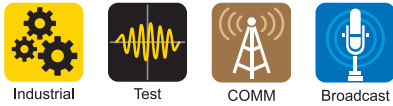
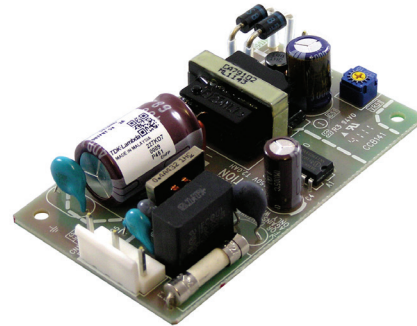


6.6 to 30W Single Output, High Reliability Power Supplies



The ZWS-B 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, machinery, semiconductor fabrication and test and measurement equipment manufacturers depend upon the ZWS-B to provide a reliable source of power. Conservatively rated electrolytic capacitor temperatures offer improved field life-times of up to 10 years. Available in three power levels, 10W, 15W and 30W, the series provides a choice of 3.3 to 24V outputs. L bracket and cover mechanical configurations are available, in addition to a double sided board coating option.

| Features | Benefits |
|--|---------------------------------------|
| • 10 Year Electrolytic Capacitor Lifetimes | • Improved Field Life |
| • Convection Cooled | • Reduced Dirt and Dust Contamination |
| • Curve B Radiated and Conducted EMI | • Easier System Compliance |
| • 5 year Warranty | • Low Cost of Ownership |

| Model Selector | | | | | | | | |
|----------------|--------------------|----------------------|---------------------|--------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------------|
| Model | Output Voltage (V) | Adjustment Range (V) | Maximum Current (A) | Maximum Output Power (W) | Maximum Ripple & Noise (mV) | Over Current Protection (A) | Over Voltage Protection (V) | Efficiency (Typ) (%) (100/200Vac) |
| ZWS10B-3 | 3.3 | 2.97-3.63 | 2 | 6.6 | 120 | >2.1 | 4.0-5.25 | 70 / 70 |
| ZWS15B-3 | 3.3 | 2.97-3.63 | 3 | 9.9 | 120 | >3.15 | 4.0-5.25 | 70 / 71 |
| ZWS30B-3 | 3.3 | 2.97-3.63 | 6 | 19.8 | 120 | >6.3 | 4.0-5.25 | 75 / 77 |
| ZWS10B-5 | 5 | 4.5-5.5 | 2 | 10 | 120 | >2.1 | 5.75-7.0 | 77 / 78 |
| ZWS15B-5 | 5 | 4.5-5.5 | 3 | 15 | 120 | >3.15 | 5.75-7.0 | 76 / 78 |
| ZWS30B-5 | 5 | 4.5-5.5 | 6 | 30 | 120 | >6.3 | 5.75-7.0 | 80 / 82 |
| ZWS10B-12 | 12 | 10.8-13.2 | 0.9 | 10.8 | 150 | >0.95 | 13.8-16.2 | 82 / 83 |
| ZWS15B-12 | 12 | 10.8-13.2 | 1.3 | 15.6 | 150 | >1.37 | 13.8-16.2 | 80 / 83 |
| ZWS30B-12 | 12 | 10.8-13.2 | 2.5 | 30 | 150 | >2.63 | 13.8-16.2 | 84 / 86 |
| ZWS10B-15 | 15 | 13.5-16.5 | 0.7 | 10.5 | 150 | >0.74 | 17.3-20.3 | 83 / 84 |
| ZWS15B-15 | 15 | 13.5-16.5 | 1 | 15 | 150 | >1.05 | 17.3-20.3 | 81 / 84 |
| ZWS30B-15 | 15 | 13.5-16.5 | 2 | 30 | 150 | >2.1 | 17.3-20.3 | 85 / 87 |
| ZWS10B-24 | 24 | 21.6-26.4 | 0.5 | 12 | 150 | >0.53 | 27.6-32.4 | 84 / 85 |
| ZWS15B-24 | 24 | 21.6-26.4 | 0.7 | 16.8 | 150 | >0.74 | 27.6-32.4 | 82 / 85 |
| ZWS30B-24 | 24 | 21.6-26.4 | 1.3 | 31.2 | 150 | >1.37 | 27.6-32.4 | 86 / 88 |

| ZWS | 30 | -B | - | 3 | / | | | | | | | | | | | |
|------------|------------------------------|-----------|----------|--|----------|--|--------|-------------|-------|------------|----|-------------------|----|-----------|------|--------------------------|
| | Nominal power: 10, 15, 30 | | | Output voltage: 3 (3.3V), 5, 12, 15, 24 | | | | | | | | | | | | |
| | | | | | | <table border="1"> <thead> <tr> <th>Suffix</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>Blank</td><td>Open frame</td></tr> <tr><td>/A</td><td>L-bracket & cover</td></tr> <tr><td>/L</td><td>L-bracket</td></tr> <tr><td>/CO2</td><td>Double sided PCB coating</td></tr> </tbody> </table> | Suffix | Description | Blank | Open frame | /A | L-bracket & cover | /L | L-bracket | /CO2 | Double sided PCB coating |
| Suffix | Description | | | | | | | | | | | | | | | |
| Blank | Open frame | | | | | | | | | | | | | | | |
| /A | L-bracket & cover | | | | | | | | | | | | | | | |
| /L | L-bracket | | | | | | | | | | | | | | | |
| /CO2 | Double sided PCB coating | | | | | | | | | | | | | | | |

Option combinations are available, please contact your local sales office

| Specifications | | | | |
|---|--------|---|---|---------------------------------------|
| Model | ZWS10B | | ZWS15B | ZWS30B |
| Input | | | | |
| Input Voltage range ⁽¹⁾ | Vac | 85 - 265 | | |
| Input Frequency | Hz | 47 - 63 | | |
| DC Input Voltage Range ⁽²⁾ | Vdc | 120 - 370 | | |
| Input Current (100/200Vac) | A | 3.3V: 0.18 / 0.11 5-24V: 0.25 / 0.13 | 3.3V: 0.24 / 0.15 5-48V: 0.34 / 0.17 | 3.3V: 0.5 / 0.3 5-48V: 0.65 / 0.35 |
| Inrush Current at 200Vac (typ) (Cold Start) | A | 30 | | |
| Leakage Current (230Vac 60Hz) | mA | <0.3 | | |
| No Load Power Consumption | W | <0.5 | | |
| 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 (See immunity table) | | |
| 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 | ZWS10B | | ZWS15B | ZWS30B |
| Output | | | | |
| Output Voltage Adjustment | - | See Model Selector Table | | |
| Switching Frequency | kHz | 100 | | |
| Line Regulation | mV | 3.3-5V: 20, 12V: 48, 15V: 60, 24V: 96 | | |
| Load Regulation | mV | 3.3-5V: 40, 12V: 96, 15V: 120, 24V: 150 | | |
| External Load Capacitance | uF | 3.3/5V: 10,000, 12V: 2,000, 15V:1,400, 24V: 300 | 3.3/5V: 10,000, 12V: 2,500, 15V:1,000, 24V: 500 | 3.3/5V: 10,000, 12V: 2,700, 15V:1,500, 24V: 600 |
| Ripple & Noise | - | See Model Selector Table | | |
| Temperature Coefficient | %/°C | 0.02 | | |
| Minimum Load | - | No minimum load required | | |
| Overcurrent Protection | - | See Model Selector Table | | |
| Overvoltage Protection | V | See Model Selector Table | | |
| Remote Sense | - | - | | |
| Remote On/Off | - | - | | |
| Parallel Operation | - | Not possible | | |

| Specifications | | | | |
|---|--------|--|---|---|
| Model | | ZWS10B | ZWS15B | ZWS30B |
| Environmental | | | | |
| Operating Temperature ⁽³⁾ (Convection Cooling, Horizontal Mounting) | °C | -10 to +70, derate from 100% to 20% load from 50 to 70 | -10 to +70, derate from 100% to 40% load from 50 to 70 | -10 to +70, derate from 100% to 20% load from 50 to 70 |
| Operating Temperature ⁽³⁾ (Forced Air Cooling, 0.7m/s) | °C | -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 - 95 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 | | |
| Isolation Resistance | MΩ | >100 at 25°C, 70%RH & 500VDC | | |
| Vibration (Non operating) | - | 10-55Hz (Sweep for 1min.) 19.6m/s ² Constant X,Y,Z 1 hour each | | |
| Shock (Non operating) | - | Less than 196m/s ² | | |
| Other | | | | |
| Weight (Typ) (Open frame models) | g | 45 | 55 | 105 |
| Size (LxWxH) (Open frame models) | mm | 73.5 x 50 x 22 | 87.5 x 50 x 22 | 105 x 50 x 26 |
| Size (LxWxH) (Open frame models) | Inches | 2.89 x 1.97 x 0.87 | 3.44 x 1.97 x 0.87 | 4.13 x 1.97 x 1.02 |
| Connectors | - | JST | | |
| MTBF - JEITA RCR-9102B ⁽⁴⁾ | Hours | 433,084 | 399,466 | 336,105 |
| Warranty | Years | 5 | | |

Notes:

See website for detailed specifications, test methods and installation manual

(1) Derate linearly to 90% load from 90 to 85Vac input

(2) Safety certified for AC input only

(3) See Instruction manual for further details and mounting orientations

(4) Component count method, ground fixed. Note the JEITA RCR-9102B calculation method produces figures significantly lower than Telcordia

Outline Drawing ZWS10B (Open Frame)

4mm max(Surface Mount Device)

PCB t=1.6mm

18±1

50±1

40±0.5

5

(4)

5

63.5±0.5

SEE NOTE D

SEE NOTE B,C

NAME PLATE

COMPONENT SIDE

INPUT

1

3

5

OUTPUT

1

2

CN51(CN2)

VR51

(68.5)

(6)

(27)

(18)

SEE NOTE A

73.5±1

SEE NOTE E

CONNECTORS USED:

| PART DESCRIPTION | PART NAME | MANUFACT. | QTY |
|-----------------------------------|-----------|-----------|-----|
| PIN HEADER (INPUT SIDE CN1) | B3P5-VH | JST | 1 |
| PIN HEADER(OUTPUT SIDE CN51(CN2)) | B2P-VH | JST | 1 |

MATCHING HOUSINGS AND PINS(NOT INCLUDED WITH THE PRODUCT):

| | | | |
|----------------------------|--------------|-----|---|
| SOCKET HOUSING (CN1) | VHR-5N | JST | 1 |
| SOCKET HOUSING (CN51(CN2)) | VHR-2N | JST | 1 |
| TERMINAL PINS | SVH-21T-P1.1 | JST | 5 |

HAND CRIMPING TOOL : YC-160R CN1,CN51(CN2) MANUFACTURER : JST

NOTES

A: THE 2- ϕ 3.5 HOLE ARE CUSTOMER CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.

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

C: COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.

D: \downarrow IS PROTECTIVE BONDING TERMINAL.

E: TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.

Outline Drawing ZWS15B (Open Frame)

4mm max(Surface Mount Device)

PCB t=1.6mm

18±1

50±1

40±0.5

5

(4)

5

77.5±0.5

SEE NOTE D

SEE NOTE B,C

NAME PLATE

COMPONENT SIDE

INPUT

1

3

5

OUTPUT

1

2

CN51

VR51

(82.5)

(4.5)

(32)

(17)

SEE NOTE A

87.5±1

SEE NOTE E

CONNECTORS USED:

| PART DESCRIPTION | PART NAME | MANUFACT. | QTY |
|------------------------------|-----------|-----------|-----|
| PIN HEADER (INPUT SIDE CN1) | B3P5-VH | JST | 1 |
| PIN HEADER(OUTPUT SIDE CN51) | B2P-VH | JST | 1 |

MATCHING HOUSINGS AND PINS(NOT INCLUDED WITH THE PRODUCT):

| | | | |
|-----------------------|--------------|-----|---|
| SOCKET HOUSING (CN1) | VHR-5N | JST | 1 |
| SOCKET HOUSING (CN51) | VHR-2N | JST | 1 |
| TERMINAL PINS | SVH-21T-P1.1 | JST | 5 |

HAND CRIMPING TOOL : YC-160R CN1,CN51 MANUFACTURER : JST

NOTES

A: THE 2- ϕ 3.5 HOLE ARE CUSTOMER CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.

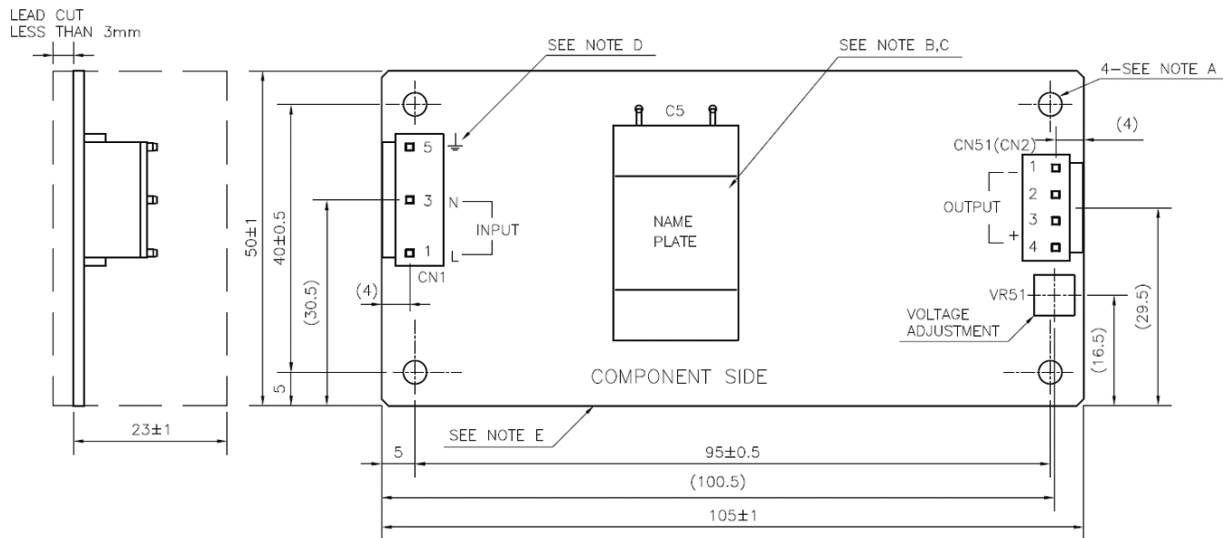
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C: COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.

D: \downarrow IS PROTECTIVE BONDING TERMINAL.

E: TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.

Outline Drawing ZWS30B (Open Frame)



CONNECTORS USED:

| PART DESCRIPTION | PART NAME | MANUFACT. | QTY |
|-----------------------------------|-----------|-----------|-----|
| PIN HEADER (INPUT SIDE CN1) | B3P5-VH | JST | 1 |
| PIN HEADER(OUTPUT SIDE CN51(CN2)) | B4P-VH | JST | 1 |

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

MATCHING HOUSINGS AND PINS(NOT INCLUDED WITH THE PRODUCT):

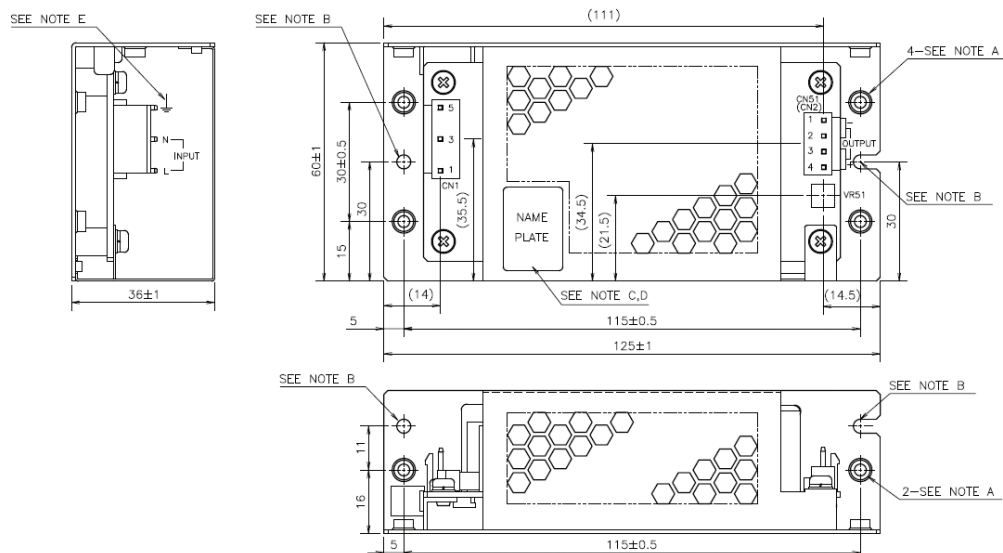
| | | | |
|----------------------------|--------------|-----|---|
| SOCKET HOUSING (CN1) | VHR-5N | JST | 1 |
| SOCKET HOUSING (CN51(CN2)) | VHR-4N | JST | 1 |
| TERMINAL PINS | SVH-21T-P1.1 | JST | 7 |

HAND CRIMPING TOOL : YC-160R CN1,CN51(CN2) MANUFACTURER : JST

NOTES

- A: THE 4- ϕ 3.5 HOLE ARE CUSTOMER CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.
- B: MODEL NAME, MAXIMUM OUTPUT POWER, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT AND SAFETY MARKING(FOR ONLY APPROVED PRODUCTS) ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
- C: COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.
- D: \downarrow IS PROTECTIVE BONDING TERMINAL.
- E: TO KEEP THE DISTANCE MORE THAN 4mm BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.

Outline Drawing ZWS30B/A



CONNECTORS USED:

| PART DESCRIPTION | PART NAME | MANUFACT. | QTY |
|------------------------------------|-----------|-----------|-----|
| PIN HEADER (INPUT SIDE CN1) | B3P5-VH | J.S.T. | 1 |
| PIN HEADER (OUTPUT SIDE CN51(CN2)) | B4P-VH | J.S.T. | 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 | J.S.T. | 1 |
| SOCKET HOUSING (CN51(CN2)) | VHR-4N | J.S.T. | 1 |
| TERMINAL PINS | SVH-21T-P1.1 | J.S.T. | 7 |
| HAND CRIMPING TOOL | YC-160R | J.S.T. | - |

NOTES

- A: M3 EMBOSSED TAPPED & COUNTERSINK HOLES (6) ARE FOR CUSTOMER'S CHASSIS MOUNTING.
- B: ϕ 3.5 HOLES (2) AND R1.75 SLOT HOLES (2) ARE FOR CUSTOMER'S CHASSIS MOUNTING.
- C: MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, MAXIMUM OUTPUT CURRENT AND SAFETY MARKING(FOR ONLY APPROVED PRODUCTS) ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
- D: COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.
- E: \downarrow IS PROTECTIVE BONDING TERMINAL.



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<https://product.tdk.com/en/power/>

