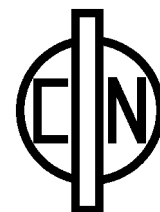


# 30W AC-DC Modules PA30A-Series



PHI-CON

- AC-DC Power module
- Universal input 85-265 VAC
- Stand-By power, no load <0.5W
- High efficiency up to 86 %
- Short circuit protection
- Internal input filter
- 3 years warranty
- Medical safety approved
- Low leakage current
- Open frame



## Model selection guide



Typ	Output power [W]	Input voltage range [V <sub>AC</sub> ]	Output voltage [V <sub>DC</sub> ]	Output current [mA]	Efficiency typ. [%]
<b>Single output</b>					
PA30A03	25	85 – 265	+3.3	7500	77
PA30A05	30	85 – 265	+5	6000	81
PA30A12	30	85 – 265	+12	2500	85
PA30A15	30	85 – 265	+15	2000	86
PA30A24	30	85 – 265	+24	1250	86
<b>Dual output</b>					
PA30A12D	30	85 – 265	±12	±1250	84
PA30A15D	30	85 – 265	±15	±1000	85
PA30A512D	30	85 – 265	+5 / +12	+3000 / +1250	82
PA30A524D	30	85 – 265	+5 / +24	+3000 / +650	82

# 30W AC-DC Modules PA30A-Series

## Specifications

All specifications typical at normal line, full load, 25 °C unless otherwise noticed.

<b>Input</b>	
Voltage range	85 – 265 VAC 120 – 375 VDC
Rated input voltage	100 – 240 VAC
Line frequency	47 – 63 Hz
Inrush current	max. 20 A @ 115 VAC max. 40 A @ 230 VAC
Input current	115/230 VAC, I <sub>o</sub> nom 0.56 / 0.34 A
Rated input current	100 – 240 VAC, I <sub>o</sub> nom 0.8 – 0.4 A
Leakage current	Normal condition: 100 µA Single fault condition: 300 µA
<b>Isolation</b>	
Voltage	4236 / 6000 VAC/VDC
Resistance	100 MΩ @ 500 VDC
<b>Output</b>	
Voltage accuracy	Single output ± 1% max Dual output ± 2 % max 524D model ± 4 % max
Minimum Load	single output models: 0% dual output models: 20% (each output)
Line voltage regulation	± 1%, max.
Load voltage regulation	single models: ± 1% max. dual models: ± 2% max.
Cross regulation (dual model)	Asymmetrical load 20 % / 100 % FL: ± 6 %
Green mode function	Power consumption at no load < 0.5W at 240VAC input
Hold up time	V <sub>i</sub> : 115/230 VAC, I <sub>o</sub> nom: 15 / 75 ms
Turn on time	1000 ms
Rise time	150 ms
Fall time	150 ms
Transient recovery time	V <sub>i</sub> nom, 1 ~0.5 I <sub>o</sub> nom: 1 ms
Ripple & noise	V <sub>i</sub> nom, I <sub>o</sub> nom, BW = 20 MHz: 50 mV
External trim ADJ. Range (for single output only)	Min -10 %, max + 10 %
Temperature coefficient	± 0.03% / °C

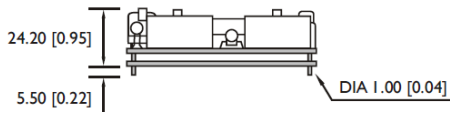
<b>General</b>	
Efficiency	Up to 86 %, see model list and typ efficiency curve
Switching frequency	65 kHz, typ.
MTBF	Bellcore issue 6 @ 40 °C, GB 3,3V, 5V, 512D & 524D models: 705000 hours 12V, 12D & 15D models: 724000 hours 15V & 24V models: 742000 hours
Altitude during operation	IEC 60068-2-13 max 4850 m
<b>Environmental</b>	
Operating temperature (ambient)	-40 °C – +71 °C
Storage temperature	-40 °C – +100 °C
Derating at 61 °C	2,5% / °C
Humidity	Up to 95%
Cooling	Free-air convection
<b>Physical</b>	
Dimensions	85.3x60.3x24.2 mm
Weight	130 g
Case material	plastic
<b>Control and protection</b>	
Input fuse	T2A / 250 VAC internal
Internal surge voltage protection	IEC 61000-4-5 Varistor
Output short circuit	Hiccup mode
Rated over load protection	Min 120 %, max 160 %
<b>Approvals and standards</b>	
UL / cUL	UL60950-1, UL60601-1 Recognized
TUV	EN60950-1 EN 60601-1
CE	EN 60601-1-2, EN 55011, EN 61000-6-3, EN 55022 Class B, EN 61000-3-2 EN 61000-3-3, EN 61000- 6-2, EN 55024, EN61000- 4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000- 4-8, EN 61000-4-11, EN 61204-3
Vibration resistance	Meet IEC 60068-2-6 (10- 500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	Meet IEC 60068-2-27 (15G 11 ms, 3 axes, 6 faces, 3 times for each face)

# 30W AC-DC Modules PA30A-Series

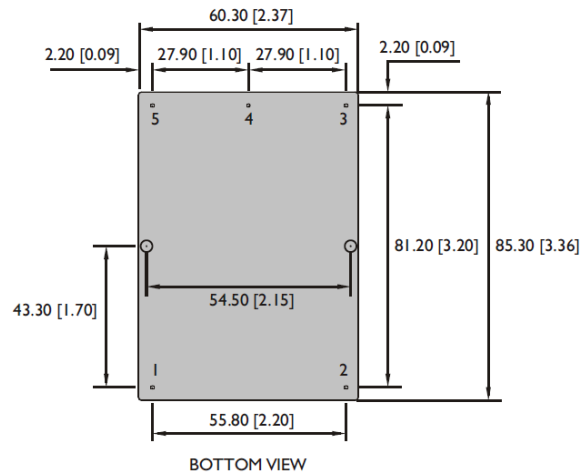


## Mechanism & Pin Configuration

mm [inch]



GENERAL TOLERANCE	
0.00[0.00] - 30.00[1.18]	±0.30[0.01]
30.00[1.18] - 120.00[4.72]	±0.50[0.02]

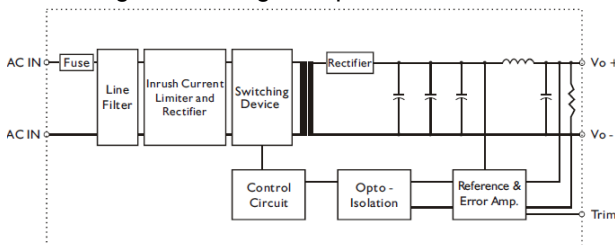


## PIN Assignment

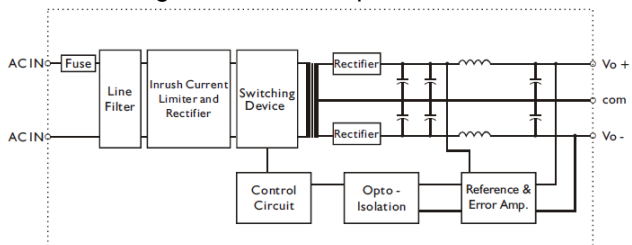
PIN No.	1	2	3	4	5
Single	AC IN	AC IN	Vo +	Vo -	Trim
Dual 12D 15D	AC IN	AC IN	Vo +	Com	Vo -
Dual 512 D	AC IN	AC IN	+ 5V	Com	+ 12V
Dual 524 D	AC IN	AC IN	+ 5V	Com	+ 24V

## Circuit Schematic

Block diagram for single output

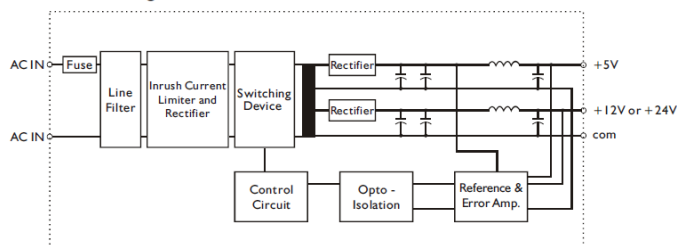


Block diagram for dual output

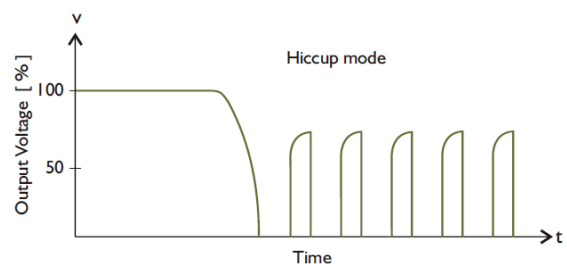


## Circuit Schematic

• Block diagram



## Typ. Current Limited Curve



# 30W AC-DC Modules PA30A-Series



Typ. Efficiency Curve

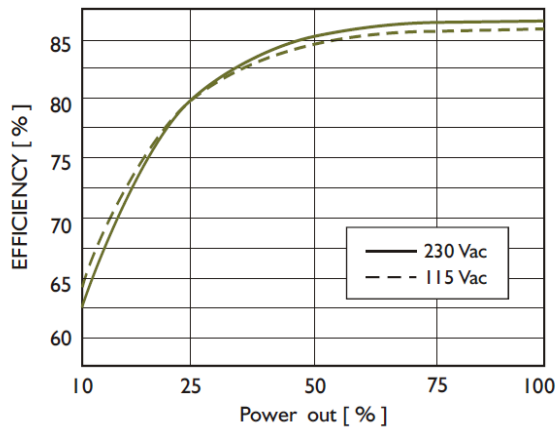
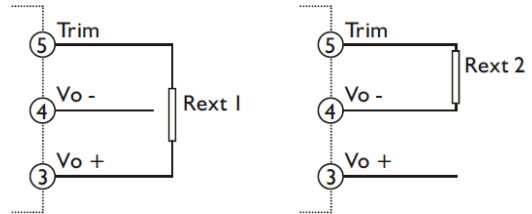


Fig. 1 Trim connection (for single output only)



## Derating Curve

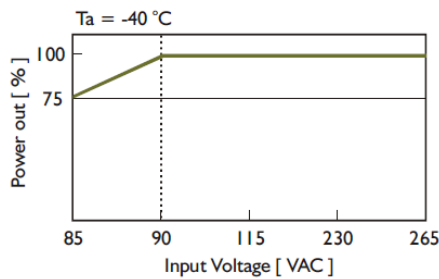
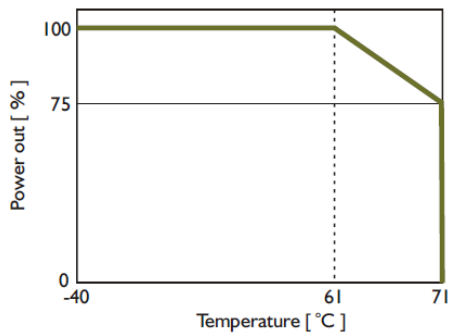


Table I Typical resistor values for various output voltage adjustment settings and max continuous power

Type	Rext 1 Vo nom -5 %	Rext 1 Vo nom - 10%	Rext 2 Vo nom +5%	Rext 2 Vo nom +10%	Maximal continuous power
PA30A03	20 kΩ	5.1 kΩ	3 kΩ	1 kΩ	25 W
PA30A05	5.1 kΩ	1 kΩ	6.8 kΩ	2 kΩ	30 W
PA30A12	39 kΩ	20 kΩ	10 kΩ	0 Ω	30 W
PA30A15	180 kΩ	56 kΩ	30 kΩ	5.1 kΩ	30 W
PA30A24	150 kΩ	51 kΩ	8.2 kΩ	0 Ω	30 W