage at full load



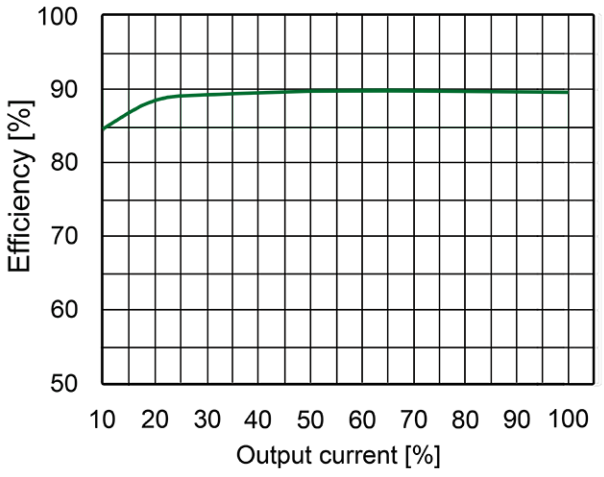
PACO65B05S Efficiency vs load at Vin 230 VAC



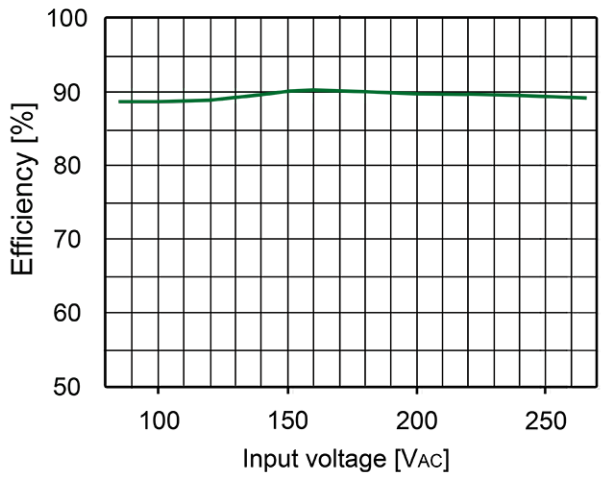
PACO65B12S Efficiency vs input voltage at full load



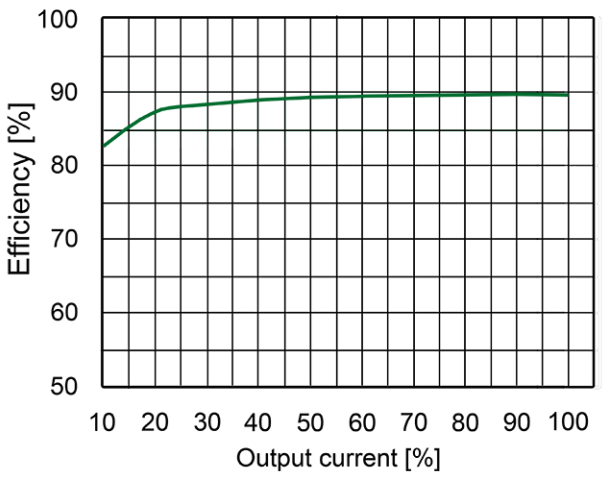
PACO65B12S Efficiency vs load at Vin 230 VAC



PACO65B24S Efficiency vs input voltage at full load



PACO65B24S Efficiency vs load at Vin 230 VAC



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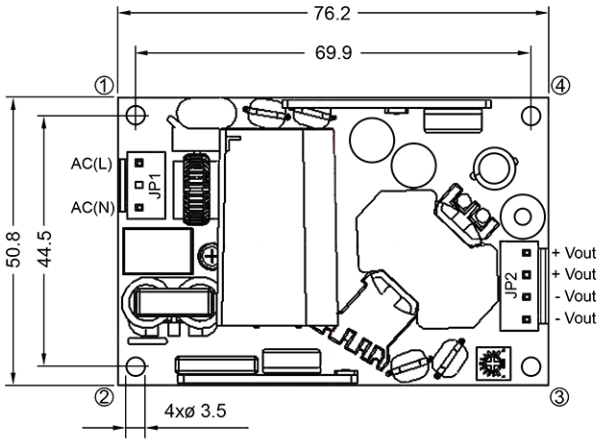
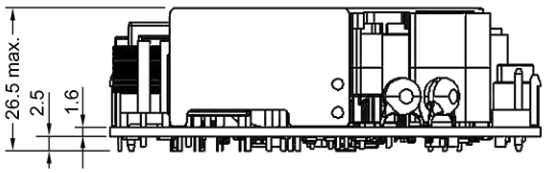
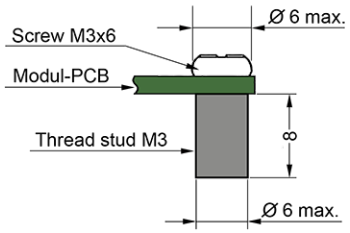
Mechanical dimensions



Connector pin assignment		
Connector	Modul connector	User connector
JP1	B3P-VH	Housing: VHR-3M Terminals: SVH-21T-P1.1
JP2	B4P-VH	Housing: VHR-4N or VHR-4M 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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