ENGLISH

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.

DEUTSCH

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.

FRANÇAIS

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 flotttantes.

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.

ITALIANO

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 assogettato 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 ragguagli.

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 i 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.

ESPAÑOL

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.

PORTUGUÊS

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 alimentaçao 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 alimentaçao considerado com um componente, não é dentro do appliquation 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.
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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.

TDK·Lambda

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ZWX Series

ZWX180・240・300

Instruction Manual

A234-04-01D

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. When a spark is generated, there are risks of igniting these substances and exploding.

⚠ WARNING

- This product is primarily designed and manufactured as Class 1 equipment. In the interest of safety, connect to earth before using the product.
- Do not touch this product and the internal components in operation or shortly after shut down. They may have high voltage or high temperature and as the product dissipates its heat so the surface of the product is hot. You may receive electric shock or burn.
- When this product is operating, keep your hands and face away from it as you may be injured by flying debris in the event of a fault.
- Do not make unauthorized changes to this product, otherwise you may receive electric shock and void your warranty.
- Do not drop or insert anything into this product. It might lead to a failure, fire and/or electric shock.
- Do not operate this product after it falls down.
- Do not use this product in the event of the emission of smoke or abnormal smell and sound etc. It might lead to fire and/or electric shock. In such cases, please contact us. Do not attempt repair by yourself, as it is dangerous for the user.
- Do not operate this product in the presence of condensation. It might lead to fire and/or electric shock.

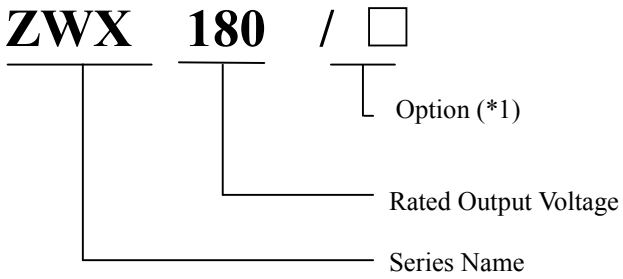
⚠ CAUTION

- This power supply is designed for use within an end product.
- Confirm connections to input/output terminals and signal 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, traffic control equipment, medical equipment, etc.), it is necessary to provide a fail-safe mechanism in the end equipment.
- Do not inject abnormal voltages into the output or signal of this product. The injection of reverse voltage or over voltage exceeding nominal output voltage into the output or signal terminals might cause damage to internal components.
- Never operate the product under over current or short-circuit conditions for more than 30 seconds, 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 not to touch the component side. When installing this product in apparatus or equipment, mount it on spacers.
- The output of this product 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.
- When using for personal computer (hereinafter called PC), cut input voltage with you may stop PC. When the AC switch is cut while PC is operating, PC might be damaged. Especially, when the AC switch is cut while the memory such as hard disks is operating, you may damage data in a PC.
- 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 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 Densei-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

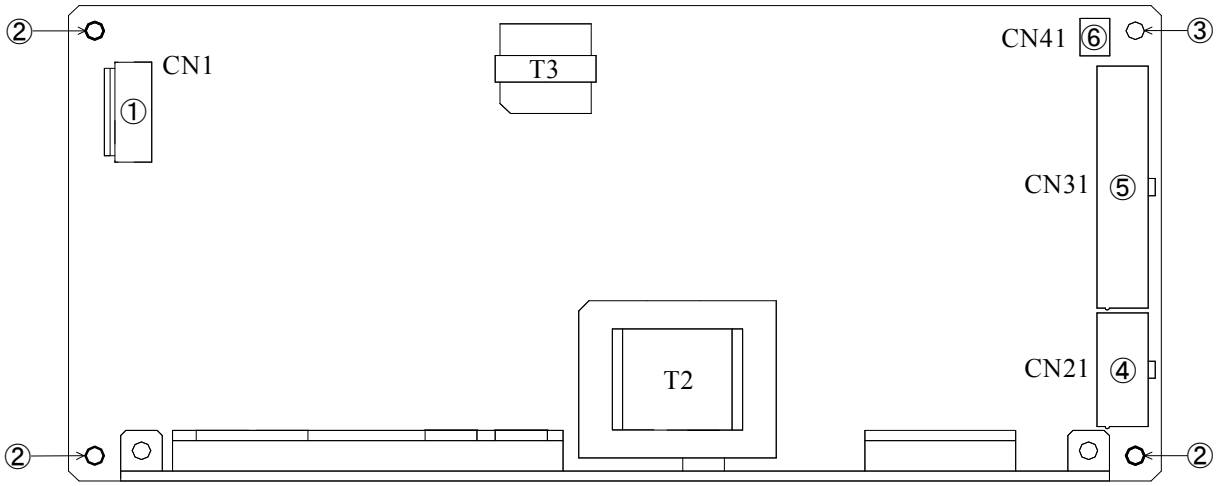


(*1)
Blank : Standard type.
/L1 : With chassis model.
/L2 : With chassis model.
/A1 : With chassis and cover model.
/A2 : With chassis and cover model.
(Refer to 6-2. Output Derating for details of option model.)

2. Terminal Explanation

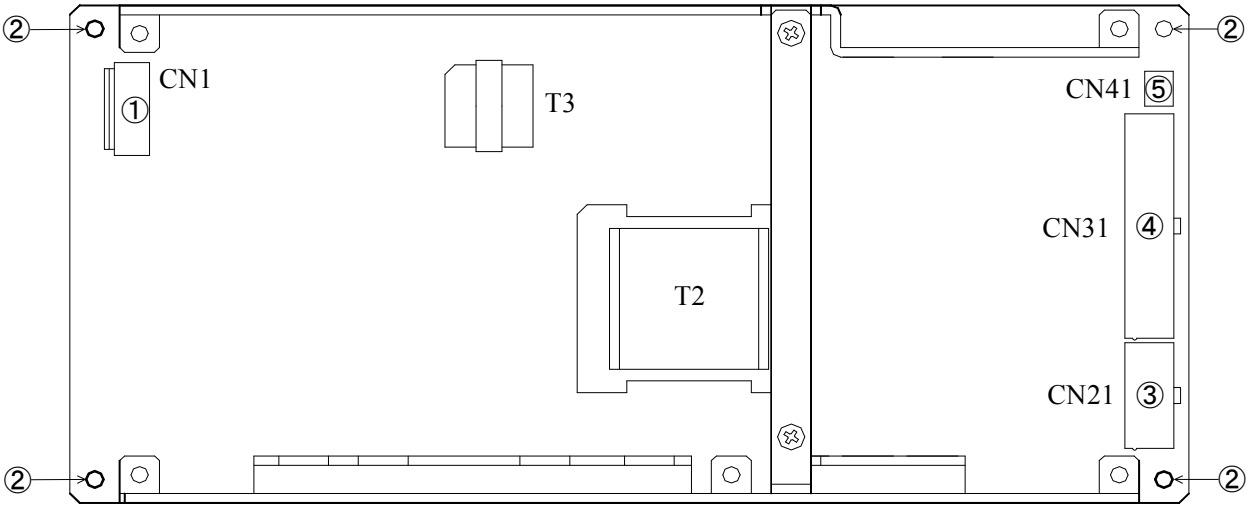
2-1. ZWX180, ZWX240 and ZWX300 Terminal Explanation

ZWX180



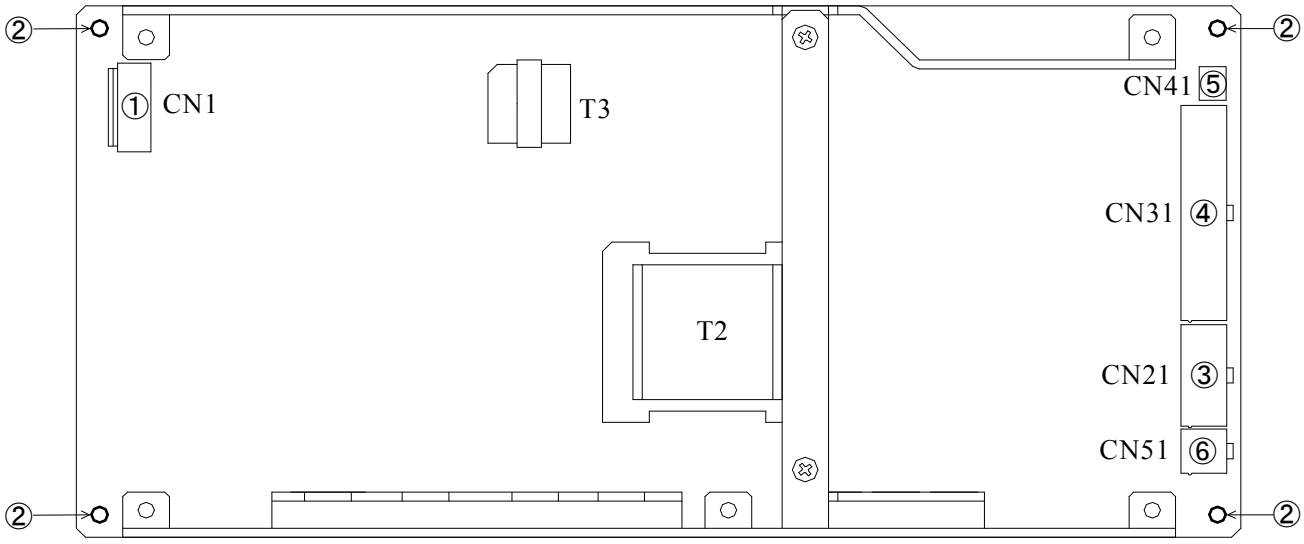
① Input Terminal: CN1 (Refer to 2-2.)
② Mounting hole : hole diameter : φ3.5mm
This hole is connected to Protective Earth of CN1.
Must be connected to electrically conductive spacer.
The mounting surface of the spacer should be within Max φ8mm.
③ Mounting hole : hole diameter : φ3.5mm
This hole is not connected to Protective Earth of CN1.
④ Output Terminal : CN21 （+3.3V, +5V and -12V） (Refer to 2-3.)
⑤ Output Terminal : CN31 （+3.3V, +5V, +12V, -12V, 5V SB and +3.3Vsense） (Refer to 2-3.)
⑥ Signal Terminal : CN41 （PS_ON and PWR_OK） (Refer to 2-3.)

ZWX240



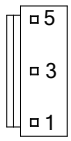
① Input Terminal : CN1(Refer to 2-2.)
② Mounting hole : hole diameter : φ3.5mm
This hole is connected to Protective Earth of CN1.
Must be connected to electrically conductive spacer.
The mounting surface of the spacer should be within Max φ8mm.
③ Output Terminal : CN21 （+3.3V, +5V and -12V） (Refer to 2-3.)
④ Output Terminal : CN31 （+3.3V, +5V, +12V, -12V, 5V SB and +3.3Vsense） (Refer to 2-3.)
⑤ Signal Terminal : CN41 （PS_ON and PWR_OK） (Refer to 2-3.)

ZWX300

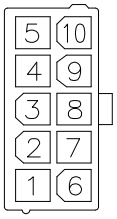


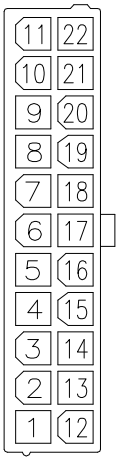
① Input Terminal : CN1 (Refer to 2-2.)
② Mounting hole : hole diameter : φ3.5mm
This hole is connected to Protective Earth of CN1.
Must be connected to electrically conductive spacer.
The mounting surface of the spacer should be within Max φ8mm.
③ Output Terminal : CN21 （+3.3V, +5V and +12V-1） (Refer to 2-3.)
④ Output Terminal : CN31 （+3.3V, +5V, +12V-1, -12V, 5V SB and +3.3Vsense） (Refer to 2-3.)
⑤ Signal Terminal : CN41 （PS_ON and PWR_OK） (Refer to 2-3.)
⑥ Output Terminal : CN51 （+12V-2） (Refer to 2-3.)

2-2. CN1 Connector pin Assign and Function (ZWX Series)

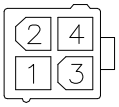
CN1	Pin No.	Function		Note
	1	L	AC Input terminal Live line	Fuse in line
	3	N	AC Input terminal Neutral line	-
	5	⏚	⏚ Terminal (Protective earth)	-

2-3. CN21, CN31, CN41 and CN51 Connector pin Assign and Function (ZWX Series)

CN21	Pin No.	Function	
	1	+3.3V	+3.3V output terminal
	2	+5V	+5V output terminal
	3	COM	GND terminal (All of COM are connected in this Power supply unit.)
	4	COM	GND terminal (All of COM are connected in this Power supply unit.)
	5	+12V	+12V output terminal (ZWX180 and ZWX240)
		+12V-1	+12V output terminal (ZWX300 only)
	6	N.C.	No connect (Connected to +3.3V inside.)
	7	+5V	+5V output terminal
	8	COM	GND terminal (All of COM are connected in this Power supply unit.)
	9	COM	GND terminal (All of COM are connected in this Power supply unit.)
	10	+12V	+12V output terminal (ZWX180 and ZWX240)
		+12V-1	+12V output terminal (ZWX300 only)

CN31	Pin No.	Function	
	1	+12V	+12V output terminal (ZWX180 and ZWX240)
		+12V-1	+12V output terminal (ZWX300 only)
	2	COM	GND terminal (All of COM are connected in this Power supply unit.)
	3	+3.3V	+3.3V output terminal
	4	+3.3V	+3.3V output terminal
	5	+3.3V sense	+3.3V output Sensing terminal
	6	-12V	-12V output terminal
	7	COM	GND terminal (All of COM are connected in this Power supply unit.)
	8	COM	GND terminal (All of COM are connected in this Power supply unit.)
	9	+5V	+5V output terminal
	10	+5V	+5V output terminal
	11	+5V SB	+5V SB output terminal
	12	+12V	+12V output terminal (ZWX180 and ZWX240)
		+12V-1	+12V output terminal (ZWX300 only)
	13	COM	GND terminal (All of COM are connected in this Power supply unit.)
	14	+3.3V	+3.3V output terminal
	15	+3.3V	+3.3V output terminal
	16	COM	GND terminal (All of COM are connected in this Power supply unit.)
	17	COM	GND terminal (All of COM are connected in this Power supply unit.)
	18	COM	GND terminal (All of COM are connected in this Power supply unit.)
	19	COM	GND terminal (All of COM are connected in this Power supply unit.)
	20	+5V	+5V output terminal
	21	+5V	+5V output terminal
	22	+5V	+5V output terminal

	Pin No.	Function	
CN41 	1	PWR_OK	PWR_OK signal terminal
	2	PS_ON	PS_ON signal terminal

(ZWX300 only) **CN51** 	Pin No.	Function	
	1	COM	GND terminal (All of COM are connected in this Power supply unit.)
	2	COM	GND terminal (All of COM are connected in this Power supply unit.)
	3	+12V-2	+12V output terminal (ZWX300 only)
	4	+12V-2	+12V output terminal (ZWX300 only)

***Output current of each connector pin must be less than 9A.**

3. Terminal Connecting Method

Take care about the input wiring. Wrong connection cause the power supply spoil.

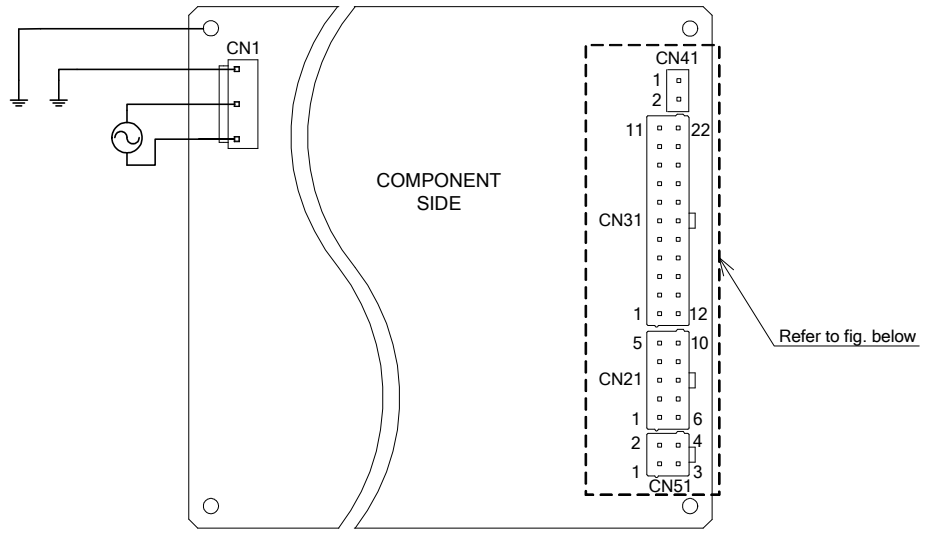
- Input must be off when making connections.
- Connect ⏚ terminal of input connector and mounting hole to protective earth of the equipment.
- The output load line and input line shall be separated to improve noise sensitivity.
- When connecting or removing connector, do not apply stress to PCB.
- Use the input/output connector specified in outline drawing. Also, use recommended crimping tool.
  Connector is not included with this product.

INPUT/OUTPUT CONNECTOR (Common ZWX Series)

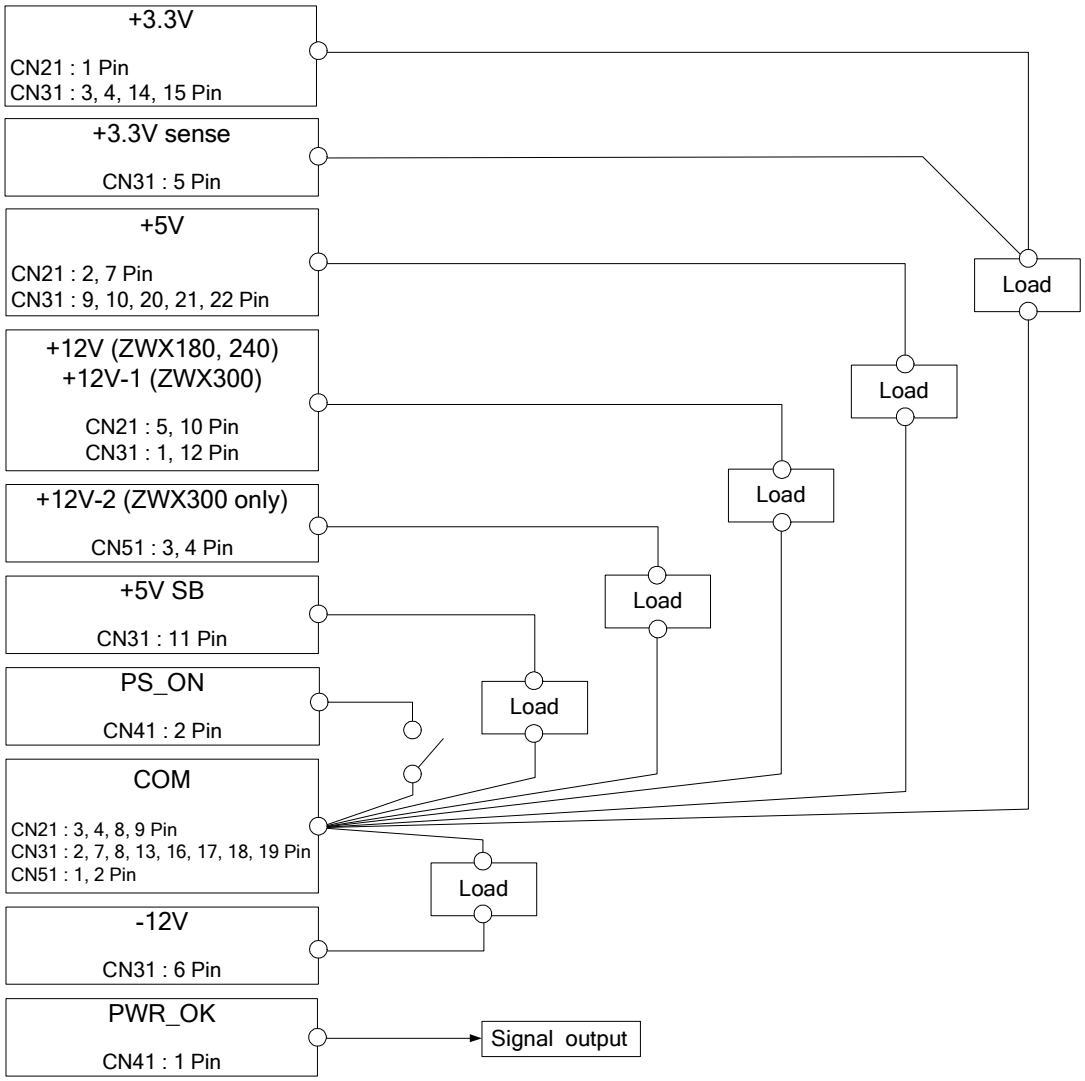
	CONNECTOR	MACHING HOUSING	TERMINAL PINS		MANUFACT
INPUT TERMINAL (CN1)	B3P5-VH(LF)(SN)	VHR-5N	AWG18-22	SVH-21T-P1.1 BVH-21T-P1.1	J.S.T.
OUTPUT TERMINAL (CN21)	5566-10A-210	5557-10R-210	AWG18-24	5556PBT, 5556PBTL	MOLEX
OUTPUT TERMINAL (CN31)	5566-22A-210	5557-22R-210	AWG18-24	5556PBT, 5556PBTL	MOLEX
SIGNAL TERMINAL (CN41)	B2B-XH-AM(LF)(SN)	XHP-2	AWG22	BXH-001T-P0.6 SXH-001T-P0.6	J.S.T.
OUTPUT TERMINAL (CN51) (ZWX300 only)	5566-04A-210	5557-04R-210	AWG18-24	5556PBT, 5556PBTL	MOLEX

Common ZWX Series

BASIC CONNECTION



BASIC CONNECTION OF OUTPUT SIDE

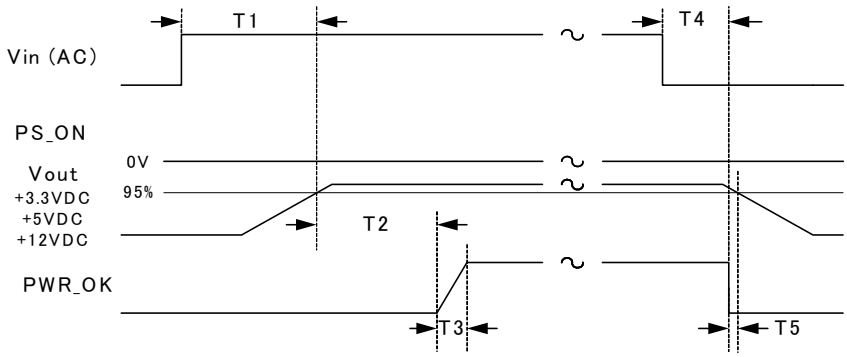


* All of COM are connected in this Power supply unit.

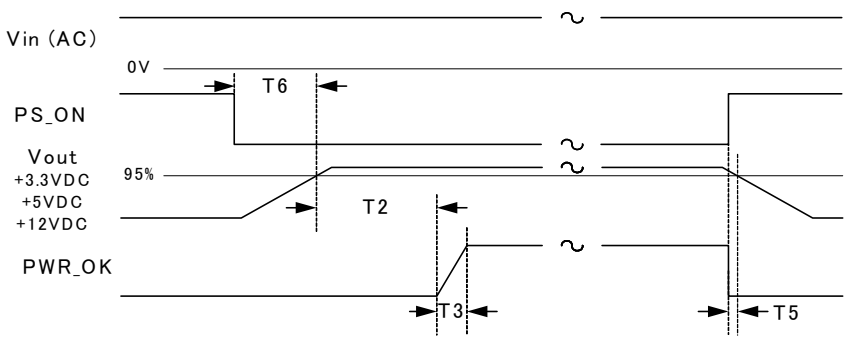
4. Specification of Input and Output Signal

Timing chart

Input & Shut down



ON/OFF Control

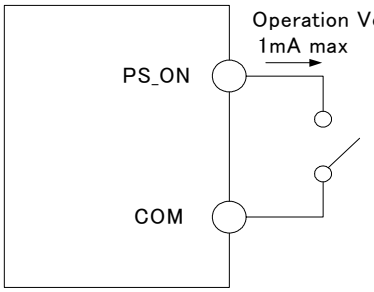


Time characteristic of signal

T1 ＜ 2s
100ms ≦ T2 ≦ 500ms
T3 ≦ 10ms
T4 ≧ 16ms
T5 ≧ 1ms
T6 ＜ 500ms

4-1. PS_ON

When the “L” is input, +3.3V, +5V, +12V (only ZWX300 has+12V-1, +12V-2) and –12V are output.
When the “H” or “OPEN” is input, +3.3V, +5V, +12V (only ZWX300 has+12V-1, +12V-2) and –12V are stopped and reset the shut down latch.

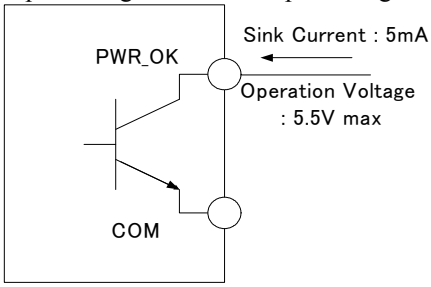


Control mode

Output	PS_ON Level to COM
ON	Short or Low : 0V – 0.8V
OFF	Open or High : 2.0V – 5.5V

4-2. PWR_OK

When the input voltage and +5V output voltage become “ON", the "H" signal is output.



PWR_OK Signal	Output	PS_ON Level to COM
High (2.4V – 5.5V)	ON	Short or Low : 0V – 0.8V
Low (＜0.4V)	OFF	Open or High : 2.0V – 5.5V

5. Explanation of Function and Precautions

5-1. Input Voltage Range

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

5-2. Output Voltage Range

Output voltage is fixed. It is not adjustable. Output voltage in the specification is value on the point of the output connector.

5-3. Inrush Current

This series equipped Power thermistor to limit the inrush Current (ZWX180, 240). ZWX180, 240 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℃ in the specification.

5-4. Wattbox

ZWX series is a Watt box power supply. Watt box can supply the total output power specified in the spec sheet with free combinations for each output CH power within the each CH spec. (Each Rating at Forced air cooling, Convention cooling and Peak power at forced air cooling.)
However, there is some limitation for +3.3VCH and +5VCH(ZWX180 only) and +12V-1 and +12V-2 (ZWX300 only). Please take a note.

5-5. Over Voltage Protection (OVP)

The OVP function (Inverter shut down method, manual reset type) is provided. As for +3.3V, +5V and +12V(+12V-1 and +12V-2 for ZWX300), the over voltage protection circuit is built-in. OVP will operate either one output voltage trigger the OVP limit (V1: 114%-130%, V2: 115%-140%, V3: 112%-130%), all the outputs (except 5V SB) will be shut down. Outputs will recover after line re-power on (line off a few minutes) or reset the PS_ON signal. Note that for both –12V and 5VSB have no OVP function. 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.

5-6. Over Current Protection（OCP Delay Shut Down）

Outputs will be shut down after the delay time shown in next table in condition over current or output short. Outputs will recover automatically when the over current or output short condition removed within the delay time. Outputs will recover after line re-power on (line off a few minutes) or reset the PS_ON signal. Also please avoid over current condition over 30seconds to avoid unit failure. In addition, the value of OCP is fixed and not adjustable.

Condition	Delay time
When Over current is output (110% or more at load of forced air) +3.3V, +5V, +12V (ZWX300 : +12V-1, +12V-2)	5 seconds or more
When a value that Peak Output Power per Total Output Power is 110% or more.	Immediate
When Output is short +3.3V, +5V +12V (only ZWX300: +12V-1, +12V-2)	Immediate

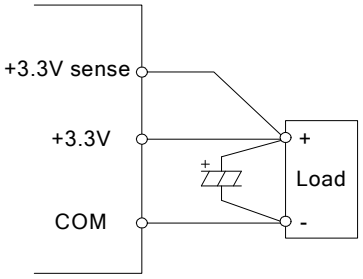
-12V output depends on +5V. Short circuit of +5V shut -12V off.
Outputs will recover automatically when the over current condition removed.
When 5V SB is shut down with over current or short, all output power will be shut down.

5-7. Over Temperature Protection (OTP)

The OTP function (manual reset type) is provided. When ambient or internal temperature rises abnormally, OTP function operates and output will be shut down. After shut down, remove the input and cool it down to reset OTP.
Then re-input.
It is not a function to guarantee that the power supply doesn't break down in all conditions.

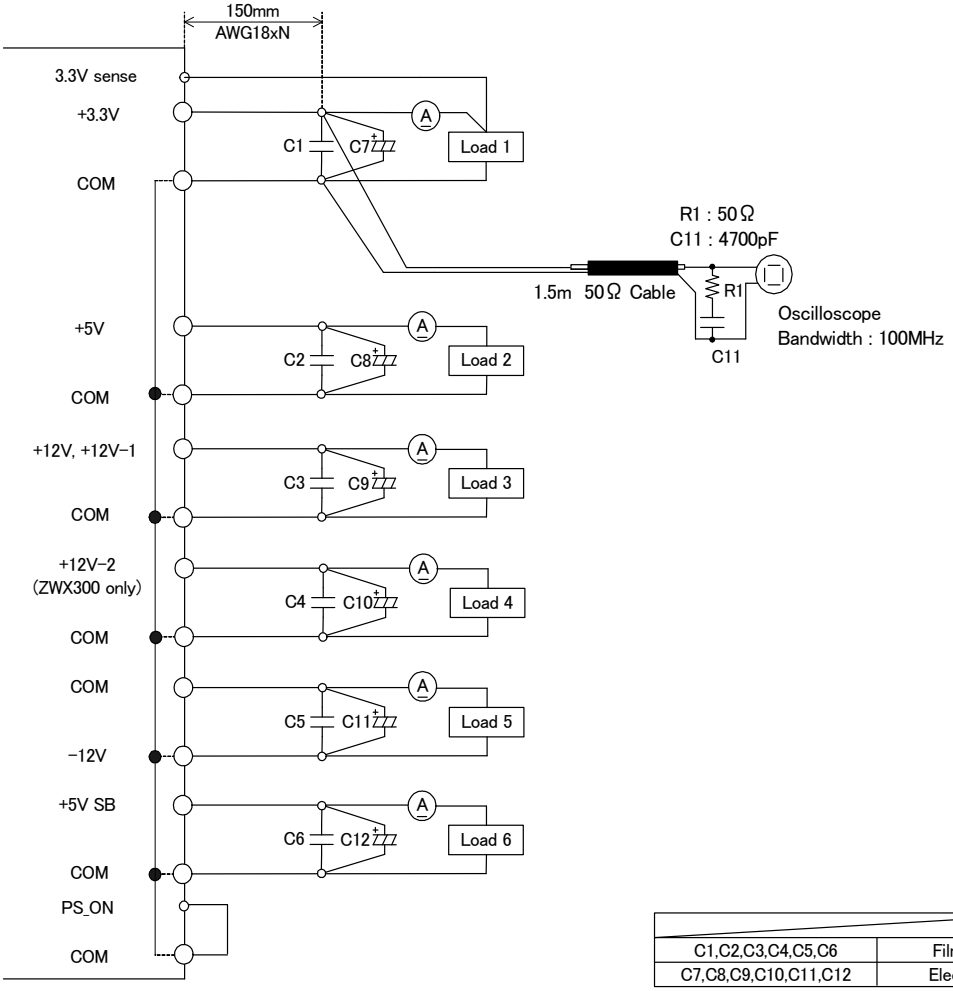
5-8. Remote Sensing (only +3.3V)

This function compensates voltage drop of wiring from output terminals to load terminals. Connect "+3.3V sense" terminal to "+3.3V" terminal. The total line voltage drop (+ side line and - side line) shall be less than 0.3V. In case that sensing lines are too long, it is necessary to put an electrolytic capacitor in following. If remote sensing terminals are opened, the stability and the accuracy of the output turns worse. Therefore, terminal "+3.3V sense" terminal, "+3.3V" terminal must be connected.



5-9. Output Ripple & Noise

The standard specification for maximum ripple value is measured according to measurement circuit specified by EIAJ-RC9131. 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.

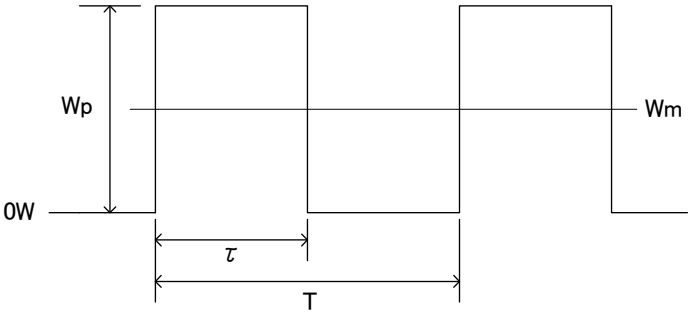


		Capacitance
C1,C2,C3,C4,C5,C6	Film Cap.	0.1uF
C7,C8,C9,C10,C11,C12	Elec. Cap.	100uF

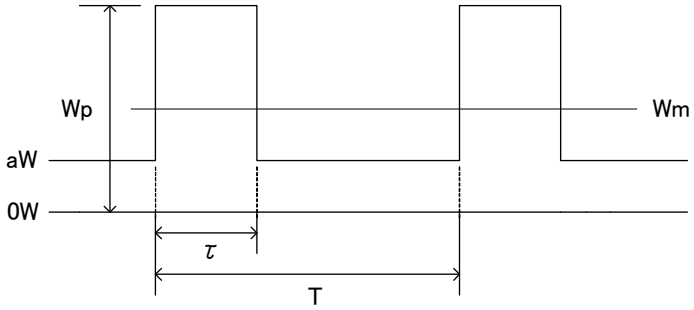
*All of COM are connected in this Power supply unit

5-10. Peak Output Current

For ZWX series, the relation between peak output current and peak output power (Wp) must satisfy formulas below.
The mean output power during peak output (Wm) have to be less than total output power specified in the spec sheet (Wavg) in both cases for forced air cooling and convection cooling.
Also operating time at peak output current (τ) should be less than 5sec, period (T) should be more than 10msec.
(Forced Air Cooling : Duty≦50%, Convention Cooling : Duty≦10%)



$$Wave \geqq Wm = \frac{Wp \times \tau}{T}$$



$$Wave \geqq Wm = \frac{(Wp - a) \times \tau}{T} + a$$

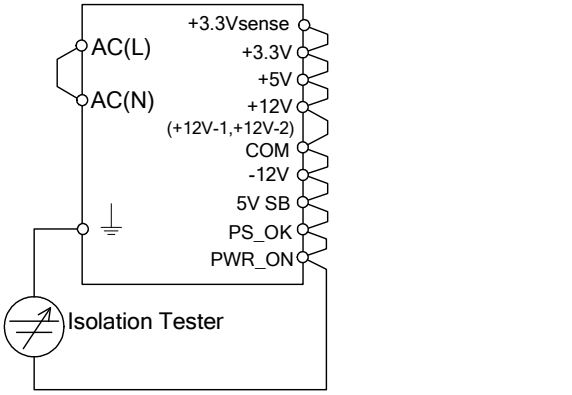
$$Duty = \frac{\tau}{T} \times 100\ (\%)$$

Wp : Peak output power (W)
Wavg : Total output power of Specification (W)
Wm : Average output power (W)
τ : Pulse width of peak output power (sec)
(Operating time at peak output)
T : Period (sec)

5-11. Isolation Test

Isolation resistance between Output - ⏚ (Protective Earth) is more than 100MΩ 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.

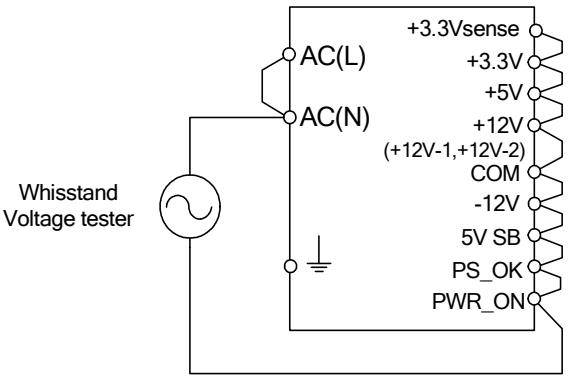
Output - ⏚ (Protective Earth) : 500VDC More than 100MΩ



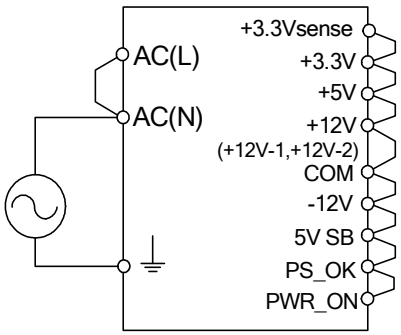
5-12. Withstand Voltage

This series is designed to withstand 3.0kVAC between input and output, 2.0kVAC between input and ⏚ (Protective Earth) and 500VAC between output and ⏚ (Protective Earth) each for 1 minute. When testing withstand voltage, set current limit of the withstand voltage test equipment to 20mA (output - ⏚ (Protective Earth): 100mA). 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.

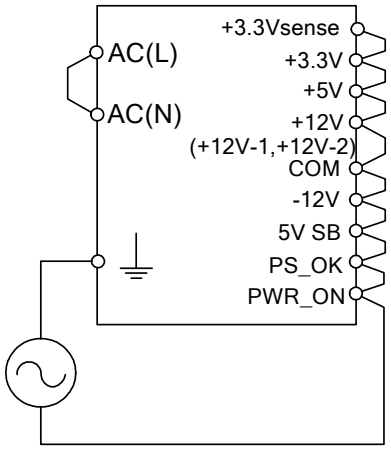
Input - Output : 3.0kVAC 1min (20mA)



Input - ⏚(Protective Earth) : 2.0kVAC 1min (20mA)



Output - ⏚(Protective Earth) : 500VAC 1min (100mA)



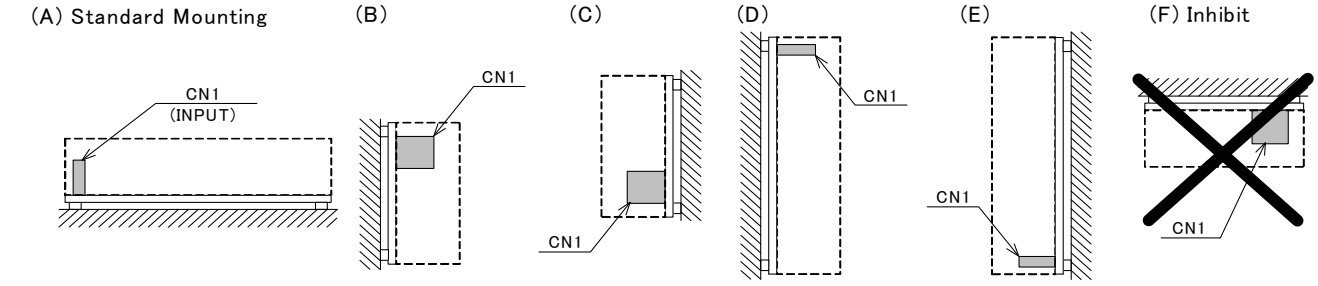
Note） This product have multilayer ceramic capacitor in secondary circuit to frame ground.
Some of the withstand voltage tester may generate high voltage at the matching with multilayer ceramic capacitor and may cause the unit damage.
So, please check the waveform of test voltage.

6. Mounting Directions

6-1. Output Derating according to the Mounting Directions.

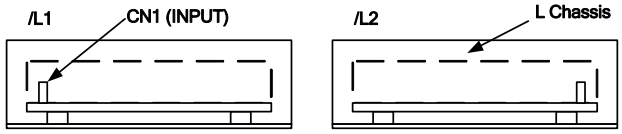
Recommended standard mounting method is (A). Method (B)-(E) are also possible. Refer to the derating below. The de-rating values are referred to in each forced air / convection rating as 100%.

ZWX180, 240, 300



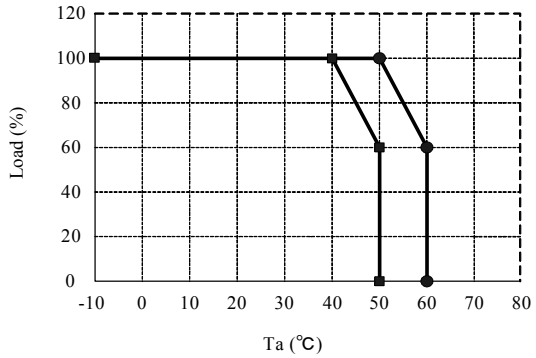
6-2. Output Derating

Standard type and with chassis type (/L1, /L2)



MOUNTING A
MOUNTING B-E

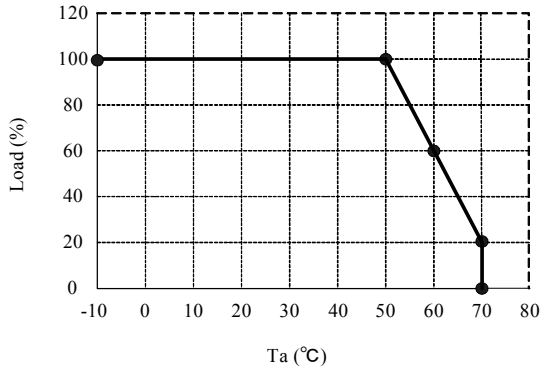
CONVECTION COOLING



Ta (℃)	Load (%)	
	Mounting (A)	Mounting (B)-(E)
-10 - +40	100	
+50	100	60
+60	60	-

Load (%) is percent of total output power (Convection).
Also apply Load(%) to maximum output current (Convection) and combined maximum output power (Convection).

FORCED AIR COOLING



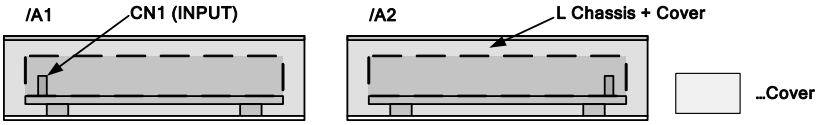
MOUNTING A-E

Ta (℃)	Load (%)
	Mounting(A)-(E)
-10 - +50	100
+60	60
+70	20

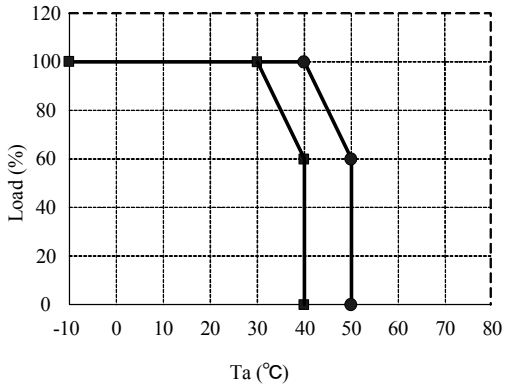
Load (%) is percent of total output power (Forced air).
Also apply Load(%) to maximum output current (Forced air) and combined maximum output power (Forced air).

Please make air flow to maintain Core of T2 temperature 75℃ and Core of T3 temperature 85℃. (*1)
(Please let air (0.85m^3/min (30cfm)) flow into the Component side.)
Air flow should cool down all the component evenly.

With cover type (/A1, /A2)



CONVECTION COOLING

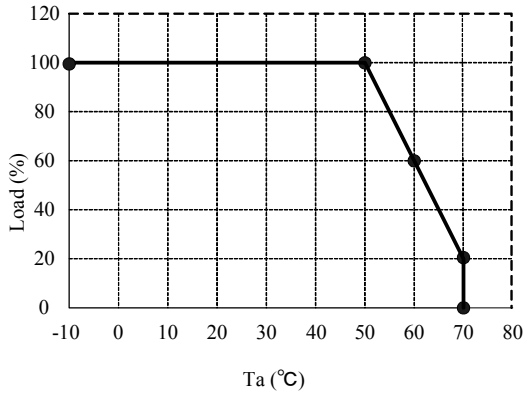


MOUNTING A
MOUNTING B-E

Ta (℃)	Load (%)	
	Mounting (A)	Mounting (B)-(E)
-10 - +30	100	
+40	100	60
+50	60	-

Load (%) is percent of total output power (Convection).
Also apply Load(%) to maximum output current (Convection) and combined maximum output power (Convection).

FORCED AIR COOLING



MOUNTING A-E

Ta (℃)	Load (%)
	Mounting(A)-(E)
-10 - +50	100
+60	60
+70	20

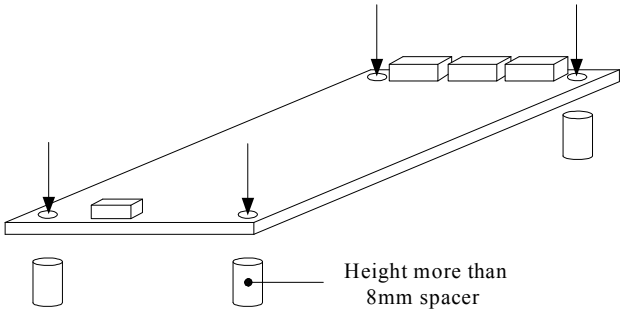
Load (%) is percent of total output power (Forced air).
Also apply Load(%) to maximum output current (Forced air) and combined maximum output power (Forced air).

Please make air flow to maintain Core of T2 temperature 75℃ and Core of T3 temperature 85℃. (*1)
(Please let air (0.85m^3/min (30cfm)) flow into the Component side.)
Air flow should cool down all the component evenly.
(*1) : T2 and T3 are shown in 2.Terminal Explanation

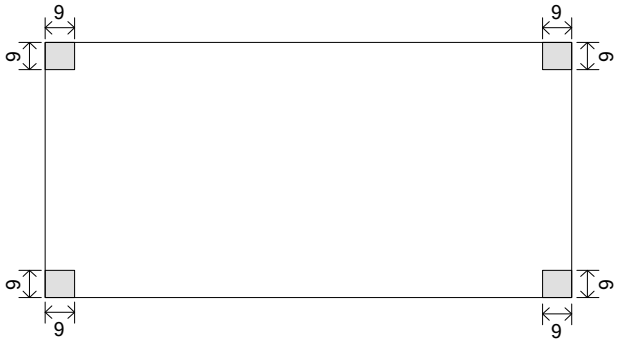
6-3. Mounting Method

Mounting Holes size

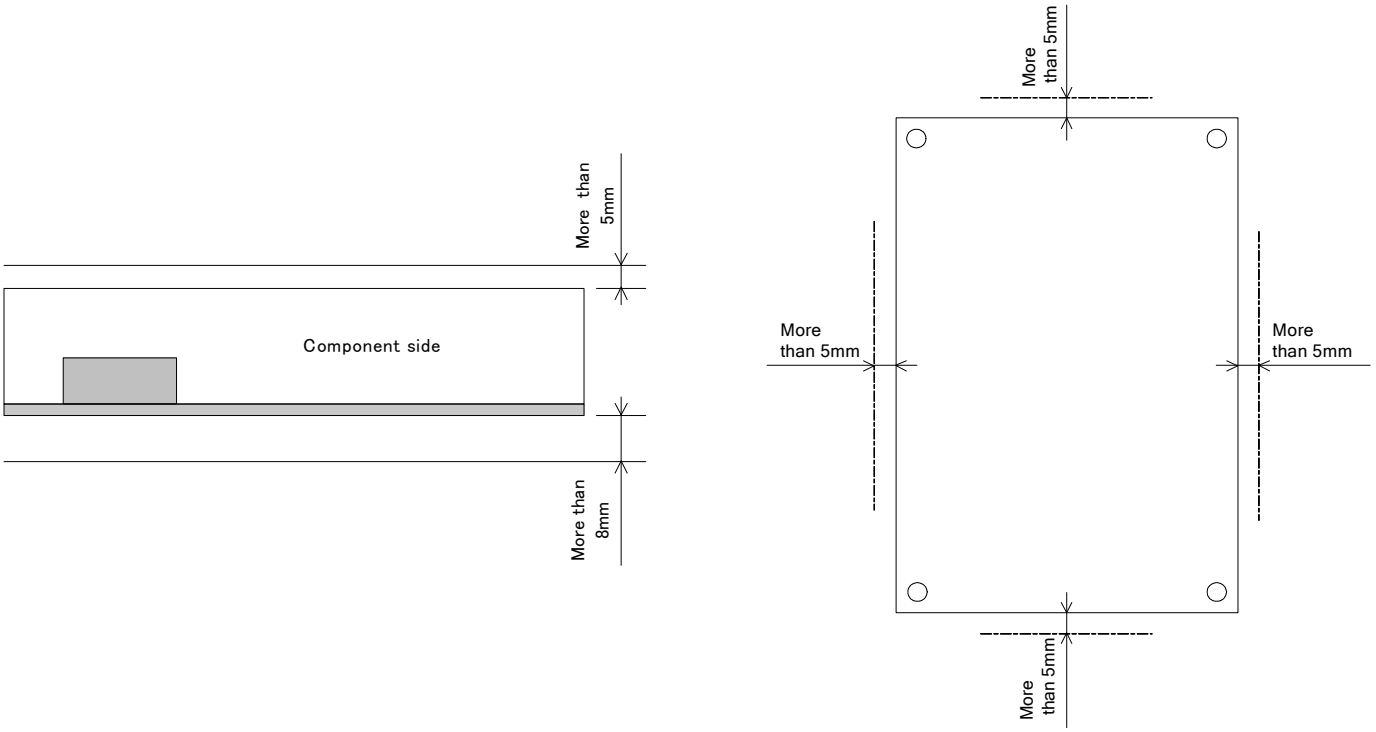
ZWX180/240/300 : 4 holes (ϕ 3.5mm)
Insert the spacer (MAX ϕ 8.0) of height more than 8mm to lift the unit. Also use all mounting holes for the unit installation. The vibration spec is the value when the unit is mounted by 8mm spacers.



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



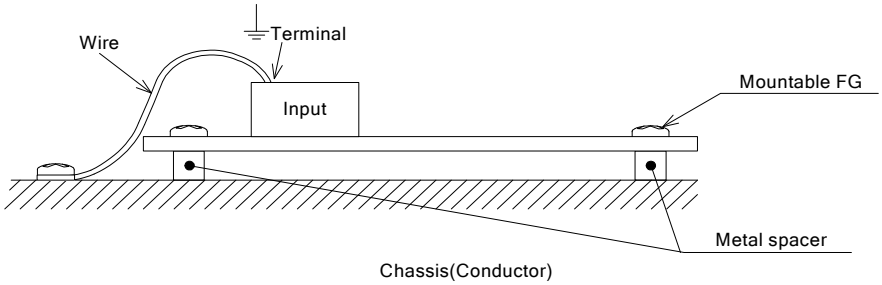
Condition to meet Insulation & Withstand Voltage standard.



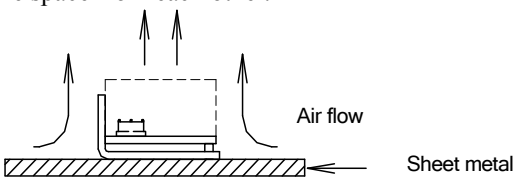
Please leave 5mm space from the surfaces and left 5mm space from the sides of PCB, especially from the solder surface, 8mm space is necessary.

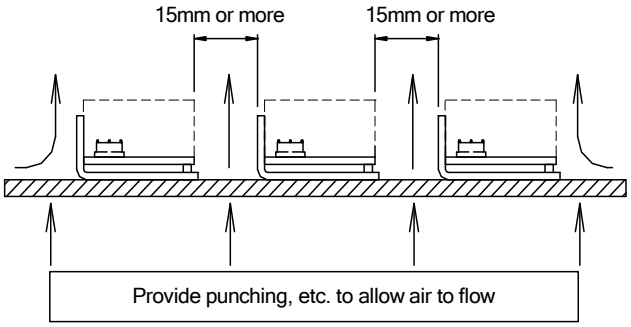
If the space is not enough, the specification of insulation and withstand will not be satisfied. Please take the space in the power supply surroundings and the upper surface place of components to keep enough convection cooling.

⏚ (Protective Earth) should be connected to the earth terminal of the equipment. If not, the conducted noise and output noise will increase.



Consider the heat radiation and safety when the power supply is used in that convection cooling. Please take a distance more than 15mm between the power supply and the peripheral parts. When lay out multiple units, please make sure to place 15mm or more space from each other.





Note:
Recommended torque for mounting screw.
M3 screw : 0.49 Nm (5kgfcm)
Penetration depth 6mm max in the power supply.

7. Wiring Method

(1) The output load line and input line shall be separated each other and twisted individually to improve noise.
(2) Noise can be reduced by attaching a capacitor to the load terminals.
(3) For safety and EMI considerations, connect ⏚ terminal of input connector and mountable Frame Ground of ZWX series to ground terminal at equipment firmly.

Connector manufacture method

a). Applicable Wire and Crimping tool

	CONNECTOR	TERMINAL PIN		CRIPPING TOOL	MANUFACTURE
Input Terminal (CN1)	B3P5-VH(LF)(SN)	AWG18-22	SVH-21T-P1.1 BVH-21T-P1.1	YC-160R	J.S.T.
Output Terminal (CN21)	5566-10A-210	AWG18-24	5556PBT, 5556PBTL	57027-5000	MOLEX
Output Terminal (CN31)	5566-22A-210	AWG18-24	5556PBT, 5556PBTL	57027-5000	MOLEX
Output Terminal (CN41)	B2B-XH-AM(LF)(SN)	AWG22	SXH-001T-P0.6 BXH-001T-P0.6	YC-110R or YRS-110	J.S.T.
Output Terminal (CN51) (OnlyZWX300)	5566-04A-210	AWG18-24	555PB6T, 5556PBTL	57027-5000	MOLEX

b). Crimping Operation

Fig.1 : Examples of crimping

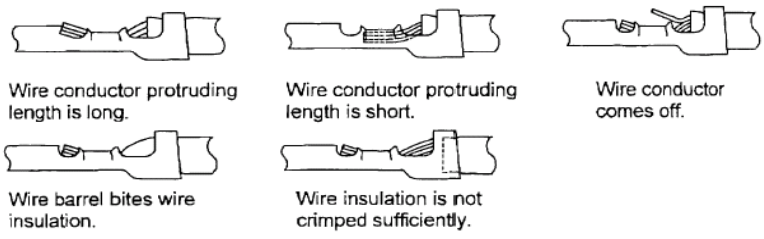


Fig.2 : Examples of defective crimping

c). Inserting contact into housing

Inserting crimped contact into housing

(1) Do not apply any pulling force to crimped part, and insert contact parallel to housing

(2) Insert contact into housing without stopping to innermost

(3) Check secure locking per each insertion by pulling wire softly in order to check that contact does not come off housing. Besides, check whether there is the backlash in the direction of insertion axis.

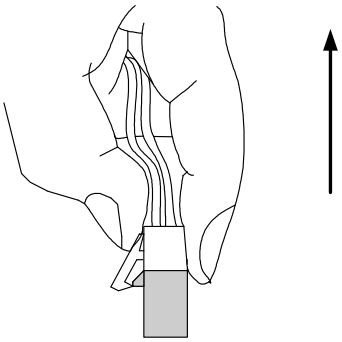
d). Mating and Unmating Connector

(1) Inserting connector

Hold receptacle housing securely and insert into header straight against to header post until click sounds.

(2) Unmating connector

Hold all wires securely and fix receptacle housing by fingers so as to pry, and then, withdraw it on the mating axis



e). Routing of Wire

Routing wire so as not to apply external force to connector except force to such an extent that wire slightly buckles, considering an enough length to route and fixing of wire.

8. 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. Please use slow-blow or time-lag type fuse, not fast-blow fuse. Fuse rating is specified 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

ZWX180: 6.3A
ZWX240: 8.0A
ZWX300: 10A

9. 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 material is not too thin.
(4) If use function of the +3.3V sense, check if the +3.3V sense connector is not opened. Control, check if the +3.3V sense connector is not opened. If in open condition, output voltage accuracy turns worse.
If use function of the PS_ON, check if the PS_ON connector is not opened. If in open condition, power supply will not output.
(5) Is the chassis of power supply hot abnormally? The output is shut down by OTP operation.
(6) Please re-input after the unit to cool down sufficiently. The OTP function is provided. When ambient or internal temperature rises abnormally, OTP function operates and output will be shut down. After shut down, remove the input and cool it down to reset OTP. Then re-input.
(7) Check if the output current and output wattage dose not over specification.
(8) Audible noise can be heard when input voltage waveform is not sinusoidal.
(9) Audible noise can be heard during Dynamic-Load operation.
(10) Ensure that a large capacitor is not connected on the load side.
(11) Please use it following, the stop of the output or the unstable operation might be caused. Please use within maximum capacitance shown below.
(12) Some consideration is necessary, if it connects over capacity of the following. Please inquire details of our company.

Maximum capacitance on each output.
ZWX Series

Output voltage	capacitance (μ F)
+3.3V	6,000
+5V	10,000
+12V, +12V-1	5,000
+12V-2 (only ZWX300)	3,000
-12V	350
5V SB	350

(13) When external voltage of 3V or more is applied at the output terminals of 3.3V or 5V unit, sink current will flow when PS_ON signal is at OFF condition.
Also, there is possibility that output voltage might not turn OFF (output voltage is continuous).
In addition, customer device might be damaged due to sink current.
Therefore, avoid injecting external voltage at the output terminals.

10. Range of free warranty

This product is warranted for a period of 3 years from the date of shipment. As for the breakdown under a normal use during free warranty term, repair is at free of charge.

Conditions of usage at the free of charge warranty are as follows.
(1)Average operating temperature (ambient temperature of the power supply unit) is under 40ºC
(2)Average load factor is less than 80% of each channel.
(3)Installation method: Standard installation. Refer to Output derating for the load factor.

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).
Unauthorized modifications or repair by the buyers' defects not cause by our company.