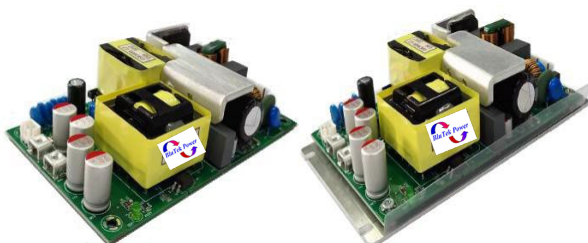




BPA-CH360-120XXX: Isolated AC-DC Power Modules

Universal input; Main and Fan Outputs; 360W@12V/24V/48V/56V and 6W@12V



Dimensions: 140.0mm(L)×76.2mm(W)×34.8mm(H)---A version
Dimensions: 127.0mm(L)×76.2mm(W)×32.1mm(H)---B version



Description:

BPA-CH360 series is isolated AC-DC converters with an industry standard package that can deliver up to 30A output current or 360W output power with high efficiency of 93% (VIN = 230Vac, half load). These modules can operate over universal AC input, even up to 300Vac without damage, and provide a precisely regulated single main output voltage and non-regulated fan power. BPA-CH360 series has excellent electrical and thermal performance with creative circuit design and optimized component placement. With different standard output voltage and fan power, the BPA-CH360 series has flexibility for various applications. The series module integrated input UVP/OVP, OCP, OTP, SCP feature for high reliability design. The module can be compliance with UL/IEC62368 safety requirement.

Applications

- Industry/automation
- Distributed power architectures
- Instrument and Test Equipment
- Amplifier and Base Station
- LANs/WANs
- PoE or PoE+ and Enterprise Networks
- Telecom equipment and system

Features

- Wide input voltage range: Universal AC input up to 300Vac/45-55Hz without damage
- Fully tightly regulated main output voltage
- High efficiency design to meet 93% at 50% load
- Deliver up to 30Adc current or 360W power with system airflow
- Active PFC (typical:0.99@115Vin, 0.96@230Vin)
- Industry standard (Pls see the mechanical drawing for detail)

Dimensions: 140.0(L)×76.2(W)×34.8mm(H)---A version

Dimensions: 127.0(L)×76.2(W)×32.1mm(H)---B version

- Directive 2002/95/EC (RoHS) Compatible
- Option for thermal plate or no thermal plate
- Full protection for Input UVP, Output OVP, OCP, SCP, OTP
- 3000Vac/1Min for Pri to Sec and 1500Vac/1Min for Pri to Earth isolation voltage.
- Wide operating temperature range (-20°C to 70°C) and -40°C can power up (derating above 50°C)
- Design to meet safety standard of IEC/UL62368



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Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only, functional operation of the device is not implied at these or any other conditions in excess of those given in the operations sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect the device reliability.

Parameter	Device	Symbol	Min	Max	Unit
Input Voltage					
Continuous Operation Transient Non-operating continuous	All	V_{IN}		264 300 315	Vac
Signal Pin	All		-0.3	16	Vdc
Operating Ambient Temperature (Derating from 50°C to 70°C by 2.5%/°C)	All	T_A	-10	50	°C
Storage Temperature	All	T_{stg}	-40	70	°C
Input/Output Isolation voltage	All			3000	Vac
Input/Earth-Chassis Isolation voltage	All			1500	Vac

Electrical Specifications

Unless otherwise indicated, specifications apply over all operating input voltage, resistive load, and room temperature conditions.

Parameter	Device	Symbol	Min	Typ	Max	Unit
Operating Input Voltage		V_{IN}	90	—	264	Vac
Operating Frequency	All		47	—	63	Hz
Max Input Current ($V_{IN}=100V$, $P_O=360W$)	All	$I_{IN,max}$			5.5	A
Input No Load Power (V_{IN} =Nominal Input, $I_O=0$, Module enabled)			—	0.5	1	W
Input Standby Power (V_{IN} =Nominal Input, Module disabled)						
Inrush Current with Cold Start	All	230V _{in}	—	70	—	A
Power Factor (Nominal Input and Full Load)	All	λ	0.95	0.98	—	
Leakage Current (264Vac)	All		—		3.5	mA
Input Protection		Fuse in Line Input				



BPA-CH360-120XXX: Isolated AC-DC Power Modules

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Electrical Specifications **(continued)**

Output Spec (Spec is required at +25°C if not specification).

Parameters	Condition and Description		Min	Mon	Max	Unit
Main Output Voltage	Half load condition	BPA-CH360-120	11.76	12.00	12.24	V
		BPA-CH360-240	23.52	24.00	24.48	V
		BPA-CH360-480	47.04	48.00	48.96	V
		BPA-CH360-560	54.88	56.00	57.12	V
Fan Voltage	>10% main power		10.20	12.00	13.80	V
	No trim function					
Output Load		BPA-CH360-120	0		30	A
		BPA-CH360-240	0		15	A
		BPA-CH360-480	0		7.5	A
		BPA-CH360-560	0		6.4	A
Fan Current					0.5	A
Load Regulation	From Open to Full (Nominal Input)				+/-2%*Vout	V
Line Regulation	All Range (50% load)				+/-1%*Vout	V
Thermal regulation					+/- 0.03%*Vout/°C	V
Min Load	No requirement					A
Ripple and Noise	115/230 in Full load (20k-20M bandwidth/10uf Tan-capacitor)			+/-1%Vout	+/-2%Vout	V
External Capacitive load	Main Power, full load	BPA-CH360-120			8000	uF
		BPA-CH360-240			4000	uF
		BPA-CH360-480			2000	uF
		BPA-CH360-560			2000	uF
Dynamic 1 (1A/us)	25% to 75% to 25% load				+/-4%Vout	V
Dynamic 2 (1A/S)	5-50% and 50%-100% load				+/-5%Vout	V
Recovery Time	Back to 1% Vout				500	uS
Turn On Overshoot					5%	V
Delay time	Nominal Input to 90% output			1	1.5	s
Rise time	10% output to 90% output, Monotonic. No external capacitor			30	50	mS
Output Indicator	LED=ON for having output					
Efficiency	230V input/50% load	BPA-CH360-120		92		%
		BPA-CH360-240		93		%
		BPA-CH360-480		93		%
		BPA-CH360-560		93		%
Current Sharing (Unbalance)	No current sharing function					
Holdup Time	Nominal Input and Full Load and			12		mS



BPA-CH360-120XXX: Isolated AC-DC Power Modules
Universal input; Main and Fan Outputs; 360W@12V/24V/48V/56V and 6W@12V

	droop to 90% of output voltage				
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Protection Spec

Parameters	Condition and Description	Min	Mon	Max	Unit
Input UVP	Auto-Recovery			90	Vac
Output OCP	Auto-Recovery	110%*Io		150%*Io	A
Output OVP	Latch Mode	110%*Vout			V
OTP(Ambient)	Latch Mode		75		°C
Short protection	All condition	No damage/smoke/fire			

Environment Spec

Parameters	Condition and Description	Min	Mon	Max	Unit
Working Temperature	For full load/input	-20	+25	+50	°C
	Derating from 50°C to 70°C by 2.5%/°C	+50		+70	°C
Hot Spot Temperature			115		°C
Airflow	System Airflow				
Altitude				5000	m
Humidity		+5%		95%	
Weight	BPA-CH360-XXXXA		385		g
	BPA-CH360-XXXB		285		g

Isolation Specifications

Isolation Voltage from Primary to Secondary(Main Output)	3000Vac@1Min
Isolation Voltage from Primary to Earth	1500Vac@1Min
Isolation Voltage from Main output to Earth	500Vdc@1Min
Isolation Voltage from main output and fan power	100Vdc@1Min

EMC Spec

EMC Item	Requirement	Criterion	reference
Conducted Emissions	Class B + system box		EN55022 QP/AV Mathod
Radiated Emissions	Class B + system box		EN55022/FCC Controlled by system
Conducted Immunity	Level 2		EN55024,EN61000-4-3
SURGE	DM: ±2KV CM: ±4KV	B	EN61000-4-5, EN 55024 ETSI EN 300 386 V1.3.2
EFT	±2KV (Level 2)	B	EN61000-4-4 , EN 55024 ETSI EN 300 386 V1.3.2



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Universal input; Main and Fan Outputs; 360W@12V/24V/48V/56V and 6W@12V

ESD	Touch: $\pm 6\text{KV}$ Air: $\pm 8\text{KV}$	B	EN61000-4-2, EN 55024 ETSI EN 300 386 V1.3.2
	Touch: $\pm 8\text{KV}$ Air: $\pm 15\text{KV}$ for Case	R	EN61000-4-2, EN 55024 ETSI EN 300 386 V1.3.2
Harmonic	Class A	NC	EN 61000-3-2 ETSI EN 300 386 V1.3.2
Flicker		NC	EN 61000-3-3 ETSI EN 300 386 V1.3.2
RS	80M~2GHz 10V/m, 80% AM (level 3)	A	EN 61000-4-3, EN 55024 ETSI EN 300 386 V1.3.2
CS	150KHz~80MHz 10V, 80% AM	A	EN 61000-4-6, EN 55024 ETSI EN 300 386 V1.3.2
Lightning AC power fault			GR-1089 Issue 4
DIP	See the following		EN 61000-4-11, EN 55024 ETSI EN 300 386 V1.3.2

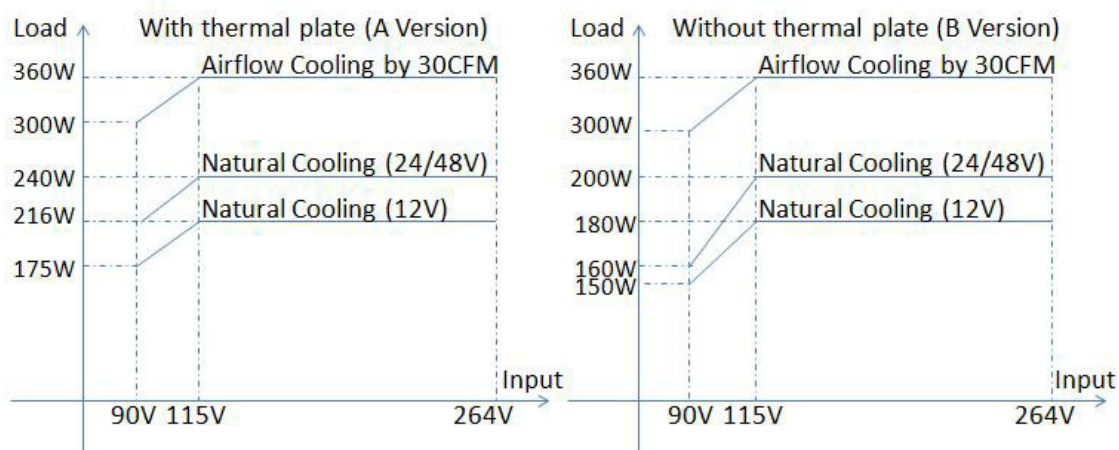
DIP Requirement

Voltage Drop	Duration Time	Criteria
0%Ut	12ms	B
70%Ut	500ms	C
40%Ut	200ms	C
0%Ut	5000ms	C

LED indicator

There are one LED located on PCB (secondary side) to indicate PSU status. LED green is power on. LED off is no input or power failure.

Derating Curve



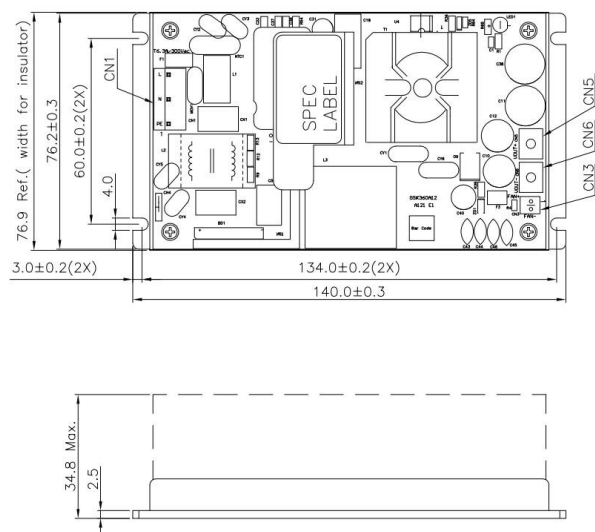


BPA-CH360-120XXX: Isolated AC-DC Power Modules

Universal input; Main and Fan Outputs; 360W@12V/24V/48V/56V and 6W@12V

Detail Mechanical Drawing

1. Mechanical drawing for A version (with thermal plate under PCBA) (FG. BPA-CH360-XXXXA)



Connectors Information

	Connector type	Mating Connector type
CN1	JWT A3963WV2-5P,P2 P4 empty or equivalent	JWT A3961H2-5P or equivalent
CN3	JWT A2501WV2-2P or equivalent	JWT A2501H02-2P or equivalent
CN5	M3 copper terminal	
CN6	M3 copper terminal	

Pin assignments for CN1

P1	P2	P3	P4	P5
PE	NC	N	NC	L

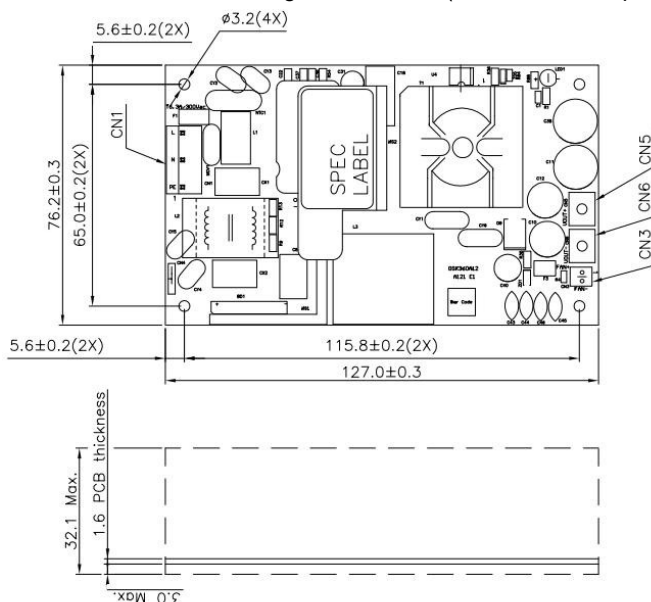
Pin assignments for CN3

P1	P2
FAN+	FAN-

Pin assignments for CN5/CN6

CN5	CN6
Vout+	Vout-

2. Mechanical drawing for B version (without thermal plate under PCBA) (FG. BPA-CH360-XXXXB)



Connectors Information

	Connector type	Mating Connector type
CN1	JWT A3963WV2-5P,P2 P4 empty or equivalent	JWT A3961H2-5P or equivalent
CN3	JWT A2501WV2-2P or equivalent	JWT A2501H02-2P or equivalent
CN5	M3 copper terminal	
CN6	M3 copper terminal	

Pin assignments for CN1

P1	P2	P3	P4	P5
PE	NC	N	NC	L

Pin assignments for CN3

P1	P2
FAN+	FAN-

Pin assignments for CN5/CN6

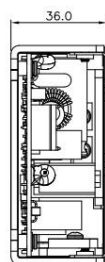
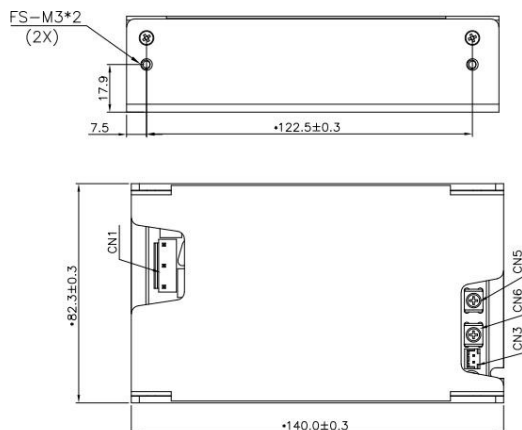
CN5	CN6
Vout+	Vout-



BPA-CH360-120XXX: Isolated AC-DC Power Modules

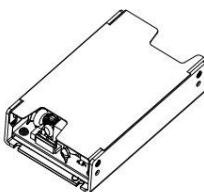
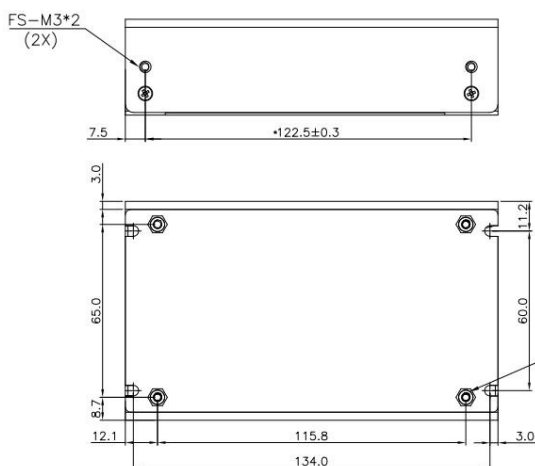
Universal input; Main and Fan Outputs; 360W@12V/24V/48V/56V and 6W@12V

3. Mechanical drawing for C version (with U-Bracket and cover) (FG. BPA-CH360-XXXC)



Connectors Information

	Connector type	Mating Connector type
CN1	JWT A3963WV2-5P,P2 P4 empty or equivalent	JWT A3961H02-5P or equivalent
CN3	JWT A2501WV2-2P or equivalent	JWT A2501H02-2P or equivalent
CN5	M3 copper terminal	
CN6	M3 copper terminal	



Pin assignments for CN1

P1	P2	P3	P4	P5
PE	NC	N	NC	L

Pin assignments for CN2

P1	P2
FAN+	FAN-

Pin assignments for CN5/CN6

CN5	CN6
Vout+	Vout-



BPA-CH360-120XXX: Isolated AC-DC Power Modules

Universal input; Main and Fan Outputs; 360W@12V/24V/48V and 6W@12V

Order Information

Assigned Project Name

Input Voltage	Output Voltage	Output Current	Fan Power Voltage	Fan Power Current	Product Name	Note
90VAC-264VAC	12Vdc	0—30A	12Vdc	0-0.5A	BPA-CH360-120A	With thermal Plate
90VAC-264VAC	24Vdc	0—15A	12Vdc	0-0.5A	BPA-CH360-240A	With thermal Plate
90VAC-264VAC	48Vdc	0—7.5A	12Vdc	0-0.5A	BPA-CH360-480A	With thermal Plate
90VAC-264VAC	56Vdc	0—6.4A	12Vdc	0-0.5A	BPA-CH360-560A	With thermal Plate
90VAC-264VAC	12Vdc	0—30A	12Vdc	0-0.5A	BPA-CH360-120B	Without thermal plate
90VAC-264VAC	24Vdc	0—15A	12Vdc	0-0.5A	BPA-CH360-240B	Without thermal plate
90VAC-264VAC	48Vdc	0—7.5A	12Vdc	0-0.5A	BPA-CH360-480B	Without thermal plate
90VAC-264VAC	56Vdc	0—6.4A	12Vdc	0-0.5A	BPA-CH360-560B	Without thermal plate
90VAC-264VAC	12Vdc	0—30A	12Vdc	0-0.5A	BPA-CH360-120C	With U-Bracket and Cover
90VAC-264VAC	24Vdc	0—15A	12Vdc	0-0.5A	BPA-CH360-240C	With U-Bracket and Cover
90VAC-264VAC	48Vdc	0—7.5A	12Vdc	0-0.5A	BPA-CH360-480C	With U-Bracket and Cover
90VAC-264VAC	56Vdc	0—6.4A	12Vdc	0-0.5A	BPA-CH360-560C	With U-Bracket and Cover

Note: Fan power voltage is non-regulated, pls see definition for detail

Change History

Item	Version	Change List	Signature	Date
1	V1.0	New Release	A. Lo Presti	Nov 16th, 2022