## Scope

This specification applies to built－in DC stabilized power supply，OZP－200－3R3－＊＊E＊－＊and OZP－200－5－＊＊E＊－＊．
This power supply provides DC output at AC input instantaneous power failure by connecting dedicated capacitor package（DC output 380V）
In addition，all items in this specification shall be provided at normal temperature and humidity unless otherwise specified．

## Model name coding

Example：$\frac{\mathrm{OZ}}{(1)} \quad \frac{\mathrm{P}}{(2)}-\frac{\mathbf{2 0 0}}{(3)}-\frac{\mathbf{5}}{(4)}-\frac{\mathrm{J}}{(5)} \quad \frac{\mathrm{S}}{(6)} \frac{\mathrm{E}}{(7)}-\frac{-\mathrm{C}}{(9)}$
（1）Series name $\cdots \cdots$. ＂ OZ ＂： OZ series
（2）Peak power $\cdots \cdots$ ．＂P＂：Corresponding to Peak power
（3）Continuous output power …．＂200＂： 200 W
（4）Output voltage..... ＂ 3 R 3 ＂： 3.3 V ，＂ 5 ＂： 5 V
（5）Input／Output connector type $\cdots . .$. ＂ J ＂：Nylon connector，＂T＂：Harmonica Terminal block
（6）Current balance function …．＂ 0 ＂：W／O current balance function，＂ S ＂：With current balance function
（7）Low standby power consumption…．．＂E＂：Low standby power consumption type
（8）Modification ．．．．．．＂（Blank）＂：Standard，＂ 1 to 9 ＂or＂A to $Z$＂：Modification symbol
（9）Chassis $\cdots . .$. ＂C＂：With Chassis，＂K＂：With Chassis and Cover，＂Blank＂：W／O Chassis and Cover

| General specification |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Items |  |  | Specification |  | Measurement conditions，etc． |
|  |  |  | OZP－200－3R3 | OZP－200－5 |  |
| Rated voltage |  |  | 100－240 VAC |  | Worldwide range |
| Voltage range |  |  | 85－264 VAC |  | Load factor shall be 90 to $100 \%$ at 85 － 95 VAC range． |
| $\begin{aligned} & \stackrel{\rightharpoonup}{3} \\ & \frac{3}{3} \\ & \frac{3}{4} \end{aligned}$ | Current | At 100 VAC | 1．7A typ． | 2．4A typ． | At rated output（Natural air cooling） |
|  |  |  | 1．9A typ． | 2.8 A typ． | At rated output（Forced air cooling） |
|  |  | At 200VAC | 0．9A typ． | 1.2 A typ． | At rated output（Natural air cooling） |
|  |  |  | 1．0A typ． | 1．4A typ． | At rated output（Forced air cooling） |
|  | Rated frequency |  | $50 / 60 \mathrm{~Hz}$ |  | Frequency range： 47 to 63 Hz |
|  | Inrush current | At 100VAC | 17A typ． |  | Power thermistor system Continuous rated output power with cold start at $25^{\circ} \mathrm{C}$ |
|  |  | At 200VAC | 34A typ． |  |  |
|  | Efficiency | At 100 VAC | 82\％typ． | 85\％typ． | At rated output（Natural air cooling） |
|  |  | At 200VAC | 85\％typ． | 88\％typ． |  |
|  | Power factor | At 100VAC | 99\％typ． |  | At rated output |
|  |  | At 200VAC | 92\％typ． | 94\％typ． |  |
|  | No－load power | At 100 VAC | 1.3 W typ． |  | Power consumption at No－load |
|  |  | At 200VAC | 1．3W typ． |  |  |
|  | Standby power | At 100VAC | 60 mW typ． |  | Power consumption at RC signal OFF |
|  |  | At 200VAC | 200 mW typ． |  |  |
| Note |  |  |  |  | (株)二プロン・技管 |


|  | ishib <br> ashi |  | Yamad <br> a | 方 | yamam oto | $\begin{aligned} & \text { Model } \\ & \text { OZP-200-3R3-**E*_* } \\ & \text { OZP-200-5-**E*_* } \end{aligned}$ | Drawing No $3165-01-4-520$ <br> $1 / 11$ |
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| Items |  |  | Specification |  |  |  | Measurement conditions，etc． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | OZP－200－3R3 |  |  | OZP－200－5 |  |
| $\begin{aligned} & \text { 罗 } \\ & 0 \\ & 0 \\ & 0 \\ & 0 \\ & 0 \\ & 0 \end{aligned}$ | Operating temp． | Natural air cooling | -10 to $60^{\circ} \mathrm{C}$（Open frame single body） |  |  |  | Refer to <br> ＂Output derating specification．＂ |
|  |  |  | -10 to $55^{\circ} \mathrm{C}$（With Chassis and Cover） |  |  |  |  |
|  |  | Forced air cooling | -10 to $70^{\circ} \mathrm{C}$（Open frame single body） |  |  |  | Refer to <br> ＂Output derating specification．＂ |
|  |  |  |  | to $70^{\circ} \mathrm{C}$ | ith Cl |  |  |
|  | Operating humidity |  | $20-90 \% \mathrm{RH}$ |  |  |  |  |
|  | Storage temp．／Humidity |  | -20 to $75^{\circ} \mathrm{C} / 10$ to $95 \% \mathrm{RH}$ |  |  |  | There shall be no condensation． |
|  | Vibration |  | To endure the vibration acceleration of 2 G with vibration frequency of 10 to 55 Hz for 10 sweep cycles in each $\mathrm{X}-\mathrm{Y}-\mathrm{Z}$ direction． |  |  |  | To follow JIS－C－60068－2－6 <br> at no operation <br> However，1G for mounting only with heat releasing fin． |
|  | Surface dr | ping |  | one bott osite edge eat 3 tim function | m edg <br> placed <br> for <br> all be | with the et it fall． and no | To follow JIS－C－60068－2－31 at no operation |
| 帚 | Dielectric strength |  | 3 kVAC for 1min．between Input and Output／RC／AC＿FAIL |  |  |  | Cut－off current： 10 mA |
|  |  |  | 2 kVAC for 1 min ．between Input and FG |  |  |  | Cut－off current： 10 mA |
|  |  |  | 500 VAC for 1 min ．between Output／RC／AC＿FAIL／FG |  |  |  |  |
|  | Insulation resistance |  | $50 \mathrm{M} \Omega$ min．between Input／Output／RC／AC FAIL／FG |  |  |  | With 500 VDC |
|  | Leakage current |  | Refer to page． 8 |  |  |  |  |
| $\begin{aligned} & \stackrel{O}{\underset{F}{6}} \\ & \underset{\sim}{6} \end{aligned}$ | Electrostatic discharge |  | IEC61000－4－2 test level 3 compliant （Contact discharge： $\pm 6 \mathrm{kV}, 10$ times） |  |  |  | Apply to FG，Chassis or Cover． There shall be no malfunction |
|  | Line noise immunity |  | $\pm 2000 \mathrm{~V}$（Pulse width of $100 / 1000 \mathrm{nS}$ ，cycle period of 30 to 100 Hz ，Normal／Common mode with Positive／Negative polarity for 10 minutes） |  |  |  | To be measured with INS－410． There shall be no output voltage fluctuation in DC component nor malfunction |
|  | Impulse voltage immunity |  | IEC－61000－4－5（Installation environment Class 3，4） compliant；apply five times each of Common mode $\pm 4 \mathrm{kV}$ and Normal mode $\pm 2 \mathrm{kV}$ |  |  |  | There shall be no malfunction． |
|  | Conducted emission |  | VCCI，FCC，CISPR22，and EN55022 Class B compliant |  |  |  | At rated input and output，with chassis（natural air cooling） |
|  | Harmonic current regulations |  | IEC61000－3－2（Ed．2．1）Class D，and EN61000－3－2（A14）Class D compliant |  |  |  | At rated input and output |
|  | Safety Standard |  | UL60950－1，CSA60950－1（c－UL）acquired， CE marking，PSE（Ordinance item 2）compliant |  |  |  |  |
|  | Cooling system |  | Natural air cooling |  |  |  |  |
|  | Dimensions and Weight |  | $73 \times 40 \times 222(\mathrm{~W} \times \mathrm{H} \times \mathrm{D}) / 530 \mathrm{~g}$ typ． |  |  |  | Except Chassis and Cover |
|  |  |  | $83.8 \times 51 \times 252(\mathrm{~W} \times \mathrm{H} \times \mathrm{D}) / 830 \mathrm{~g}$ typ． |  |  |  | With Chassis and Cover |
|  | Warranty |  | Three years after delivery：if any defects belong to us，the defective unit shall be repaired or replaced at our cost． |  |  |  | The unit shall be operated at normal temperature and hymidity Except for lifetimderder tic <br>  environment． |
| V | ishib ashi | Yamad a |  | yamam oto | Mode <br> OZP <br> OZP | Drawing 31 | $5-01-4-520$ $2 / 11$ |

Output Specification


|  | $\begin{gathered} \text { ishib } \\ \text { ashi } \end{gathered}$ | ¢ | $\begin{aligned} & \text { Yamad } \\ & a \end{aligned}$ | 亳 | yamam <br> oto | $\begin{aligned} & \text { Model } \\ & \text { OZP-200-3R3-**E*-* } \\ & \text { OZP-200-5-**E*_* } \end{aligned}$ | Drawing No $3165-01-4-520$ <br> 3／11 |
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Signal Input／Output specification


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## －Sequence Timing diagram（W／O capacitor package connected）



## Peak output current specification

Peak output current shall meet the specification below．
－Duty ratio of peak current shall be $45 \%$ or less．
－Energized period of peak current shall be 10 seconds or less．
－In the case that the ambient temperature is $50^{\circ} \mathrm{C}$ or higher with natural air cooling， the energized period of peak current shall be 5 seconds or less．
－The value resulting from the formula below shall not exceed the continuous rated current，Io， after derating specified in＂Output derating＂item．

$$
\sqrt{ }\left(\left(\operatorname{Ip}^{2} \times \mathrm{D}\right)+\left(\operatorname{Im}^{2} \times(1-\mathrm{D})\right)\right) \leqq \mathrm{Io}
$$

$$
\mathrm{Ip}=\text { Peak current value }
$$

$\mathrm{Im}=$ Min．current value
$\mathrm{D}=$ Duty ratio， $\mathrm{t} / \mathrm{T}$
$t=$ Pulse width of peak current
T＝Cycle

$\mathrm{Io}=$ Continuous rated current specified in＂Output derating＂item．
（Note）
In case of temp．of power thermistor for prevention of inrush current will NOT go up enough，such as the amount of average load power is small，（Resistance value is high），output power at peak might drop for about 100 ms ．
If this might cause any problem，please check output voltage waveform equipping and operating the power supply with actual device．


Note

|  | ishib ashi |  | Yamad <br> a | 苞 | yamam oto | $\begin{aligned} & \text { Model } \\ & \text { OZP-200-3R3-**E*_* } \\ & \text { OZP-200-5-**E*_* } \end{aligned}$ | Drawing No $3165-01-4-520$ <br> 5／11 |
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## Output derating based on ambient temperature，installation direction and cooling condition

Follow the derating diagram below for output according to the ambient temperature and installation direction．
In addition，for the unit with chassis and cover，input voltage shall be 90 VAC or higher．Also，forced air cooling condition in the diagram shall be provided that the air blow of $1.5 \mathrm{~m} / \mathrm{s}$ is applied from the direction below．

（F）

（B）

（C）

（D）

（E）


Airflow of forced air cooling



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## Guideline for forced air cooling

Set the core surface temperature of the transformer（T1）to $80^{\circ} \mathrm{C}$ or lower．


## Output derating vs．Input voltage

When input voltage is 95 VAC or lower，follow the derating diagram below to reduce the continuous rated current and power．


When power supply is operated at lower temperature， follow the derating diagram below to reduce the output power for startup．


Note

| 呙 | ishib ashi |  | Yamad <br> a | 菏 | yamam oto | Model <br> OZP－200－3R3－＊＊E＊＿＊ <br> OZP－200－5－＊＊E＊＊＊ | Drawing No $3165-01-4-520$ <br> 7／11 |
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By connecting the outputs of $N$ power supplies in parallel，output capacity＂Rated output x N units $\times 0.9$＂will be obtained． In this case，please beware of the following．（ $\mathrm{N} \leqq 5$ ）

## （Connection）

－Please connect the applicable cable（Model type：WH－02PH02PH－200）between the connectors＂CN13＂or＂CN14＂ on the PCB of both power supplies connected in parallel．By connecting between these connectors，output current balance for each power supply is controlled to be equal．
－Load wires from each power supplies should be wired to make both impedance equal as much as possible．

## （Usage）

－When adjusting the output voltage，set either one of the potentiometer to the minimum（to the leftmost），and adjust the potentiometer of the other power supply．
－When starting up the power supply by AC input，operating waveform of output voltage may be tiered or dropped down（caused by the operation of overcurrent protection circuit）due to dispersion of startup time of the power supplies connected in parallel．It can be prevented by starting up each output at the same time using output ON／OFF control signal of both power supplies connected in parallel．

## （LED indication）

－LED on the PCB light green when main inverter circuit is operating，and blacks out at circuit failure， AC input failure，or at main inverter circuit is stopped，by turning off＂Output ON／OFF control signal＂stops circuit．Also， there may be LED light darken or flickering at output power is with almost no load（about 0.2 A or less），or at pulse load even main inverter circuit is operating．

## （Leakage current）

－Please refer to the below for leakage current value at parallel connecting．


## （Others）

－Because it does not include ORing diode in the output terminal，output power does not remain when one of the power supplies is damaged due to short mode etc．In addition，output power does not remain normally when power supply in operation is connected to the one in shutdown condition in parallel．


Note


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## Circuit block diagram

（．．．．．．．．．．．．． is applied to OZP－200－＊－＊SE＊－＊model only）


Note

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## Power supply installation

To meet the safety standard for insulation and dielectric withstand，install the power supply to keep the dimensions， d 1 ， d 2 ，and d 3 ，shown in the drawings below．
Install the power supply so that natural air convection and air ventilation is expected to keep the temperature rise around the power supply low．


## Mounting screws and grounding of power supply

－Fix all four screws firmly at power supply mounting holes．
－Use 3 mm diameter screws for mounting power supply．
－In mounting，do not use any metal parts that exceed the hatched area shown below．
－In mounting the unit with Chassis and Cover，do not use any screws that exceed the area shown below．
－Make sure to connect FG terminal of CN1 or FG portion of PWB to customer＇s safety grounding．Also，make sure to connect FG terminal of CN 1 to the safety ground of the customer＇s system in the case of safety standard application．
－Be recommended to connect the FG portion of solder face of PWB to customer＇s metal system body with metal parts such as metal spacers to reduce noise．


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|  | ishib ashi |  | Yamad <br> a | 交 | yamam oto | $\begin{aligned} & \text { Model } \\ & \text { OZP-200-3R3-**E*_* } \\ & \text { OZP-200-5-**E*_* } \end{aligned}$ | Drawing No $3165-01-4-520$ <br> $10 / 11$ |
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## Precautions before use

1．Grounding－$\widehat{\Delta}$ Warning
This unit is designed and produced to meet Class 1 equipment．Make sure to connect the grounding terminal of the unit to grounding in a proper way for safety．

2．Electric shock－$\triangle$ Warning
This unit is designed and produced as built－in equipment and has high－voltage part inside．Make sure to securely install in the equipment in a proper way to prevent electric shock．Also，shorting plug（CN2）for RC signal setting and radiating fin next to it are primary circuit components．When the plug is handled，make sure to turn off AC input before the handling of the plug．

3．PWB handling－$\triangle$ Caution
In handling，use the edge of the PWB so as not to touch the component sides．Lift the PWB from the equipment with filter pieces in installation．Besides，handle the PWB with care to prevent twisting or bending of the PC board as it has SMT components on it．

4．Output short circuit－$\widehat{\text { Caution }}$
Prevent shorting outputs．When output is shorted，capacitors inside the power supply rapidly discharge leading to fire and／or spark resulting in serious accident．It also shortens the lifetime of the power supply．

5．Applying external voltage to output terminal－$\triangle$ Caution
Applying external voltage to power supply＇s output terminal，parallel connection of output power without connecting voltage and current balance signal（CN13 or CN14），parallel connection of power supplies with different output（3．3V output and 5 V etc．）may lead to the failure of power supply．

6．Inrush current control circuit－$\triangle$ Caution
To prevent inrush current into rectifying capacitors when AC input is turned on，a power thermistor is used．When AC input is turned on before the temperature of the thermistor goes low after turning off， huge inrush current may occur．Make sure to keep 60 －second period at least before reclosing of AC input．

7．Output energy－$\widehat{\Delta}$ Caution
The output energy of this unit is 240VA or more，and regarded as dangerous．Any operators must not touch the unit．Besides，apply necessary measures to prevent service personnel or service tools to touch accidentally the equipment with this unit installed．Make sure that the output voltage of this unit goes down to the safe level before servicing after the input voltage is turned off．


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