

## 150 to 240W High Reliability Power Supplies with 200% Peak Power



The ZWS-BP industrial grade power supplies are used in a wide range of applications where equipment down-time cannot be tolerated during years of operation. Globally, process control, test and measurement equipment, machinery, semiconductor fabrication, communications and printer manufacturers depend upon the ZWS-BP to provide a reliable source of power. Conservatively rated electrolytic capacitor temperatures offer improved field life-times of up to 10 years. They are available in 150W or 240W power levels (each with a 200% peak power capability for up to 5 seconds with a 40% duty cycle) with a choice of 24V, 36V and 48V outputs. A variety of mechanical configurations are available, in addition to a double sided board coating option.

Features	Benefits
• Up to 200% Peak Power Capability	• Suitable for Powering Capacitive, Inductive and Thermal Printer Loads
• 10 Year Electrolytic Capacitor Lifetimes	• Improved Field Life
• Convection Cooled	• Reduced Dirt and Dust Contamination
• 5 year Warranty	• Low Cost of Ownership

Model Selector							
Model	Output Voltage (V)	Adjustment Range (V)	Maximum Current (A)	Maximum Output Power (W)	Peak Current (A)	Peak Power (W) <sup>(1)</sup>	Efficiency (Typ) (%) (100/200Vac)
ZWS150BP-24	24	21.6 - 26.4	6.3	151.2	12	288	87 / 90
ZWS240BP-24	24	21.6 - 26.4	10	240	20	480	88 / 91
ZWS150BP-36	36	32.4 - 39.6	4.2	151.2	8	288	87 / 90
ZWS240BP-36	36	32.4 - 39.6	6.7	241.2	13.4	482.4	88 / 91
ZWS150BP-48	48	39.6 - 52.8	3.2	153.6	6	288	87 / 90
ZWS240BP-48	48	39.6 - 52.8	5	240	10	480	88 / 91

<b>ZWS</b>	<b>240</b>	<b>BP</b>	<b>-</b>	<b>24</b>	<b>/</b>
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Nominal power:  
150, 240

Output voltage:  
24, 36, 48

Suffix	Description	Models
Blank	Open frame, JST connectors	ZWS150 - 240BP
/A	L-bracket, cover, JST connectors	ZWS150 - 240BP
/L	L-bracket, JST connectors	ZWS150 - 240BP
/CO2	Double sided PCB coating	ZWS150 - 240BP
/R	Remote on/off	ZWS150 - 240BP
/T	Screw terminal connections	ZWS240BP
/TA	Screw terminals, L bracket & cover	ZWS240BP

Preferred option

Option combinations are available, please contact your local sales office

Specifications			
Model	ZWS150BP		ZWS240BP
<b>Input</b>			
Input Voltage range <sup>(2)</sup>	Vac	85 - 265	
Input Frequency	Hz	47 - 63	
DC Input Voltage Range <sup>(3)</sup>	Vdc	120 - 370	
Input Current (100/200Vac)	A	1.9 / 0.95	2.8 / 1.5
Inrush Current at 200Vac (typ) (Cold Start)	A	30	
Leakage Current	mA	<0.5	
Power Factor (100/200Vac)	-	0.98/0.93	
Harmonic Compliance	-	Meets IEC61000-3-2	
Hold Up Time (typ) at 100Vac, 100% load	ms	20	
Efficiency	-	See Model Selector Table	
Conducted & Radiated EMI	-	EN55011 / EN55032-B, FCC-B, VCCI-B	
Immunity	-	IEC61000-6-2, EN61000-4-2, -3, -4, -5, -6, -8, -11	
Insulation Class	-	Class I	
Safety Certifications and Markings	-	IEC/UL/CSA/EN62368-1, 60950-1, EN50178 (OV II), CE Mark and UKCA Mark	

Immunity				
Test	Standard	Test Level	Criteria	Notes
ESD	EN61000-4-2	Air ± 8kV and contact ± 4kV	A	See IEC61000 immunity test report on website
Radiated Susceptibility	EN61000-4-3	80M -1GHz: 10V/m 1.4 - 2.0GHz: 3V/m 2.0 - 2.7GHz: 1V/m	A	
Electrical Fast Transient Burst	EN61000-4-4	± 2kV	A	
Surge	EN61000-4-5	Normal ± 2kV Common ± 4kV	A	
Conducted Susceptibility	EN61000-4-6	10Vrms	A	
Magnetic Fields	EN61000-4-8	30A/m	A	
Voltage Dips	EN61000-4-11	30% 500ms	B	
		60% 200ms	B	
		100% 20ms	B	
		100% 5000ms	B	

Specifications			
Model	ZWS150BP		ZWS240BP
<b>Output</b>			
Output Voltage Adjustment	-	See Model Selector Table	
Switching Frequency (Main converter)	kHz	120	
Line Regulation	mV	24V: 96, 36V: 144, 48V: 192	
Load Regulation	mV	24V: 192, 36V: 288, 48V: 384	
External Load Capacitance	-	Not applicable	
Ripple & Noise	mV	24V: 240, 36V: 360, 48V: 480	
Temperature Coefficient	%/°C	0.02	
Minimum Load	-	No minimum load required	
Overcurrent Protection	%	>101 of peak current capability (constant current style)	
Overvoltage Protection	V	24V: 28.8 - 33.6, 36V: 41.4 - 48.6, 48V: 55.2 - 64.8	
Remote Sense	-	-	
Remote On/Off	-	Optional, see part numbering scheme	
Parallel Operation	-	Not possible	

Specifications			
Model		ZWS150BP	ZWS240BP
<b>Environmental</b>			
Operating Temperature <sup>(4)</sup> (Convection Cooling)	°C	ZWS150BP: -10 to +70, derate linearly from 100% to 50% load from 50 to 70 ZWS240BP: -10 to +70, derate linearly from 100% to 30% load from 50 to 70	
Operating Temperature <sup>(4)</sup> (Forced Air Cooling)	°C	ZWS150BP: -10 to +70, derate linearly from 100% to 70% load from 60 to 70 ZWS240BP: -10 to +70, derate linearly from 100% to 70% load from 60 to 70	
Storage Temperature	°C	-30 to +75	
Humidity (non condensing)	%RH	30 - 90 Operating, 10 - 90 storage	
Cooling	-	Convection. (Forced air will reduce derating at high ambient temperatures)	
Altitude	m	3,000	
Withstand Voltage (For 1 minute)	Vac	Input to Ground 2,000, Input to Output 3,000, Output to Ground 500 for 1 minute	
Isolation Resistance	MΩ	>100 at 25°C, 70%RH & 500VDC	
Vibration (Non operating)	-	10-55Hz (Sweep for 1min.) 19.6m/s <sup>2</sup> Constant X,Y,Z 1 hour each	
Shock (Non operating)	-	Less than 196m/s <sup>2</sup>	
<b>Other</b>			
Weight (Typ) (Open frame models)	g	360	520
Size (LxWxH) (Open frame models)	mm	160 x 75 x 37	180 x 84 x 42
Size (LxWxH) (Open frame models)	Inches	6.3 x 2.95 x 1.46	7.09 x 3.31 x 1.65
Connectors	-	JST or optional screw terminals for ZWS240BP, see part numbering scheme	
MTBF - JEITA RCR-9102B(5)	Hours	217,836	197,152
Warranty	Years	5	

Notes:

See website for detailed specifications, test methods and installation manual

- (1) See instruction manual for peak power and duty cycle information. Average power not to exceed maximum power ratings
- (2) Derate linearly to 80% load from 90 to 85Vac input
- (3) Safety certified for AC input only
- (4) See Instruction manual for further details and mounting orientations
- (5) Component count method, ground fixed. Note the JEITA RCR-9102B calculation method produces figures significantly lower than Telcordia

Outline Drawing ZWS150BP (Open Frame)

LEAD CUT LESS THAN 3mm

NAME PLATE SEE NOTE B

4--SEE NOTE A

(5)

75±1

65±0.5

SEE NOTE C

INPUT

CN1

OUTPUT

CN51

CN52

VR51

SEE NOTE E (OPTION MODEL)

VOLTAGE ADJUSTMENT

(4)

(19)

34±1

5

(33)

5

SEE NOTE D

(155)

150±0.5

160±1

COMPONENT SIDE

CONNECTORS USED:

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
PIN HEADER (INPUT SIDE CN1)	B3P5-VH	JST	1
PIN HEADER (OUTPUT SIDE CN51)	B6P-VH	JST	1

\*OUTPUT CURRENT OF EACH CONNECTOR PIN MUST BE LESS THAN 5A.

MATCHING HOUSINGS, PINS & TOOL (NOT INCLUDED WITH THE PRODUCT):

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
SOCKET HOUSING (CN1)	VHR-5N	JST	1
SOCKET HOUSING (CN51)	VHR-6N	JST	1
TERMINAL PINS	SVH-21T-P1.1	JST	9
	BVH-21T-P1.1	JST	
HAND CRIMPING TOOL	YC-160R	JST	-

NOTES:

A: 4-∅3.5 HOLES ARE FOR CUSTOMER'S CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.

B: MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT, COUNTRY OF MANUFACTURE AND SAFETY MARKING(FOR ONLY APPROVED PRODUCTS) ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.

C: ⚡ IS PROTECTIVE BONDING TERMINAL.

D: TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PCB EDGE AND CUSTOMER'S CHASSIS.

E: OPTION MODEL(ZWS150BP-\*/R)  
 REMOTE ON/OFF CONTROL CONNECTOR (CN52) : B2B-XH-AM (JST)  
 MATCHING HOUSING : XHP-2 (JST)  
 MATCHING TERMINAL : BXH-001T-P0.6 (JST) OR SXH-001T-P0.6 (JST)  
 HAND CRIMPING TOOL : YC-110R (JST) OR YRS-110 (JST)  
 MATCHING HOUSING AND TERMINAL --- NOT INCLUDED WITH THE PRODUCT

Outline Drawing ZWS150BP/A

SEE NOTE D

SEE NOTE B

(19)

SEE NOTE A

SEE NOTE B

SEE NOTE B

VOLTAGE ADJUSTMENT

43

85±1

35±0.5

55±0.5

(38)

NAME PLATE

SEE NOTE C

(49)

(24)

176±0.5

188±1

6

15

20

25

15

6

176±0.5

SEE NOTE B

SEE NOTE A

NOTES:

A: 14 CHBOSSED TAPPED & COUNTERSINK HOLES (6) ARE FOR CUSTOMER'S CHASSIS MOUNTING.

B: 4-∅5 HOLES (3) AND R2.25 SLOT HOLES (2) ARE FOR CUSTOMER'S CHASSIS MOUNTING HOLES.

C: MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT, COUNTRY OF MANUFACTURE AND SAFETY MARKING(FOR ONLY APPROVED PRODUCTS) ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.

D: ⚡ IS PROTECTIVE BONDING TERMINAL.

CONNECTORS USED:

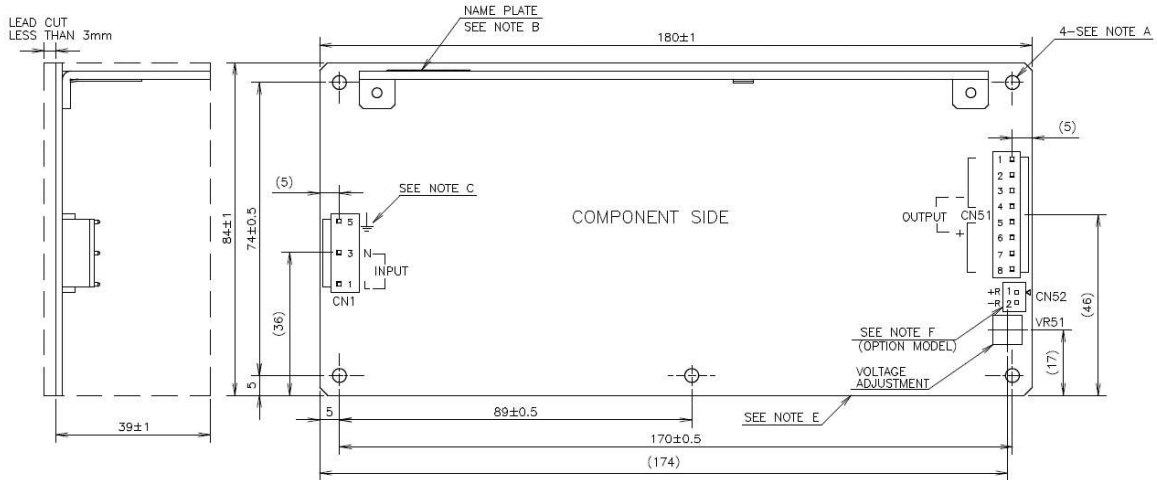
PART DESCRIPTION	PART NAME	MANUFACT.	QTY
PIN HEADER (INPUT SIDE CN1)	B3P5-VH	JST	1
PIN HEADER (OUTPUT SIDE CN51)	B6P-VH	JST	1

\*OUTPUT CURRENT OF EACH CONNECTOR PIN MUST BE LESS THAN 5A.

MATCHING HOUSINGS, PINS & TOOL (NOT INCLUDED WITH THE PRODUCT):

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
SOCKET HOUSING (CN1)	VHR-5N	JST	1
SOCKET HOUSING (CN51)	VHR-6N	JST	1
TERMINAL PINS	SVH-21T-P1.1	JST	9
	BVH-21T-P1.1	JST	
HAND CRIMPING TOOL	YC-160R	JST	-

## Outline Drawing ZWS240BP (Open Frame)



**CONNECTORS USED:**

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
PIN HEADER (INPUT SIDE CN1)	B3P5-VH	JST	1
PIN HEADER(OUTPUT SIDE CN51)	B8P-VH	JST	1

\*OUTPUT CURRENT OF EACH CONNECTOR PIN MUST BE LESS THAN 5A.

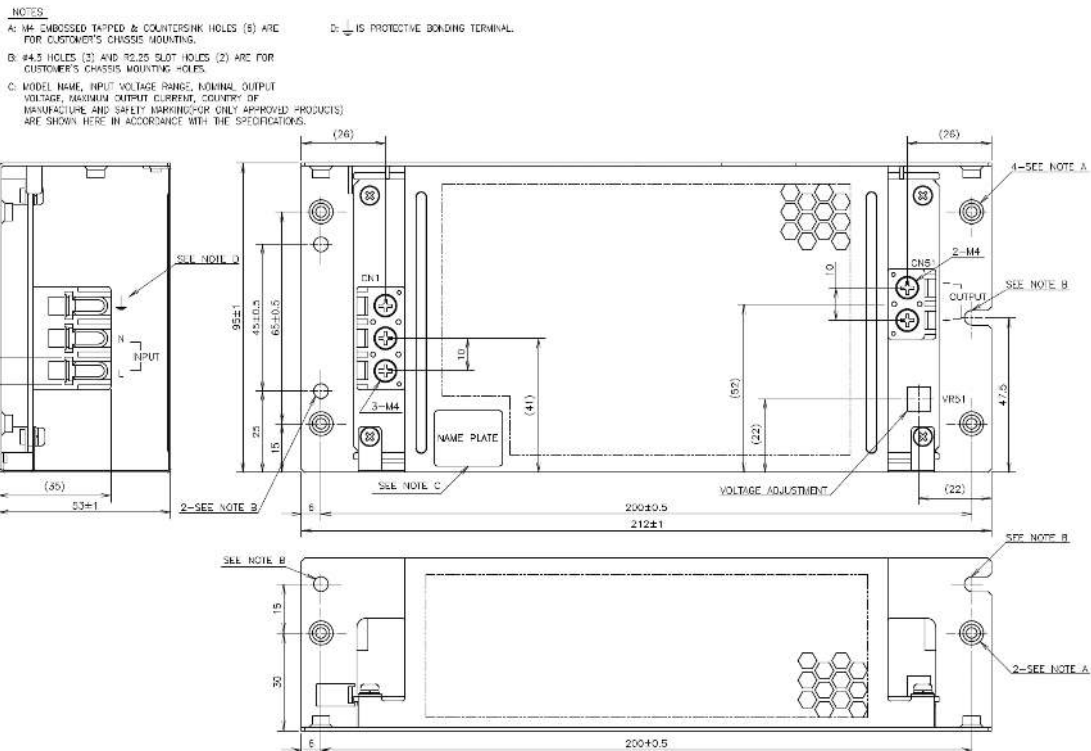
**MATCHING HOUSINGS, PINS & TOOL (NOT INCLUDED WITH THE PRODUCT):**

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
SOCKET HOUSING (CN1)	VHR-SN	JST	1
SOCKET HOUSING (CN51)	VHR-BN	JST	1
TERMINAL PINS	SVH-21T-P1.1 BVH-21T-P1.1	JST	11
HAND CRIMPING TOOL	YC-160R	JST	-

**NOTES**

- A: 4- $\phi$ 3.5 HOLES ARE FOR CUSTOMER'S CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.
- B: MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT, COUNTRY OF MANUFACTURE AND SAFETY MARKING(FOR ONLY APPROVED PRODUCTS) ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
- C:  $\downarrow$  IS PROTECTIVE BONDING TERMINAL.
- D: TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PCB EDGE AND CUSTOMER'S CHASSIS.
- E: OPTION MODEL(ZWS240BP-\*/R)  
REMOTE ON/OFF CONTROL CONNECTOR (CN52) : B2B-XH-AM (JST)  
MATCHING HOUSING : XHP-2 (JST)  
MATCHING TERMINAL : BXH-001T-P0.6 (JST) OR SXH-001T-P0.6 (JST)  
HAND CRIMPING TOOL : YC-110R (JST) OR YRS-110 (JST)  
MATCHING HOUSING AND TERMINAL --- NOT INCLUDED WITH THE PRODUCT

## Outline Drawing ZWS240BP/TA



- NOTES**
- A: M4 EMBOSSED TAPPED & COUNTERSINK HOLES (8) ARE FOR CUSTOMER'S CHASSIS MOUNTING.
  - B:  $\phi$ 4.5 HOLES (3) AND  $\phi$ 2.25 SLOT HOLES (2) ARE FOR CUSTOMER'S CHASSIS MOUNTING HOLES.
  - C: MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT, COUNTRY OF MANUFACTURE AND SAFETY MARKING(FOR ONLY APPROVED PRODUCTS) ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
  - D:  $\downarrow$  IS PROTECTIVE BONDING TERMINAL.

[Click here for other outline drawings and technical information](#)



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