

**General Safety Instructions:**

READ SAFETY INSTRUCTIONS

**Servicing:**

These products are not customer serviceable TDK-Lambda UK LTD and their authorised agents only are permitted to carry out repairs.

**Critical Components:**

These products are not authorised for use as critical components in nuclear control systems, life support systems or equipment for use in hazardous environments without the express written approval of the Managing Director of TDK-Lambda EMEA.

**Product Usage:**

These products are designed for use within a host equipment which restricts access to authorised competent personnel.

This product is a component power supply and is only to be installed by qualified persons within other equipment and must be not operated as a stand alone product.

This product is for sale to business to business customers and can be obtained via distribution channels. It is not intended for sale to end users.

This product is a component power supply and does not fall within the scope of the EMC directive. Compliance with the EMC directive must be considered in the final installation. Please contact your local TDK-Lambda office.

**Environmental:**

These products are IPX0, and therefore chemicals/solvents, cleaning agents and other liquids must not be used.

**Environment:**

This power supply is a switch mode power supply for use in applications within a Pollution Degree 2, overvoltage category II environment. Material Group IIIb PCB's are used within it.

**Output Loading:**

The output power taken from the power supply must not exceed the rating stated on the power supply label, except as stated in the product limitations in this handbook.

**Input Parameters:**

This product must be operated within the input parameters stated in the product limitations in this handbook.

**End of Life Disposal:**

The unit contains components that require special disposal. Make sure that the unit is properly disposed of at the end of its service life and in accordance with local regulations.



RISK OF ELECTRIC SHOCK

**High Voltage Warning:**

Dangerous voltages are present within the power supply. The professional installer must protect service personnel from inadvertent contact with these dangerous voltages in the end equipment.

**WARNING:** When installed in a Class 1 end equipment, this product must be reliably earthed and professionally installed.

The (+) or (-) output(s) can be earthed or left floating.

The unit cover(s)/chassis (where applicable) must not be made user accessible.

The mains input connector is not acceptable for use as field wiring terminals.

For encased products, do not use mounting screws, which penetrate the unit more than; See drawings.

Internal fuses protect the unit and must not be replaced by the user. In case of internal defect, the unit must be returned to TDK-Lambda UK LTD or one of their authorised agents.

A suitable mechanical, electrical and fire enclosure must be provided by the end use equipment for mechanical, electric shock and fire hazard protection.

**Energy Hazards:**

The main output of this product is capable of providing hazardous energy (240VA). Final equipment manufacturers must provide protection to service personnel against inadvertent contact with the output terminals.

The unit cover/chassis, where applicable, is designed to protect skilled personnel from hazards. They must not be used as part of the external covers of any equipment where they may be accessible to operators, since under full load conditions, part or parts of the unit chassis may reach temperatures in excess of those considered safe for operator access.

**Allgemeine Sicherheitsvorschriften:**

LESEN SIE DIE SICHERHEITSVORSCHRIFTEN

**Wartung:**

Diese Produkte können nicht durch den Kunden gewartet werden. Nur TDK-Lambda UK LTD. und deren zugelassene Vertriebshändler sind zur Durchführung von Reparaturen berechtigt.

**Kritische Komponenten:**

Diese Produkte sind nicht für die Verwendung als kritische Komponenten in nuklearen Kontrollsystemen, Lebenserhaltungssystemen oder Geräten in gefährlichen Umgebungen geeignet, sofern dies nicht ausdrücklich und in Schriftform durch den Geschäftsführer von TDK-Lambda EMEA genehmigt wurde.

**Produktverwendung:**

Diese Produkte sind zur Verwendung innerhalb von Host-Anlagen gedacht, die einen auf das Fachpersonal beschränkten Zugang haben.

Dieses Produkt ist eine Stromversorgungs-Komponente und sie darf nur von qualifiziertem Personal in andere Geräte eingebaut werden und sie darf NICHT als eigenständiges ("Stand-Alone") Gerät betrieben werden.

Dieses Produkt ist für den Verkauf an Geschäftskunden entwickelt worden und es kann über Distributionskanäle bezogen werden.

Es ist NICHT für den Verkauf an Endkunden gedacht und konzipiert.

Dieses Produkt ist eine Stromversorgungsbaugruppe und sie fällt NICHT in den Bereich der EMV Direktive.

Die Konformität mit der EMV Richtlinie muss in der finalen Gesamtinstallation betrachtet werden.

Bitte kontaktieren Sie Ihr regionales TDK-Lambda Vertriebsbüro im Falle von Rückfragen.

**Umwelt:**

Diese Produkte sind IPX0, aus diesem Grund dürfen keine Chemikalien/Lösungsmittel, Reinigungsmittel und andere Flüssigkeiten verwendet werden.

**Umgebung:**

Dieses Netzteil ist ein Schaltnetzteil zur Verwendung in einer Umgebung mit einem Verschmutzungsgrad 2, Überspannungskategorie II. Materialgruppe IIIb mit darin verwendeten PCBs.

**Ausgangsstrom:**

Der Ausgangsstrom des Netzteiles darf die Leistung, die auf dem Label des Netzteiles vermerkt ist, nur dann überschreiten, wenn dies in den Produktgrenzen dieses Handbuches ausgezeichnet ist.

**Eingangsparameter:**

Dieses Produkt muss innerhalb der Eingangsparameter, die in den Produktgrenzen dieses Handbuches angegeben sind, betrieben werden.

**Entsorgung am Ende der Betriebszeit:**

Das Gerät enthält Komponenten die unter Sondermüll fallen. Das Gerät muss am Ende der Betriebszeit ordnungsgemäß und in Übereinstimmung mit den regionalen Bestimmungen entsorgt werden.

**GEFAHR DURCH ELEKTRISCHEN SCHLAG****Hochspannungswarnung:**

Innerhalb des Netzteiles gibt es gefährliche Spannungen. Der Elektroinstallateur muss das Wartungspersonal vor versehentlichem Kontakt mit den gefährlichen Spannungen im Endgerät schützen.

**WARNUNG!** Falls Sie unser Netzgerät in eine Anwendung mit Schutzklasse 1 eingebaut haben, stellen Sie sicher, dass es fachgerecht installiert und zuverlässig geerdet ist.

Die (+) oder (-) Ausgänge können geerdet werden oder unangeschlossen bleiben.

Die Abdeckung des Gerätes/das Gehäuse darf für den Benutzer nicht zugänglich sein.

Der Haupteingangsanschluss ist nicht für die Verwendung als Feldverdrahtungsanschluss geeignet.

Für ummantelt Produkte, verwenden Sie keine Schrauben, die das Gerät mehr als durchdringen; siehe Zeichnung. Eine interne Sicherung schützt das Gerät und darf durch den Benutzer nicht ausgetauscht werden. Im Fall von internen Defekten muss das Gerät an TDK-Lambda UK LTD oder einen der autorisierten Vertriebshändler zurückgeschickt werden.

Ein geeignetes mechanisches, elektrisches und brandgeschütztes Gehäuse muss als Schutz vor der Gefahr von mechanischen Risiken, Stromschlägen und Brandschutz in dem Endgerät vorgesehen werden.

**Gefahren durch elektrische Energie:**

Von bestimmten Modulen kann je nach Einstellung der Ausgangsspannung gefährliche elektrische Energie ausgehen (240 VA). Die Endgerätehersteller müssen einen Schutz für Servicepersonal vor unbeabsichtigtem Kontakt mit den Ausgangsanschlüssen dieser Module vorsehen. Kann aufgrund der Einstellung gefährliche elektrische Energie auftreten, dürfen die Modulanschlüsse für den Benutzer nicht zugänglich sein.

Die Geräteabdeckung/das Gehäuse ist so entworfen, dass das Fachpersonal vor Gefahren geschützt wird. Sie dürfen nicht als Teil der externen Abdeckung für Geräte verwendet werden, die für den Betreiber zugänglich sein müssen, da Teile oder das gesamte Gerätegehäuse unter voller Auslastung übermäßige Temperaturen erreichen kann, die für den Zugang des Betreibers nicht mehr als sicher betrachtet werden.

**Consignes générales de sécurité:**

LIRE LES CONSIGNES DE SECURITE

**Entretien:**

Ces produits ne peuvent pas être réparés par l'utilisateur. Seuls, TDK-Lambda UK LTD et ses agents agréés sont autorisés à effectuer des réparations.

**Composants critiques:**

Ces produits ne doivent pas être utilisés en tant que composants critiques dans des systèmes de commande nucléaire, dans des systèmes de sauvetage ou dans des équipements utilisés dans des environnements dangereux, sans l'autorisation écrite expresse du directeur général de TDK-Lambda EMEA.

**Utilisation du produit:**

Ces produits sont conçus pour être utilisés dans un équipement hôte dont l'accès n'est autorisé qu'aux personnes compétentes.

Ce produit est une alimentation considérée comme un composant devant être installé par des personnes qualifiées, dans un autre équipement. Il ne doit pas être utilisé en tant que produit fini.

Ce produit est destiné à la vente entre entreprises et peut être obtenu via des canaux de distribution.

Il n'est pas prévu à la vente pour les particuliers.

Ce produit est une alimentation considérée comme un composant, il ne relève pas du champ d'application de la directive CEM. Le respect de la directive CEM doit être pris en compte dans l'installation finale. Veuillez contacter votre bureau TDK-Lambda le plus proche.

**Environnement:**

Ces produits sont IPX0, et donc on ne doit pas utiliser des produits chimiques/solvants, des produits de nettoyage et d'autres liquides.

**Environnement fonctionnel :**

Cette alimentation fonctionne en mode commutation pour utilisation dans des applications fonctionnant dans un environnement avec Degré de Pollution 2 et catégorie de surtension II. Elle utilise des cartes des circuits imprimés (PCB) de Groupe IIIb.

**Intensité soutirée:**

L'intensité soutirée de l'alimentation ne doit pas dépasser l'intensité nominale marquée sur la plaque signalétique, sauf indications contraires dans les limitations du produit décrit dans ce manuel.

**Paramètres d'entrée:**

Ce produit doit être utilisé à l'intérieur des paramètres d'entrée indiqués dans les limitations du produit dans ce manuel.

**Elimination en fin de vie:**

L'alimentation contient des composants nécessitant des dispositions spéciales pour leur élimination. Vérifiez que cette alimentation est mise au rebut correctement en fin de vie utile et conformément aux réglementations locales en vigueur.



RISQUE DE CHOC ELECTRIQUE

**Attention-Danger haute tension:**

Des tensions dangereuses sont présentes dans l'alimentation. L'installateur doit protéger le personnel d'entretien contre un contact involontaire avec ces tensions dangereuses dans l'équipement final.

**AVERTISSEMENT:** Si ce produit est installé dans un équipement final de classe I, il doit être mis à la terre de manière fiable et installé par un professionnel averti.

Les sorties (+) ou (-) peuvent être raccordées à la terre ou laissées flottantes.

Le couvercle/châssis de l'alimentation ne doit pas être accessible à l'utilisateur. Le connecteur d'entrée d'alimentation principale ne doit pas être utilisé comme borne de raccordement.

N'utilisez pas de vis pénétrant dans le module sur une profondeur supérieure à : Voir dessins.

Un fusible interne protège le module et ne doit pas être remplacé par l'utilisateur. En cas de défaut interne, le module doit être renvoyé à TDK-Lambda UK LTD ou l'un de ses agents agréés.

Une enceinte appropriée doit être prévue par l'utilisateur final pour assurer la protection contre les chocs mécaniques, les chocs électriques et l'incendie.

**Energies dangereuses :**

Certains modules peuvent générer une énergie dangereuse (240 VA) selon le réglage de tension de sortie. Le fabricant de l'équipement final doit assurer la protection des techniciens d'entretien contre un contact involontaire avec les bornes de sortie de ces modules. Si une telle tension dangereuse risque de se produire, les bornes ou les connexions du module ne doivent pas être accessibles par l'utilisateur.

Le couvercle et le châssis du module sont conçus pour protéger des personnels expérimentés. Ils ne doivent pas être utilisés comme couvercles extérieurs d'un équipement, accessible aux opérateurs car en condition de puissance maximum, des parties du châssis peuvent atteindre des températures considérées comme dangereuses pour l'opérateur.

**Norme generali di sicurezza:**

SI PREGA DI LEGGERE LE NORME DI SICUREZZA

**Manutenzione:**

Il cliente non può eseguire alcuna manutenzione su questi prodotti. L'esecuzione delle eventuali riparazioni è consentita solo a TDK-Lambda UK LTD e ai suoi agenti autorizzati.

**Componenti critici:**

Non si autorizza l'uso di questi prodotti come componenti critici all'interno di sistemi di controllo nucleari, sistemi necessari alla sopravvivenza o apparecchiature destinate all'impiego in ambienti pericolosi, senza l'esplicita approvazione scritta dell'Amministratore Delegato di TDK-Lambda EMEA.

**Uso dei prodotti:**

Questi prodotti sono progettati per l'uso all'interno di un'apparecchiatura ospite che limiti l'accesso al solo personale competente e autorizzato.

Questo prodotto è da considerarsi come un alimentatore professionale componente e come tale deve essere installato da personale qualificato all'interno di altre apparecchiature e non può essere utilizzato come prodotto indipendente.

Questo prodotto non è inteso per la vendita al dettaglio o agli utilizzatori finali.

Questo alimentatore è da considerarsi come un componente e come tale non è assoggettato dagli scopi della direttiva EMC. Conformità alla direttiva EMC deve essere considerata nell'installazione finale di utilizzo. Gli uffici di TDK-Lambda Sas Succursale Italiana sono a vostra disposizione per ulteriori raggugli.

**Condizioni ambientali:**

Questi prodotti sono classificati come IPX0, dunque non devono essere utilizzati sostanze chimiche/solventi, prodotti per la pulizia o liquidi di altra natura.

**Ambiente:**

Questo prodotto è un alimentatore a commutazione, destinato all'uso in applicazioni rientranti in ambienti con le seguenti caratteristiche: Livello inquinamento 2, Categoria sovratensione II. Questo prodotto contiene schede di circuiti stampati in materiali di Gruppo IIIb.

**Carico in uscita:**

La potenza in uscita ottenuta dall'alimentatore non deve superare la potenza nominale indicata sulla targhetta dell'alimentatore, fatto salvo dove indicato nei limiti per il prodotto specificati in questo manuale.

**Parametri di alimentazione:**

Questo prodotto deve essere utilizzato entro i parametri di alimentazione indicati nei limiti per il prodotto, specificati in questo manuale.

**Smaltimento:**

L'unità contiene componenti che richiedono procedure speciali di smaltimento. Accertarsi che l'unità venga smaltita in modo corretto al termine della vita utile e nel rispetto delle normative locali.



RISCHIO DI SCOSSA ELETTRICA

**Avvertimento di alta tensione:**

All'interno dell'alimentatore sono presenti tensioni pericolose. Gli installatori professionali devono proteggere il personale di manutenzione dal rischio di contatto accidentale con queste tensioni pericolose all'interno dell'apparecchiatura finale.

**ATTENZIONE:** Se installato in un'attrezzatura di classe I, questo prodotto deve essere collegato a terra in modo affidabile ed installato in modo professionale.

Le uscite (+) o (-) possono essere messa a terra o lasciate isolate.

I coperchi/il telaio dell'unità non devono essere accessibili da parte dell'utente.

Il connettore dell'alimentazione principale non può essere utilizzato come terminale di collegamento di campo.

Non utilizzare viti che penetrano nell'unità per più di : Vedi disegni

Un fusibile interno protegge l'unità e non deve essere sostituito dall'utente. Nell'eventualità di un difetto interno, restituire l'unità a TDK-Lambda UK LTD o a uno dei suoi agenti autorizzati.

L'apparecchiatura finale deve includere una recinzione meccanica, elettrica e antincendio per proteggere dai pericoli di natura meccanica, dalle scosse elettriche e dai pericoli di incendio.

**Pericoli energetici:**

Alcuni moduli sono in grado di erogare energia pericolosa (240 VA) a seconda della tensione in uscita impostata. I produttori delle apparecchiature finali sono tenuti a proteggere il personale di manutenzione dal rischio di contatto accidentale con questi terminali dei moduli di uscita. Se impostati su livelli che non escludono l'erogazione di energia pericolosa, questi terminali o collegamenti non devono risultare accessibili da parte dell'utente.

Il coperchio/telaio dell'unità è realizzato per proteggere il personale esperto dai pericoli. Non deve essere usato come parte degli involucri esterni di qualsiasi apparecchiatura, se risulta accessibile da parte degli addetti, poiché è possibile che in condizioni di pieno carico una o più parti del telaio dell'unità giunga/ giungano a temperature superiori ai limiti considerati sicuri per l'accesso da parte degli addetti.



**Instrucciones generales de seguridad:**

LEA LAS INSTRUCCIONES DE SEGURIDAD

**Servicio:**

Estos productos no pueden ser reparados por los clientes. TDK-Lambda UK LTD. y sus agentes autorizados son los únicos que pueden llevar a cabo las reparaciones.

**Componentes fundamentales:**

Estos productos no pueden ser utilizados como componentes fundamentales en sistemas de control nuclear, sistemas de soporte vital o equipos a utilizar en entornos peligrosos sin el consentimiento expreso por escrito del Director General de TDK-Lambda EMEA.

**Uso de los productos:**

Estos productos han sido diseñados para ser utilizados en un equipo central que restrinja el acceso al personal cualificado autorizado.

Este producto es una fuente de alimentación y sólo puede ser instalado por personal cualificado dentro de otros equipos y no debe ser tratado como un producto independiente. Este producto debe ser vendido entre empresas profesionales y solo puede obtenerse a través de los canales de distribución. No está destinado para la venta a usuarios finales.

Este producto es una fuente de alimentación y no se ve afectada por la directiva EMC. El cumplimiento de la directiva EMC se debe considerar en la instalación final. Por favor, póngase en contacto con su oficina local de TDK – Lambda.

**Medioambiental:**

Estos productos son IPX0 y, por tanto, no pueden utilizarse sustancias químicas/disolventes, agentes de limpieza ni otros líquidos.

**Medio ambiente:**

Esta fuente de alimentación es una fuente de alimentación de modo conmutado a utilizar en aplicaciones dentro de un entorno con un Grado de contaminación 2 y una Categoría de sobretensión II. En él se utilizan policloruros de bifenilo del Grupo de materiales IIIb.

**Carga de salida:**

La potencia de salida tomada de la fuente de alimentación no puede sobrepasar el valor nominal indicado en la etiqueta de la fuente de alimentación, excepto en los casos indicados en las limitaciones del producto en este manual.

**Parámetros de entrada:**

Este producto debe ser utilizado dentro de los parámetros de entrada indicados en las limitaciones del producto en este manual.

**Desecho de la unidad:**

La unidad contiene componentes que deben ser desechados de una manera especial. Asegúrese de desechar correctamente la unidad al final de su vida útil y conforme a las normas locales vigentes.



PELIGRO DE DESCARGAS ELÉCTRICAS

**Advertencia de alta tensión:**

En esta fuente de alimentación hay tensiones peligrosas. El instalador profesional debe proteger al personal de servicio contra cualquier contacto accidental con estas tensiones peligrosas en el equipo final.

**ADVERTENCIA:** La instalación de este producto en un equipo de clase I la deben llevar a cabo profesionales y el producto debe estar conectado a tierra.

La salida o salidas (+) o (-) pueden conectarse a tierra o se las puede dejar flotando.

Debe impedirse el acceso de los usuarios a la cubierta o cubiertas y al chasis de la unidad.

El conector de entrada de la red no es apto para ser utilizado a modo de bornes de cableado de campo.

No utilice tornillos de montaje susceptibles de penetrar en la unidad más de: Ver dibujos.

Un fusible interno protege la unidad y este no debe ser nunca reemplazado por el usuario. En caso de existir algún defecto interno, la unidad debe ser enviada a TDK-Lambda UK LTD o a uno de sus agentes autorizados.

El equipo de uso final debe constituir un recinto de protección mecánica, eléctrica y contra incendios de protección mecánica, contra descargas eléctricas y contra el peligro de incendios.

**Peligros de energía:**

Algunos módulos pueden generar energía peligrosa (240VA) dependiendo de la configuración de la tensión de salida. Los fabricantes de equipos finales deben proteger al personal de servicio contra un contacto accidental con estos bornes de salida de los módulos. Si se configura de modo que pueda generarse energía peligrosa, hay que evitar que el usuario pueda acceder a los bornes o conexiones del módulo.

La cubierta/chasis de la unidad ha sido diseñada para que proteja a las personas cualificadas de los peligros. No deben ser utilizadas como parte de las cubiertas externas de cualquier equipo al que pueden acceder los operarios, ya que bajo unas condiciones de carga completa, la pieza o piezas del chasis de la unidad pueden alcanzar temperaturas superiores a las consideradas seguras para el acceso de los operarios.

**Instruções gerais de segurança:**

LEIA AS INSTRUÇÕES DE SEGURANÇA

**Manutenção:**

Estes produtos não são podem ser submetidos a manutenção por parte do cliente. Apenas a TDK-Lambda UK LTD e os seus agentes autorizados têm permissão para realizar reparações.

**Componentes essenciais:**

Não é autorizada a utilização destes produtos como componentes essenciais de sistemas de controlo nuclear, sistemas de suporte de vida ou equipamento para utilização em ambientes perigosos sem a expressa autorização por escrito do Director-Geral da TDK-Lambda EMEA.

**Utilização do produto:**

Estes produtos foram concebidos para utilização dentro de um equipamento de alojamento que apenas permita o acesso a pessoal qualificado autorizado.

Este produto é uma alimentação considerado com um componente para ser instalado por pessoas qualificadas, em outros equipamentos. Não deve ser usado como um produto acabado.

Este produto é destinado para venda entre as empresas e pode ser obtido através de canais de distribuição. Não se destina à venda aos particulares.

Este produto é uma alimentação considerado com um componente, não é dentro do application âmbito da directiva CEM.

Conformidade com a directiva CEM devem ser considerados na instalação final.

Entre em contacto com seu escritório TDK-Lambda mais próximo.

**Ambiental:**

Estes produtos são IPX0 e, como tal, não se devem utilizar químicos/solventes, agentes de limpeza e outros líquidos.

**Ambiente:**

Esta fonte de alimentação é uma fonte de alimentação do modo de comutação para utilização em aplicações com um Nível de Poluição 2 e ambientes da categoria de sobretensão II. São utilizadas placas de circuitos impressos do grupo de materiais IIIb.

**Carga de saída:**

A potência de saída extraída da fonte de alimentação não deve exceder a classificação assinalada na etiqueta da fonte de alimentação, excepto quando indicado nas limitações do produto neste guia.

**Parâmetros de entrada:**

Este produto deve ser utilizado dentro dos parâmetros de entrada indicados nas limitações do produto neste guia.

**Eliminação no fim de vida:**

A unidade contém componentes que necessitam de procedimentos especiais de eliminação. Certifique-se de que a unidade é devidamente eliminada no fim da sua vida útil e que tal é feito em conformidade com os regulamentos locais.



RISCO DE CHOQUE ELÉCTRICO

**Aviso de alta tensão:**

Estão presentes tensões perigosas dentro da fonte de alimentação. O profissional que realizar a instalação deve proteger o pessoal de assistência contra contactos inadvertidos com estas tensões perigosas do equipamento final.

**AVISO:** Quando instalado num equipamento de Classe I, este produto deve ser ligado à terra de forma fiável e instalado por um profissional.

As saídas (+) e (-) podem ser ligadas à terra ou deixadas soltas.

O chassis/cobertura(s) da unidade não deve estar acessível ao utilizador.

O conector de entrada de alimentação não deve ser utilizado como terminal de cablagens no local.

Não utilize parafusos de montagem, uma vez que estes penetrarão na unidade em mais do que: Veja os desenhos

Existe um fusível interno que protege a unidade e que não deve ser substituído pelo utilizador. Em caso de defeito interno, a unidade deve ser devolvida à TDK-Lambda UK LTD ou a um dos seus agentes autorizados.

O equipamento de utilização final deve fornecer um bastidor com protecção mecânica, eléctrica e contra incêndios adequada.

**Perigos de energia:**

Alguns módulos tem a capacidade de fornecer energia perigosa (240 VA), de acordo com a configuração da tensão de saída. O equipamento final do fabricante deve garantir que o pessoal de assistência está protegido contra contactos inadvertidos com estes terminais de saída do módulo. Se essa energia perigosa for produzida, as ligações e os terminais do módulo não devem ser acessíveis pelos utilizadores.

O chassis/cobertura da unidade está concebido de forma a proteger o pessoal especializado de perigos. Não devem ser utilizados como parte das coberturas externas de qualquer equipamento em que possam estar acessíveis aos operadores, uma vez que em condições de carga máxima, algumas peças do chassis da unidade podem atingir temperaturas superiores às consideradas seguras para o acesso do operador.

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# *ZWS-BAF Series*

## *Instruction Manual*

### **BEFORE USING THE POWER SUPPLY UNIT**

Be sure to read this instruction manual thoroughly before using this product. Pay attention to all cautions and warnings before using this product. Incorrect usage could lead to an electrical shock, damage to the unit or a fire hazard.

#### **⚠ DANGER**

Never use this product in locations where flammable gas or ignitable substances are present. There are risks of igniting these substances and exploding by an arcing.

#### **⚠ WARNING**

- Do not touch this product or its internal components while circuit is live, or shortly after shutdown. There may be high voltage or high temperature present and you may receive an electric shock or burn.
- While this product is operating, keep your hands and face away from it as you may be injured by an unexpected situation.
- Do not make unauthorized changes to this product, otherwise you may receive an electric shock and void your warranty.
- Do not drop or insert anything into this product. It might cause a failure, fire and electric shock.
- Do not use this product under unusual condition such as emission of smoke or abnormal smell and sound etc. It might lead to fire and electric shock. In such cases, please contact us. Do not attempt repair by yourself, as it is dangerous for the user.
- Do not operate these products in the presence of condensation. It might lead fire and electric shock.

#### **⚠ CAUTION**

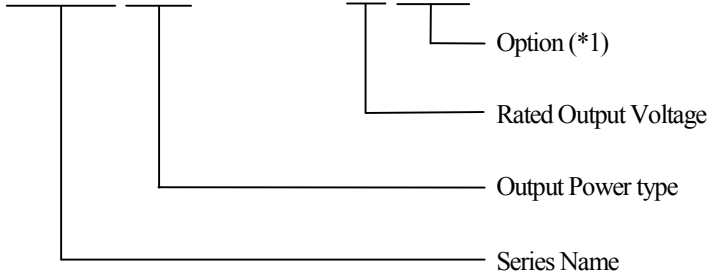
- This power supply is designed and manufactured for use within an end product such that it is accessible to SERVICE ENGINEERS only.
- Confirm connections to input/output terminals are correct as indicated in the instruction manual before switching on.
- Input voltage, Output current, Output power, ambient temperature and ambient humidity should be kept within specifications, otherwise the product will be damaged.
- Do not operate and store this product in an environment where condensation might occur. In such case, waterproof treatment is necessary.
- Do not use this product in environment with a strong electromagnetic field, corrosive gas or conductive substances.
- For applications, which require very high reliability (Nuclear related equipment, medical equipment, traffic control equipment, etc.), it is necessary to provide a fail-safe mechanism in the end equipment.
- Do not inject abnormal voltages into the output of this product. The injection of reverse voltage or over voltage exceeding nominal output voltage into the output terminal or signal terminal might cause damage to internal components.
- Never operate the product under over current or short-circuit conditions, or outside its specified Input Voltage Range. Insulation failure, smoking, burning or other damage may occur.
- This product contains a printed circuit board utilizing surface mounted devices. PCB stress such as bending, twisting etc. could cause damage. Therefore, please handle with care.
- When handling this product, hold the board edge and take care not to touch the component side. When installing this product in apparatus or equipment, mount it on spacers.
- The outputs of this product may, under fault conditions, exceed SELV voltage limits. Therefore the outputs must be protected in the end equipment to maintain SELV.
- This product has used Power Thermistor to protect the circuit from Inrush Current. Frequent repetition of input might cause damage to internal components because of generating surge current.
- Breaking of internal fuse is considered internal failure. In such cases, please contact us.
- The output power of ZWS300BAF is considered to be a hazardous energy level (The voltage is 2V or more and the power is 240VA or more). It must not be made accessible to users. Protection must be provided for Service Engineers against indirect contact with the output terminals and/or to prevent tools being dropped across them. While working on this product, the AC input power must be switched off and the input and output voltage should be zero.
- The information in this document is subject to change without prior notice. Please refer to the latest version of the data sheet, etc., for the most up-to date specifications of the product.
- No part of this document may be copied or reproduced in any form without prior written consent of TDK-Lambda.

#### **Note: CE MARKING**

CE Marking, when applied to a product covered by this handbook, indicates compliance with the low voltage directive.

**1. Model name identification method**

**ZWS 50 BAF – 5 / □**

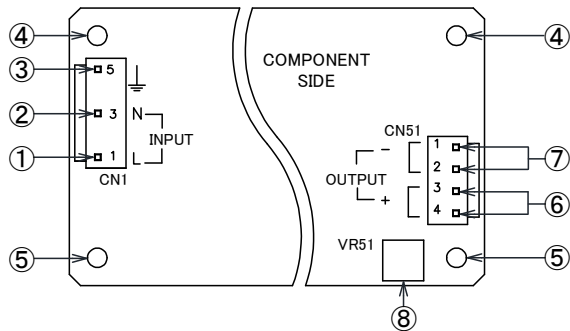


(\*1)

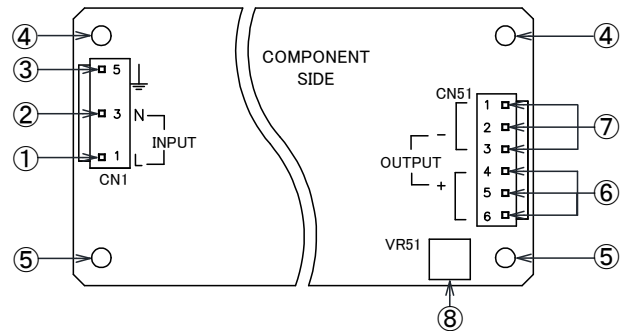
- Blank : Standard type.
- /A : With chassis and cover model.
- /L : With chassis model.
- /CO2 : With coating on both sides of PCB model.
- /R : With remote ON/OFF control model.  
(Option model "R" : Only for ZWS100BAF, ZWS150BAF, ZWS300BAF)
- /T : With terminal model  
(Option model "T" : Only for ZWS300BAF)

**2. Terminal Explanation**

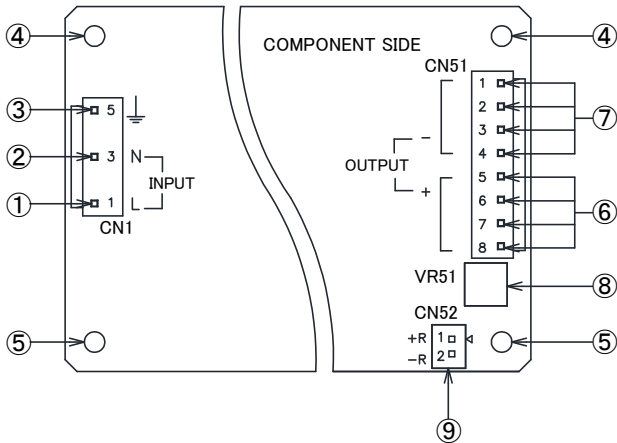
**ZWS50BAF**



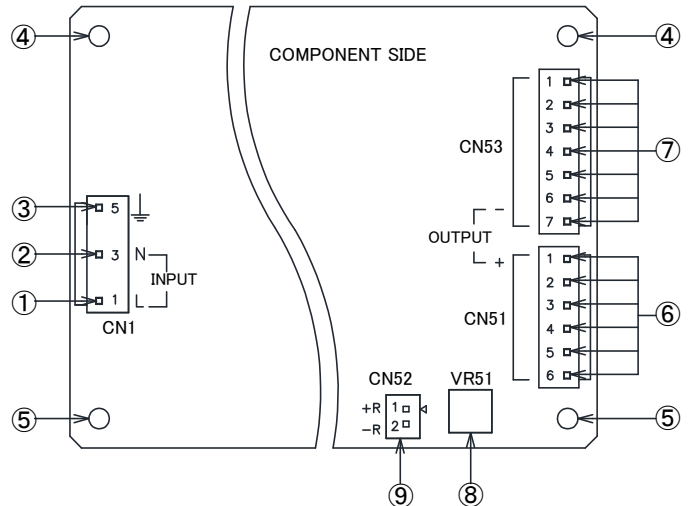
**ZWS75BAF**



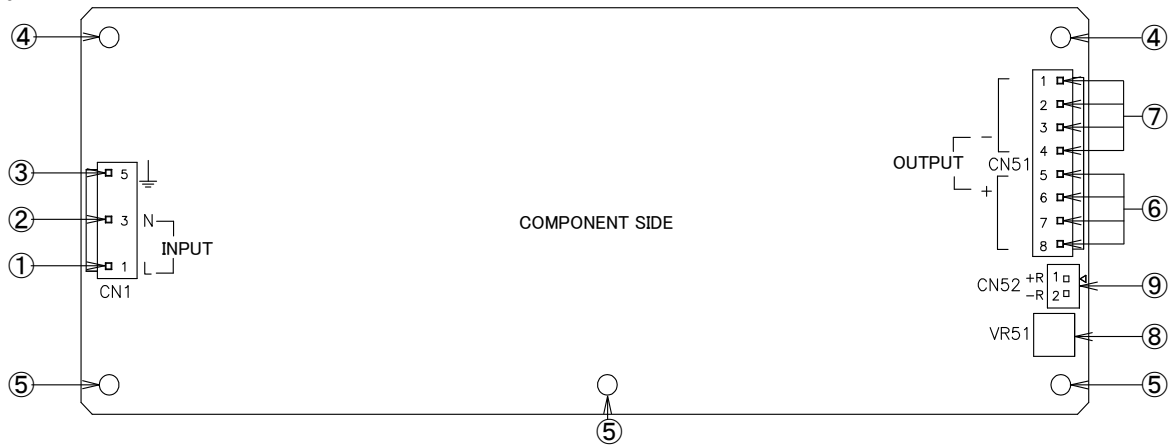
**ZWS100BAF**



**ZWS150BAF**



**ZWS300BAF**



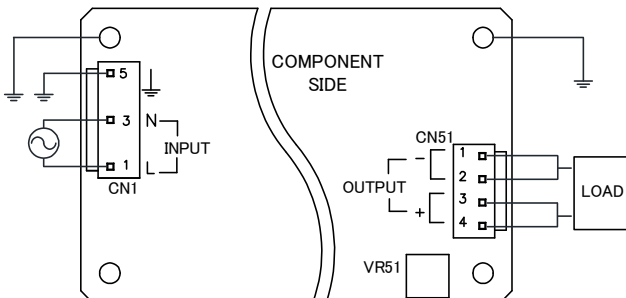
- ① L : AC Input terminal Live line (Fuse in line.)
- ② N : AC Input terminal Neutral line
- ③  $\perp$  : Earth ( $\perp$ ) Terminal
- ④ Mounting hole (hole diameter :  $\phi$  3.5mm)  
These holes are connected to  $\perp$  terminal of CN1.  
Must be connected to Chassis (Conductor) of the equipment by metal spacer.  
The mounting surface of the spacer should be within Max  $\phi$  8mm.
- ⑤ Mounting hole (hole diameter :  $\phi$  3.5mm)  
These holes are not connected to  $\perp$  terminal of CN1.
- ⑥ + : + Output Terminal
- ⑦ - : - Output Terminal
- ⑧ V.ADJ : Output voltage adjust trimmer. The output voltage rises when a trimmer is turned clockwise.
- ⑨ ON/OFF Control Terminal (Option model "R" : Only for ZWS100BAF, ZWS150BAF, ZWS300BAF)

**3. Terminal Connection Method**

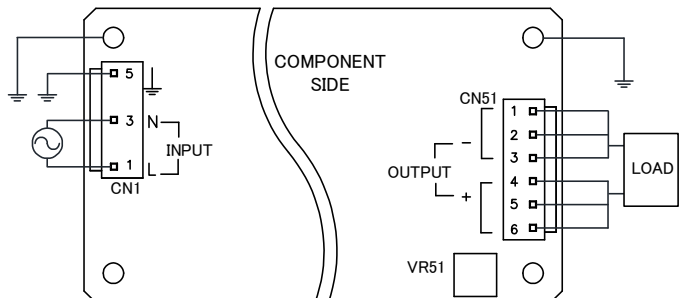
Pay attention to the input wiring. If it is connected to wrong terminal, the power supply will be damaged.

- Input must be off when making connections.
- Connect  $\perp$  terminal of input connector to protective earth terminal.
- The output load line and input line shall be separated to improve noise sensitivity.
- Do not apply stress to PCB, when connecting or removing connector.
- Use input/output connector (housing) specified by the table below.
- Use the terminal pin SVH-21T-P1.1 or BVH-21T-P1.1, when output current per connector pin is 5A or less.
- Use the terminal pin SVH-41T-P1.1 or BVH-41T-P1.1, when output current per connector pin is 7A or less.
- Use recommended crimping tool. Connector is not included with this product. (Refer to the following page)

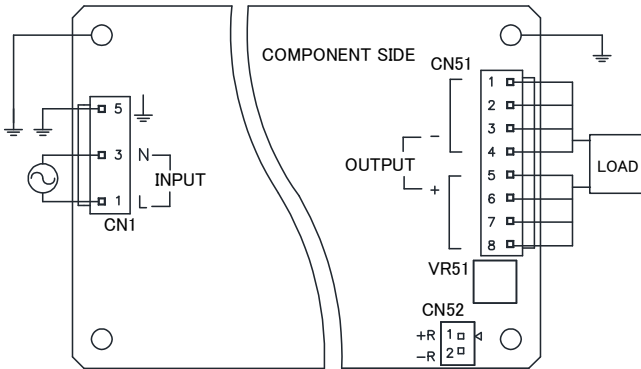
**ZWS50BAF**



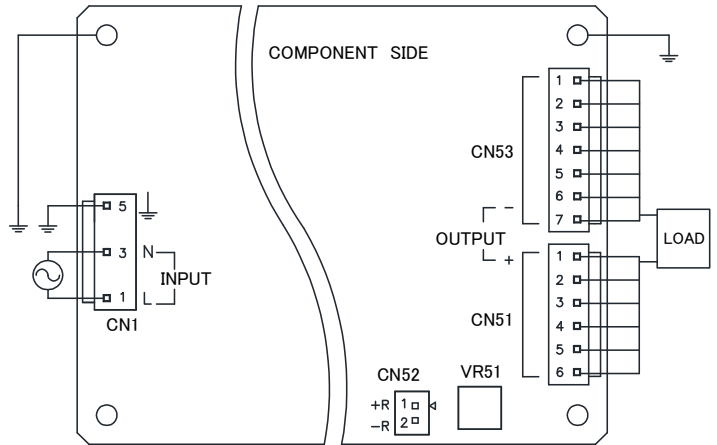
**ZWS75BAF**



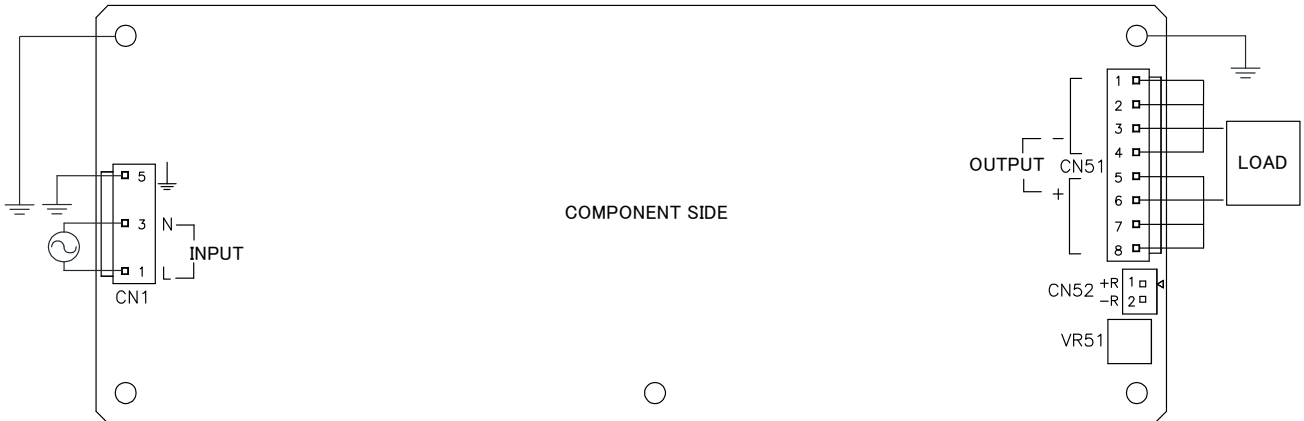
**ZWS300BAF**



**ZWS150BAF**



**ZWS300BAF**



**Input/Output Connector**

	Model	Connector	Housing	Terminal Pin	Maker
Input (CN1)	Common	B3P5-VH(LF)(SN)	VHR-5N	(In the case of 5A MAX per PIN) SVH-21T-P1.1 or BVH-21T-P1.1	J.S.T.
Output (CN51)	ZWS50BAF	B4P-VH(LF)(SN)	VHR-4N		
	ZWS75BAF	B6P-VH(LF)(SN)	VHR-6N		
	ZWS100BAF ZWS300BAF	B8P-VH(LF)(SN)	VHR-8N		
Output (CN53)	ZWS150BAF	B6P-VH(LF)(SN)	VHR-6N	(In the case of 7A MAX per PIN) SVH-41T-P1.1 or BVH-41T-P1.1	J.S.T.
	ZWS150BAF	B7P-VH(LF)(SN)	VHR-7N		

**Remote ON/OFF Control (Option model "R" : Only for ZWS100BAF, ZWS150BAF, ZWS300BAF)**

Model	Connector	Housing	Terminal Pin	Maker
CN52	B2B-XH-AM	XHP-2	BXH-001T-P0.6 or SXH-001T-P0.6	J.S.T.

**Hand Crimping Tool**

Hand Crimping Tool	Terminal Pin
YC-160R(J.S.T)	BVH-21T-P1.1 or SVH-21T-P1.1
YC-930R(J.S.T)	BVH-41T-P1.1 or SVH-41T-P1.1
YC-110R(J.S.T) or YRS-110(J.S.T)	BXH-001T-P0.6 or SXH-001T-P0.6



## 4. Explanation of Function and Precautions

### 4-1. Input Voltage Range

Input voltage range is single phase 85-265VAC(47-63Hz) or 120-370VDC. Input voltage, which is out of specification, might lead unit damage. For cases where conformance to various safeties required, described as 100-240VAC (50-60Hz).

### 4-2. Output Voltage Range

Output voltage is set the rated value at shipment. V.ADJ trimmer (VR51) can adjust the output voltage within the range. Output voltage range is within output voltage variable range. To turn the trimmer clockwise, the output voltage will be increased. Take note when the output voltage is increased excessively, over voltage protection (OVP) function may trigger and voltage will be shut down. Furthermore, when increasing the output voltage reduce the output current so as not to exceed the maximum output power.

### 4-3. Inrush Current

This series equipped Power thermistor to limit the inrush Current. This series are Power thermistor method so that higher current will flow at higher ambient temperature or re-input condition. Please select input switch and fuse carefully with the high temperature and re-input the power condition. The Inrush Current value is under cold start at 25°C in the specification.

### 4-4. Over Voltage Protection (OVP)

The OVP function (Inverter shut down method, manual reset type) is provided. OVP function operates within ZWS50-150BAF 3.3V: 115% - 150%, 5V: 115%- 140%, 12V-48V: 115%-135% of nominal output voltage, ZWS300BAF 24V : 120%-140%, 12V,15V,36V,48V : 115%-135% of nominal output voltage. When OVP triggers, the output will be shut down. To reset OVP, remove the input of power supply for a few minutes, and then re-input. In addition, the setting value of OVP is fixed and not adjustable. Pay attention not to apply higher voltage externally to the output terminal to avoid unit failure. In case of inductive load, put protective diode in series to the output power line.

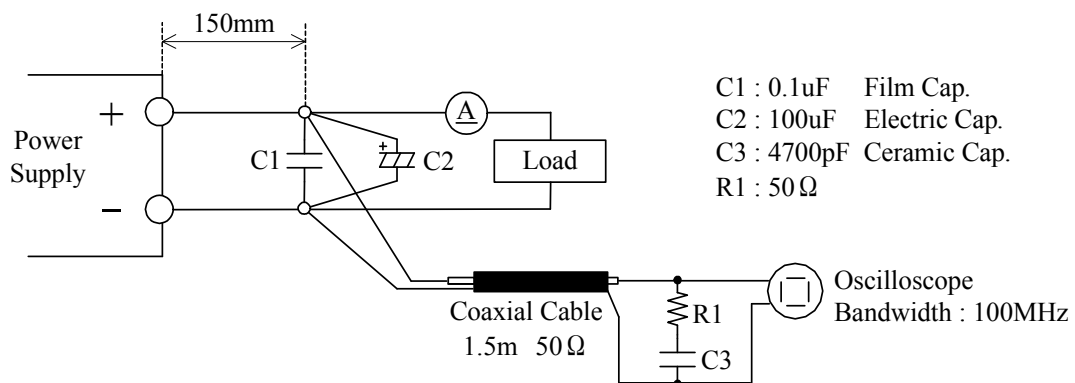
### 4-5. Over Current Protection (OCP)

- ZWS50BAF, ZWS75BAF : Fold back limit and Hiccup mode with automatic recovery.
- ZWS100BAF, ZWS150BAF : 3.3V, 5V Constant current limit and Hiccup mode near shorted conditions with automatic recovery.  
: 12V - 48V Constant current limit with automatic recovery.
- ZWS300BAF : 12V - 48V Constant current limit with automatic recovery.

OCP function operates when the output current exceeds 105% of maximum DC output current of specification. The outputs will be automatically recovered when the overload condition is canceled. Never operate the unit under over current or shorted conditions, which may leads damage or insulation failure. OCP setting is fixed and not to be adjusted externally.

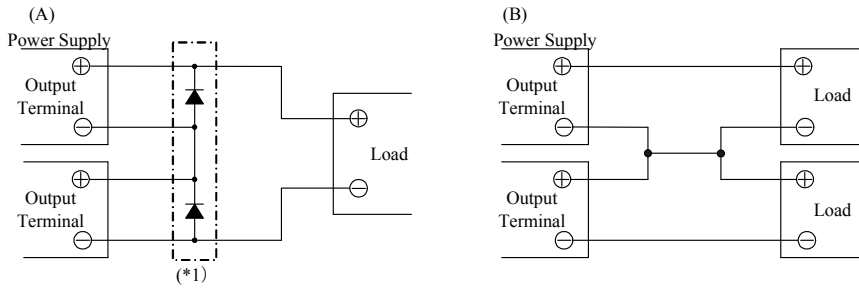
### 4-6. Output Ripple & Noise

The standard specification for maximum ripple value is measured according to measurement circuit specified by JEITA-RC9131B. When load lines are longer, ripple will becomes larger. In this case, electrolytic capacitor, film capacitor, etc. might be necessary to use across the load terminal. The output ripple cannot be measure accurately if the probe ground lead of oscilloscope is too long.



#### 4-7. Series Operation

For series operation, either method (A) or (B) is possible.



(\*1) In case of (A), please connect bypass diodes to prevent reverse voltage. Please select a bypass diode with maximum forward current rating more than output load current. And maximum reverse voltage must withstand each power supply output voltage.

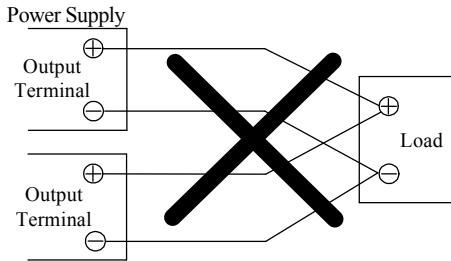
\*Series operation for ZWS100BAF, ZWS150BAF, ZWS300BAF possible without bypass diode.

Never use when one of the unit not operate, which may leads damage.

#### 4-8. Parallel Operation

For parallel operation, method (B) is possible.

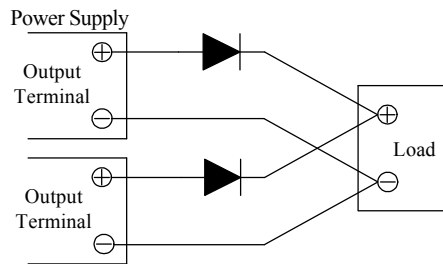
(A) To increase the output current is not possible.



(B) To use as Back-up Power Supply

1. Adjust the output voltage of each power supply to be the same.
2. Set power supply output voltage higher by the forward voltage drop ( $V_f$ ) of diode.

Use within the specification for output voltage and output power.

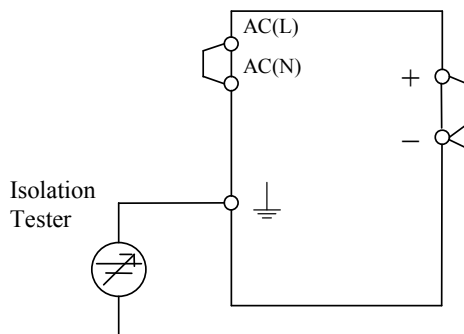


#### 4-9. Isolation Test

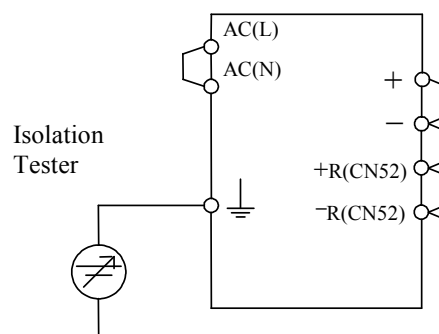
Isolation resistance between Output -  $\perp$  is more than  $100M\Omega$  at 500VDC. For safety operation, voltage setting of DC isolation tester must be done before the test. Ensure that the unit is fully discharged after the test.

■ Output -  $\perp$  : 500VDC More than  $100M\Omega$

(A) ZWS50BAF, ZWS75BAF



(B) ZWS100BAF, ZWS150BAF, ZWS300BAF



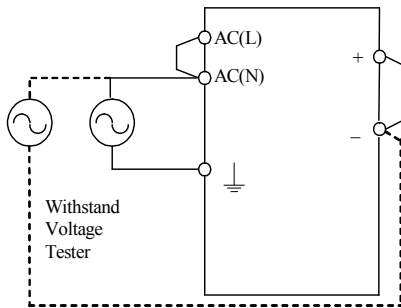
#### 4-10. Withstand Voltage

This series is designed to withstand 3.0kVAC between input and output, 2.0kVAC between input and  $\perp$  and 500VAC between output and  $\perp$  each for 1 minute. When testing withstand voltage, set current limit of the withstand voltage test equipment to 10mA (output  $\perp$  : 20mA). The applied voltage must be gradually increased from zero to the testing value and then gradually decreased for shut down. When timer is used, the power supply may be damaged by high impulse voltage at timer switch on and off. Connect input and output as follows.

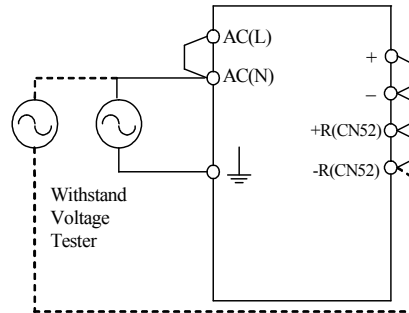
■ Input - Output(Dashed line) : 3.0kVAC 1min(10mA)

Input -  $\perp$  (Solid line) : 2.0kVAC 1min(10mA)

(A) ZWS50BAF, ZWS75BAF

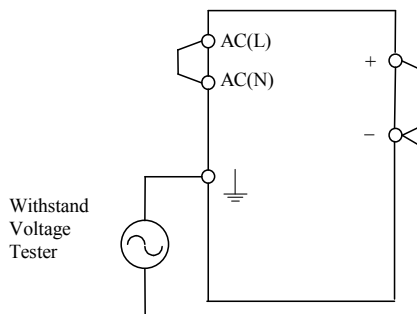


(B) ZWS100BAF, ZWS150BAF, ZWS300BAF

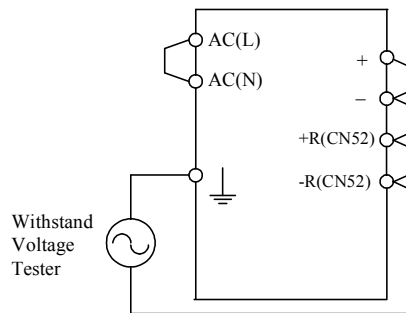


■ Output -  $\perp$  : 500VAC 1min(20mA)

(A) ZWS50BAF, ZWS75BAF



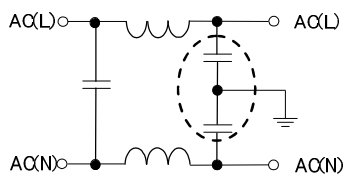
(B) ZWS100BAF, ZWS150BAF, ZWS300BAF



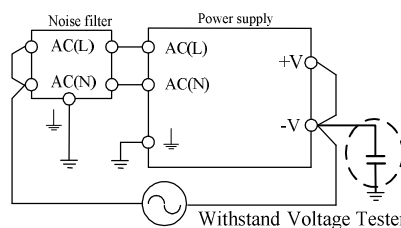
Note 1 : This product have monolithic ceramic capacitor in secondary circuit to  $\perp$ .

Some of the withstand voltage tester may generate high voltage at the matching with monolithic ceramic capacitor and may cause the unit damage. So, please check the waveform of applied voltage.

Note 2 : In case of using external noise filter, capacitance between “Input and  $\perp$ ” might be increased. When testing withstand voltage between “Input and Output”, there is a possibility exceeding withstand voltage between “Output and  $\perp$ ” (500VAC). Please check the voltage between “Output and  $\perp$ ”. If the voltage exceeding withstand voltage, please add external capacitor to “Output and  $\perp$ ”. It can decrease the voltage. On the other hand, no need to check the voltage in case of “Output and  $\perp$ ” is shorted.



The example of noise filter circuit that may increasing capacitance value between “Input and  $\perp$ ”  
(Capacitance value in dashed line is added.)



External capacitor adding point or short point.  
Even in the case of “+V and  $\perp$ ”,  
There is a similar effect.

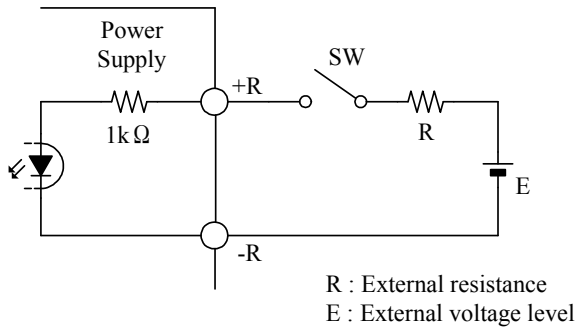
**4-11. Remote ON/OFF Control (Option model “/R” : ZWS100BAF, ZWS150BAF, ZWS300BAF only)**

Remote ON/OFF control (CN52) function is available as option. (/R).

Using this function allows the user to turn the output on and off without having to turn the AC input on and off.

However, for Cover & Chassis type (MODEL: ZWS-BAF/A) cannot be used.

It is controlled by the voltage applied to +R and -R. This circuit is in the Secondary (output) side of the power supply unit. Do not connect in the Primary (input) side. And this circuit is isolated from the Secondary (output).



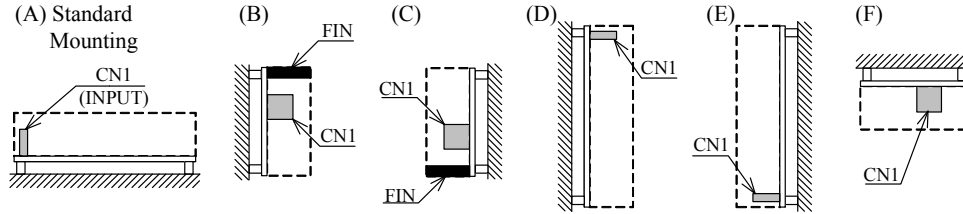
+R & -R terminal condition	Output Condition
SW ON (Higher than 4.5V)	ON
SW OFF (Lower than 0.8V)	OFF

External voltage level: E	External resistance : R
4.5 - 12.5VDC	No required
12.5 - 24.5VDC	1.5kΩ

## 5. Mounting Directions

### 5-1. Output Derating according to the Mounting Directions.

Recommended standard mounting method is (A). Method (B)-(F) are also possible. Refer to the output derating below. Load(%) such as below derating curve indicates output power.

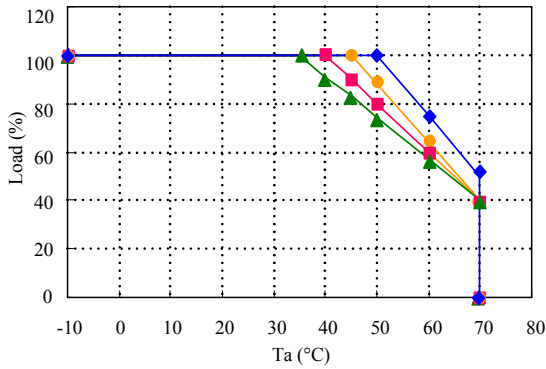


### 5-2. Output Derating

Make sure that the specified temperature range is maintained.

#### ■ CONVECTION COOLING

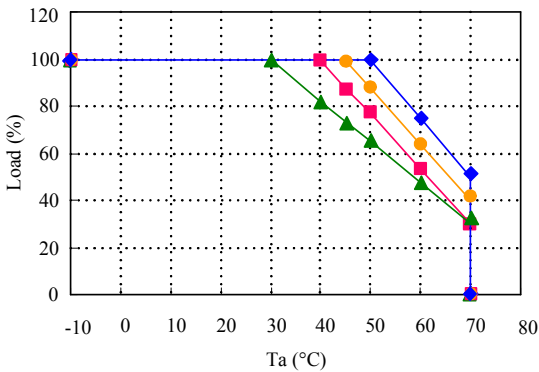
##### ZWS50BAF



- ◆ Mounting (A),(B),(C)
- Mounting (D)
- Mounting (E)
- ▲ Mounting (F)

Ta (°C)	Load (%)			
	Mounting (A),(B),(C)	Mounting (D)	Mounting (E)	Mounting (F)
-10 - +35	100			
+40	100	100	100	91
+45	100	100	90	83
+50	100	88	80	74
+60	75	64	60	57
+70	50	40	40	40

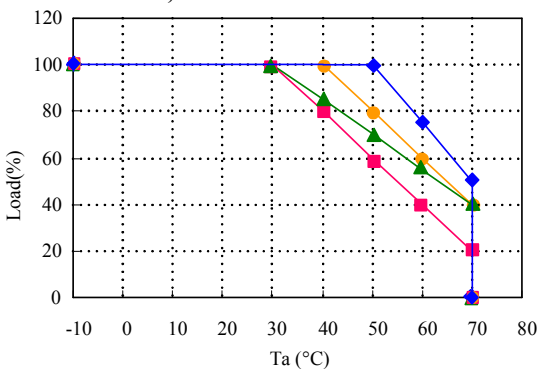
##### ZWS75BAF



- ◆ Mounting (A),(B)
- Mounting (C)
- Mounting (D),(E)
- ▲ Mounting (F)

Ta (°C)	Load (%)			
	Mounting (A),(B)	Mounting (C)	Mounting (D),(E)	Mounting (F)
-10 - +30	100			
+40	100	100	100	82
+45	100	100	88	74
+50	100	88	77	65
+60	75	64	53	48
+70	50	40	30	30

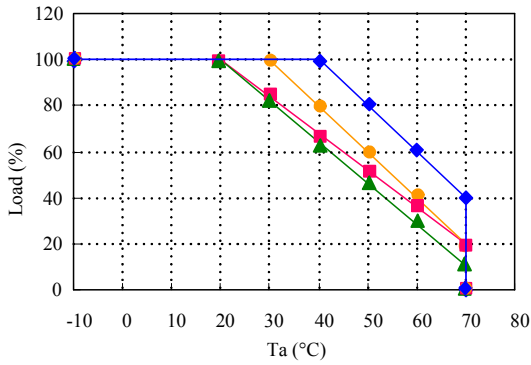
##### ZWS100BAF, ZWS150BAF



- ◆ Mounting (A),(B)
- Mounting (C),(E)
- Mounting (D)
- ▲ Mounting (F)

Ta (°C)	Load (%)			
	Mounting (A),(B)	Mounting (C),(E)	Mounting (D)	Mounting (F)
-10 - +30	100			
+40	100	100	80	85
+50	100	80	60	70
+60	75	60	40	55
+70	50	40	20	40

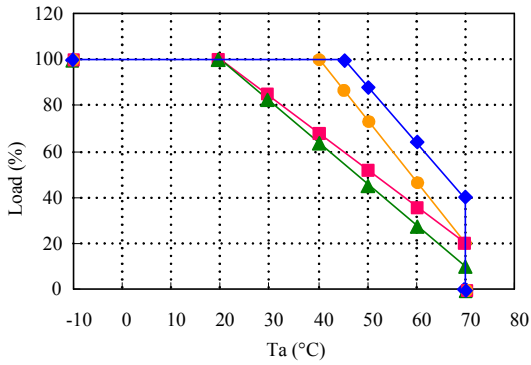
**ZWS300BAF-12,15**



- ◆ Mounting (A)
- Mounting (B),(C)
- Mounting (D)
- ▲ Mounting (E),(F)

Ta (°C)	Load (%)			
	Mounting (A)	Mounting (B),(C)	Mounting (D)	Mounting (E),(F)
-10 - +20	100			
+30	100	100	84	82
+40	100	80	68	64
+50	80	60	52	46
+60	60	40	36	28
+70	40	20	20	10

**ZWS300BAF-24, 36, 48**

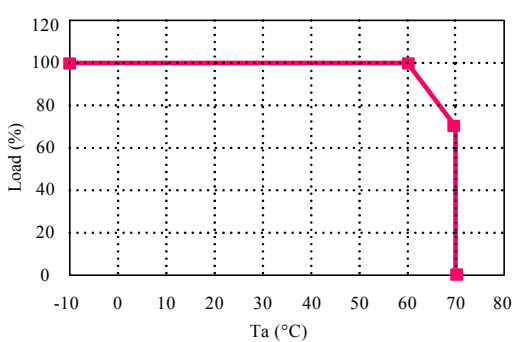


- ◆ Mounting (A),(B)
- Mounting (C)
- Mounting (D)
- ▲ Mounting (E),(F)

Ta (°C)	Load (%)			
	Mounting (A),(B)	Mounting (C)	Mounting (D)	Mounting (E),(F)
-10 - +10	100			
+20	100	100	100	100
+40	100	100	68	64
+45	100	86	60	55
+50	88	73	52	46
+60	64	46	36	28
+70	40	20	20	10

**■ FORCED AIR COOLING**

**ZWS50BAF, ZWS75BAF, ZWS100BAF and ZWS150BAF**



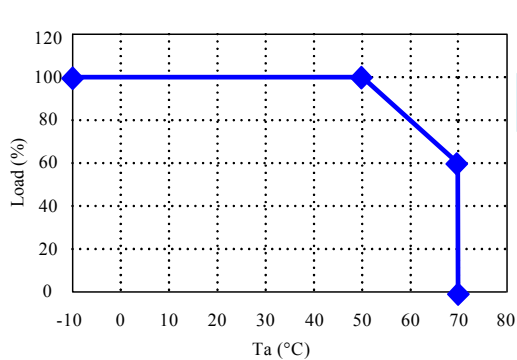
■ Mounting (A) - (F)  
Cooling : Wind velocity  $\geq 0.7\text{m/s}$

Ta (°C)	Load (%)
	Mounting (A) - (F)
-10 - +60	100
+70	70

Electrolytic capacitor allowable Max temperature

Model	Allowable Max temperature		
	C6	C51	C52
ZWS50BAF	80°C	70°C (for 24V,48V)	70°C (for 3V-15V)
ZWS75BAF	80°C	75°C (for 24V,48V)	75°C (for 3V-15V)
ZWS100BAF	80°C	-	75°C
ZWS150BAF	80°C	-	75°C

**ZWS300BAF-12, 15**



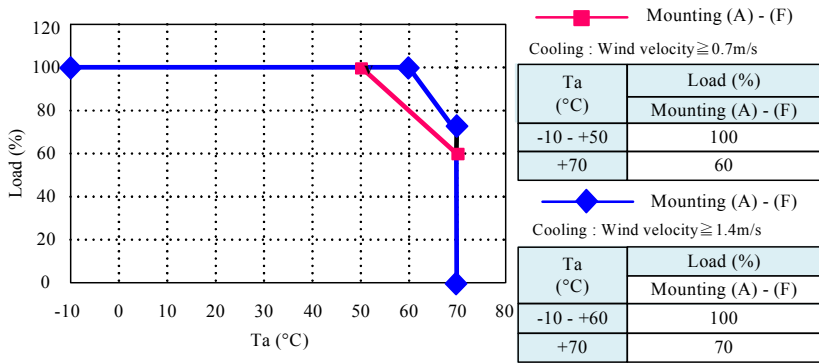
◆ Mounting (A) - (F)  
Cooling : Wind velocity  $\geq 1.4\text{m/s}$

Ta (°C)	Load (%)
	Mounting (A) - (F)
-10 - +50	100
+70	60

Electrolytic capacitor allowable Max temperature

Model	Allowable Max temperature	
	C6	C52
ZWS300BAF -12, 15	75°C	75°C

**ZWS300BAF-24, 36, 48**



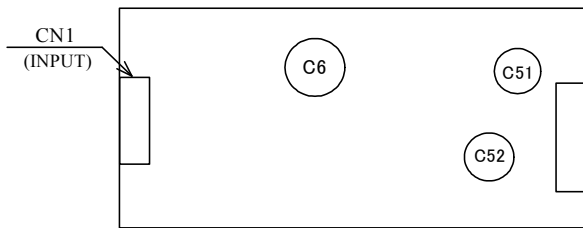
Electrolytic capacitor allowable Max temperature

Model	Allowable Max temperature	
	C6	C52
ZWS300BAF -24, 36, 48	75°C	75°C

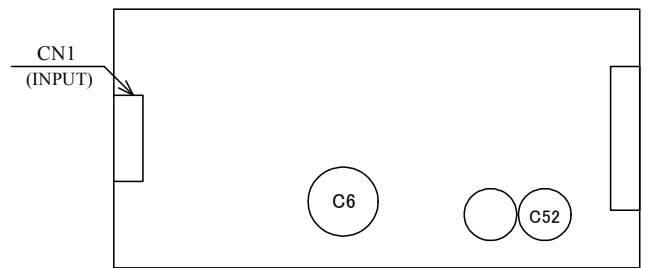
The entire component must be cooled. The maximum temperature of the electrolytic capacitor C6, C51 and C52 must keep lower than “Electrolytic capacitor allowable Max temperature” in the above table. As reference, set wind velocity at 0.7m/s (ZWS50-150BAF), 1.4m/s (ZWS300BAF-12, 15), 0.7m/s or 1.4m/s (ZWS300BAF-24, 36, 48).

For ZWS300BAF, maximum output power is different from convection cooling and forced air cooling. Please confirm specifications, and be careful.

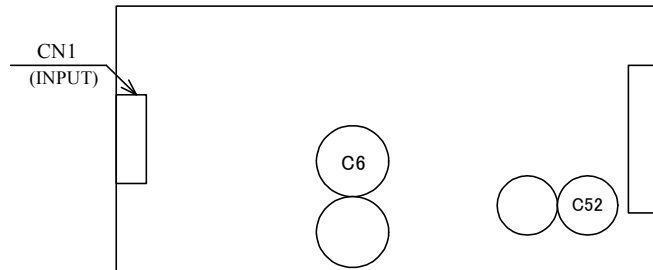
**ZWS50BAF, ZWS75BAF**



**ZWS100BAF**



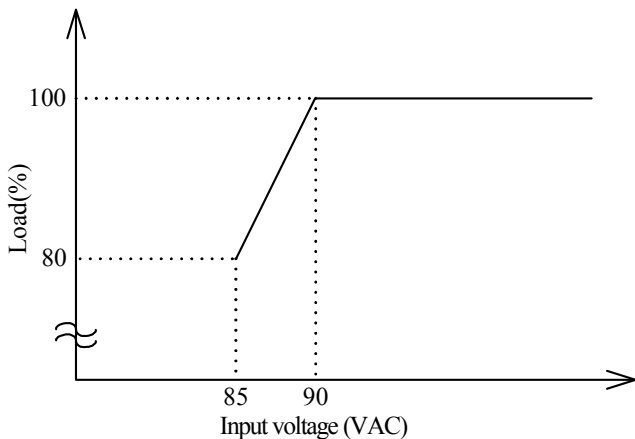
**ZWS150BAF**



**ZWS300BAF**



**5-3. Derating curve depending on input voltage(ZWS300BAF only)**



The following input voltage derating curve assumes maximum output power is 100%

**5-4. Mounting Method**

Insert the spacer (Max  $\phi$  8) of height more than 8mm to lift the unit. And use all mounting holes A for the unit installation. The vibration spec is specified under this mounting condition.  
 Please use mounting hole B as needed. Vibratility-resistant improves

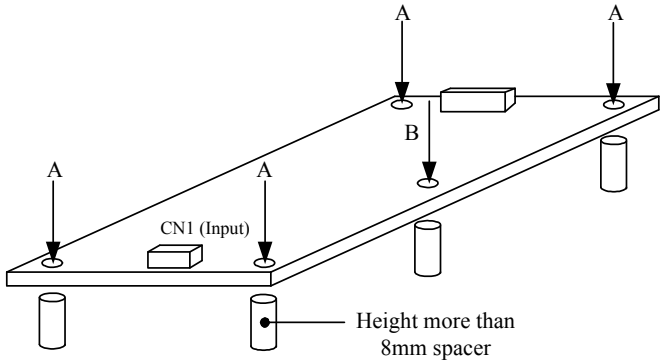
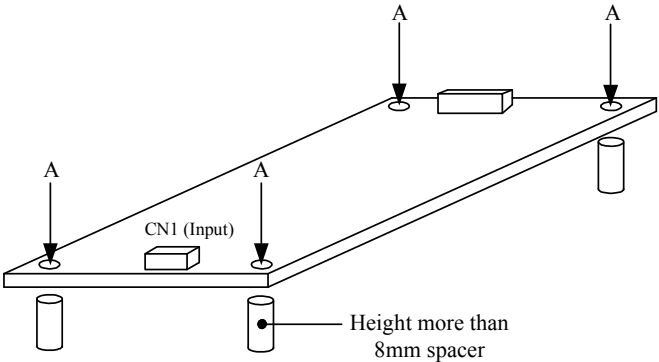
**■ Mounting Holes size**

**ZWS50BAF, ZWS75BAF, ZWS100BAF, ZWS150BAF**

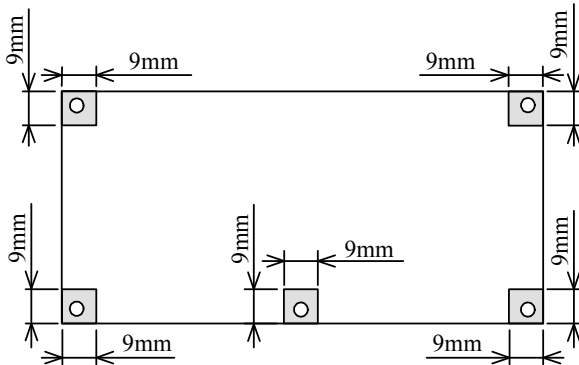
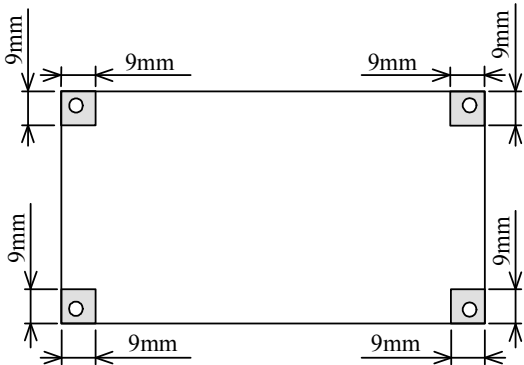
4 holes  $\phi$  3.5mm.

**ZWS300BAF**

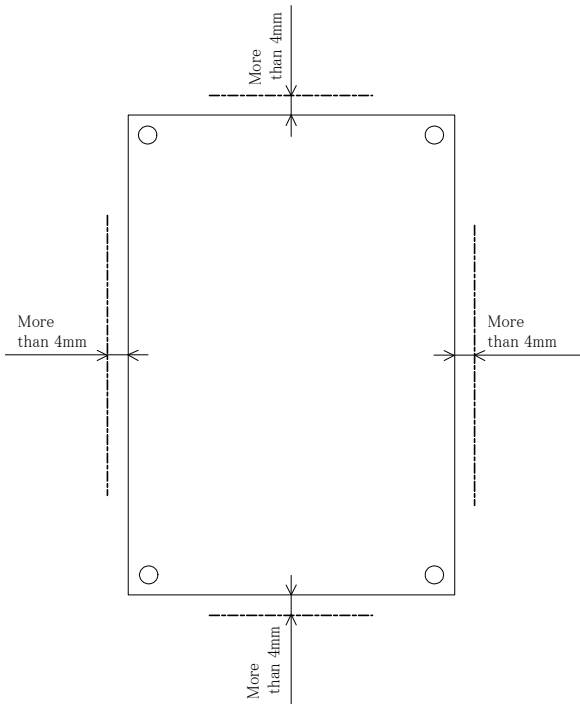
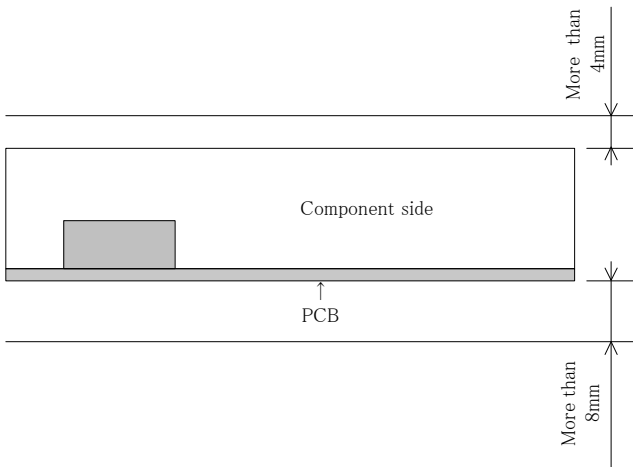
5 holes  $\phi$  3.5mm.



Allowable area by metal pieces is 9mm from each PCB corners. Refer to figure below.



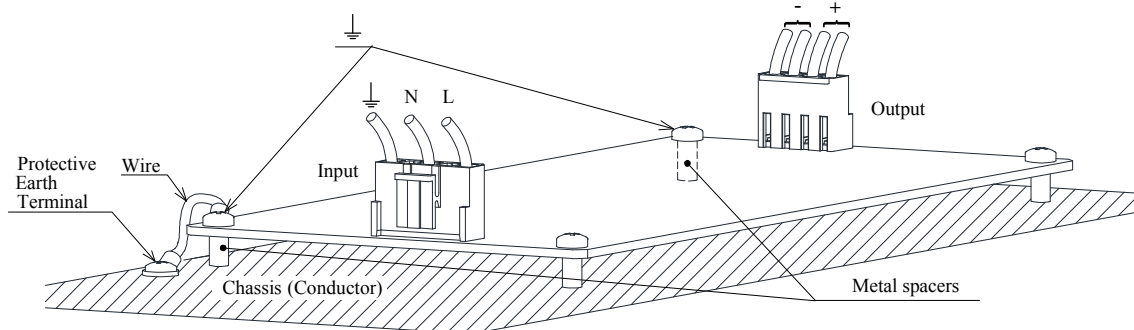
**■ Condition to meet Isolation & Withstand Voltage standard.**



Keep 4mm space from the surfaces and sides of PCB. Especially, 8mm space is necessary from the solder surface.  
 If the space is not enough, the specification of isolation and withstand will not be satisfied.  
 Take the space in the power supply surroundings and the upper area of components to keep enough for convection cooling.



■  $\perp$   
 $\perp$  should be connected to the protective earth terminal of the equipment. Also 2 mounting holes should be connected to the Chassis (Conductor) by metal spacer. If not, the conducted noise, radiation noise and output noise will increase.



## 6. Wiring Method

- (1) The output load line and input line shall be separated each other and twisted individually to improve noise.
- (2) Use all lines as thick and short as possible to made lower impedance.
- (3) Noise can be reduced by attaching a capacitor to the load terminals.
- (4) For safety and EMI considerations, connect between  $\perp$  terminal of input connector and protective earth terminal firmly.
- (5) Select the wire materials to the J.S.T connector as follows.

INPUT WIRE : AWG#22~AWG#18  
 OUTPUT WIRE : AWG#22~AWG#16

## 7. External Fuse Rating

Refer to the following fuse rating when selecting the external fuses that are to be used on input line. Surge current flows when line turns on. Have to use slow-blow or time-lag type fuse, not fast-blow fuse. Fuse rating is considered by in-rush current value at line turn-on. Do not select the fuse according to input current (RMS.) values under the actual load condition

ZWS50BAF : 3.15A  
 ZWS75BAF : 3.15A  
 ZWS100BAF : 3.15A  
 ZWS150BAF : 5.0A  
 ZWS300BAF : 6.3A

## 8. Before concluding that the unit is at fault

- (1) Check if the rated input voltage is connected.
- (2) Check if the wiring of input and output is correct.
- (3) Check if the wire thickness is enough.
- (4) Check if the output current and output wattage dose not over specification.
- (5) Check if the output voltage control (V.ADJ) is properly adjusted. OVP might be triggered and output shut down.
- (6) Audible noise can be heard when input voltage waveform is not sinusoidal wave.
- (7) Audible noise can be heard daring Dynamic-Load operation.
- (8) Ensure that a large capacitor is not connected on the output side. Please use within maximum capacitance shown below. (ZWS300BAF is no specification.)

Model	Maximum external capacitance					
	3.3V	5V	12V	15V	24V	48V
ZWS50BAF・ZWS75BAF	10,000uF		5,000uF		2,000uF	500uF
ZWS100BAF・ZWS150BAF	15,000uF		No specification			

## 9. Warranty Period

Warranty Period applies for Mounting Method (A).

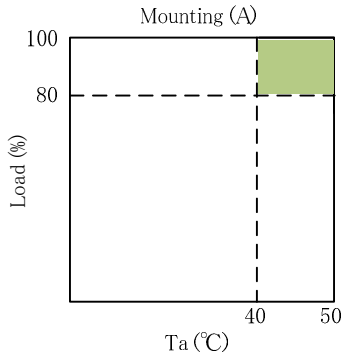
For damages occurring at normal operation within this warranty period, repair is free of charge.

For other mounting methods, please inquire to TDK-Lambda.

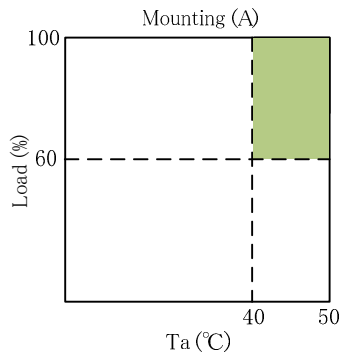
### ■ CONVECTION COOLING

#### ZWS50BAF, ZWS75BAF

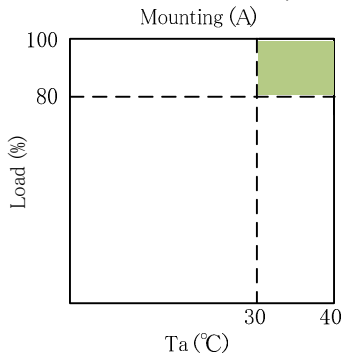
#### ZWS150BAF



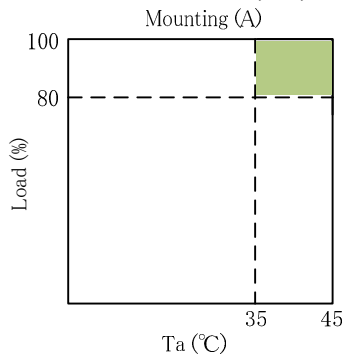
#### ZWS100BAF



#### ZWS300BAF-12, 15

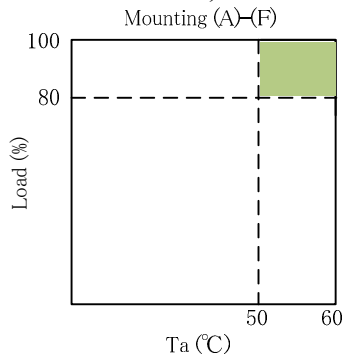


#### ZWS300BAF-24, 36, 48

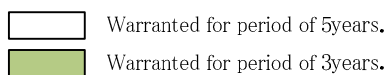
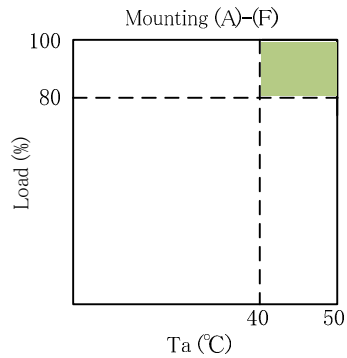


### ■ FORCED AIR COOLING

#### ZWS50BAF, ZWS75BAF ZWS100BAF, ZWS150BAF



#### ZWS300BAF



### Following cases are not covered by warranty.

- (1) Improper usage like dropping products, applying shock and defects from operation exceeding specification of the units.
- (2) Defects resulting from natural disaster (fire, flood etc).
- (3) Unauthorized modifications or repair by the buyers' defects not cause by our company.