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.
.
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 UK Ltd
Kingsley Avenue, Ilfracombe
Devon, EX34 8ES
Telephone - Sales and Service +44 (0)1271 856666
Head Office and Works +44 (0)1271 856600
Facsimile +44 (0)1271 864894
WEBSITE: www.uk.tdk-lambda.com

CUS600M/EF
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.

⚠INSTALLATION WARNING

- When installing, ensure that work is done in accordance with the instruction manual. When installation is improper, there is risk of electric shock and fire.
- Installation shall be done by Service personnel with necessary and appropriate technical training and experience. There is a risk of electric shock and fire.
- Do not cover the product with cloth or paper etc. Do not place anything flammable around. This might cause damage, electric shock or fire.

⚠WARNING on USE

- Do not touch this product or its internal components while circuit in operation, or shortly after shutdown. You may receive a burn.
- While this product is operating, keep your hands and face away from it as you may be injured by an unexpected situation.
- For products with no cover, do not touch them as there are high-voltage and high temperature parts inside. Touching them might cause injury such as electric shock or burn.
- There are cases where high voltage charge remains inside the product. Therefore, do not touch even if they are not in operation as you might get injured due to high voltage and high temperature. You might also get electric shock or burn.
- Do not make unauthorized changes to this product nor remove the cover as you might get an electric shock or might damage the product. We will not be held responsible after the product has been modified, changed or dis-assembled.
- Do not use this product under unusual condition such as emission of smoke or abnormal smell and sound etc. Please stop using it immediately and shut off the product. 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 and store these products in environments where condensation occurs due to moisture and humidity. It might lead fire and electric shock.
- Do not drop or apply shock to this product. It might cause failure. Do not operate these products, when mechanical stress is applied.

⚠CAUTION on MOUNTING

- Confirm connections to input/output terminals are correct as indicated in the instruction manual before switching on.
- Input /Output line, please use the wires as short and thick as possible.
- Do not use this product in special environment with strong electromagnetic field, corrosive gas or conductive substances and direct sunlight, or places where product is exposed to water or rain.
- Mount this product properly in accordance with the instruction manual, mounting direction and shall be properly be ventilated.
- Please shut down the input when connecting input and output of the product.
- When installing in environment where conductive foreign, dust and liquid may be present, please consider penetration of above foreign material in the power supply by installing filter, to prevent trouble or malfunction.

⚠CAUTION on USE

- Product individual notes are shown in the instruction manual. If there is any difference with common notes individual notes shall have priority.
- Before using this product, be sure to read the catalog and instruction manual. There is risk of electric shock or damage to the product or fire due to improper use.
- Input voltage, Output current, Output power, ambient temperature and ambient humidity should be kept within specifications, otherwise the product will be damaged, or cause electric shock or fire.
- If the built-in fuse is blown, do not use the product even after replacing the fuse, as there is risk of abnormality inside. Be sure to request repair to our company.
- For products without built-in protection circuit (element, fuse, etc.), insert fuse at the input to prevent smoke, fire during abnormal operation. As for products with built-in protection circuit, depending on usage conditions, built-in protection circuit might not work. It is recommended to provide separate proper protection circuit.
- For externally mounted fuse do not use other fuses aside from our specified and recommended fuse.
- This product was made for general purpose electronic equipment use and is not designed for applications requiring high safety (such as extremely high reliability and safety requirements. Even though high reliability and safety are not required, this product should not be used directly for applications that have serious risk for life and physical safety. Take sufficient consideration in fail-safe design (such as providing protective circuit or protective device inside the system, providing redundant circuit to ensure no instability when single device failure occurs).
- When used in environments with strong electromagnetic field, there is possibility of product damage due to malfunction.
- When used in environment with corrosive gas (hydrogen sulfide, sulfur dioxide, etc.) , there is possibility that they might penetrate the product and lead to failure.
- When used in environments where there is conductive foreign matter or dust, there is possibility of product failure or malfunction.
- Provide countermeasure for prevention of lightning surge voltage as there is risk of damage due to abnormal voltage.
- Connect together the frame ground terminal of the product and the ground terminal of the equipment for safety and noise reduction. If these ground is not connected together, there is risk of electric shock.
- Parts with lifetime specifications (built-in fan electrolytic capacitor) are required to be replaced periodically. Set the overhaul period depending on the environment of usage and perform maintenance. Also, note that there are cases when EOL products cannot be overhauled.
- Take care not to apply external abnormal voltage to the output. Especially, applying reverse voltage or overvoltage more than the rated voltage to the output might cause failure, electric shock or fire.
- Take care not to apply mechanical stress on surface mounted components otherwise causing failure for power supply.
- This product has possibility that hazardous voltage might occur in output terminal depending on failure mode. The output of these products must be protected in the end use equipment to maintain SELV.
- For product with built-in fan, do not block the air intake and exhaust as this might lead to fire.

⚠General installation instructions

- These products are Class I and must therefore be reliably earthed and professionally installed in accordance with the prevailing electrical wiring regulations and the safety standards covered herein.
- These products are IPX0, and therefore chemicals/solvents, cleaning agents and other liquids must not be used.
- The first protective earth connection in the final installation must be marked with the protective earth symbol.

⚠Special Instructions for IEC/EN/ES/CSA 60601-1

- These products are designed for continuous operation within an overall enclosure, and must be mounted such that access to the mains terminals is restricted. See Clause 16, IEC/60601-1 2nd edition or clause 8 IEC/EN/ES/CSA 60601-1 3rd edition.
- These products are NOT suitable for use in the presence of flammable anesthetics mixtures with air or with oxygen or with nitrous oxide.
- These products are classed as ordinary equipment according to IEC/EN/ES/CSA60601-1 and are NOT protected against the ingress of water.
- Reference should be made to local regulations concerning the disposal of these products at out of their useful life.
- These products have not been assessed to IEC/EN60601-1-2 (EMC) but EMC test data is available from TDK-Lambda Corporation.
- For IEC 60601-1 2nd Edition, these products have a reinforced insulation barrier between input and output. For IEC/EN/ES/CSA 60601-1 3rd edition, these products provide reinforced insulation between input and outputs of 2 MOPP, 1 MOPP from input to earth and 1 MOPP from output to earth.
- These products have SELV outputs.
- All outputs have basic spacing's to earth rated for mains – 250Vac, and due consideration must be given to this in the end product design.

⚠Important safety instructions

- Servicing

  These products are not customer serviceable. Repairs may only be carried out by TDK-Lambda Corporation or their authorized agents. These products are not authorized 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 Corporation.

- Safety Class of Protection

  These products are designed for the following parameters: Material Group IIIb, Pollution Degree 2, Over voltage Category II, class I (earthed)
  Indoor use as part of an overall equipment such that the product is accessible to service engineers only.

⚠EMC performance

- Immunity (IEC61000-6-2)

Test	Standard
Electrostatic discharge	IEC61000-4-2
Electromagnetic field	IEC61000-4-3
Fast / burst transient	IEC61000-4-4
Surge immunity	IEC61000-4-5
Conducted RF immunity	IEC61000-4-6
Power frequency magnetic field	IEC61000-4-8
Voltage dips, variations, interruptions	IEC61000-4-11

- Emissions

Test	Standard	Comments
Radiated electric field	EN55032	Class B (as per CISPR 32)
Conducted emissions	EN55032	Class B (as per CISPR 32)
Conducted harmonics	IEC61000-3-2	Compliant
Flicker	IEC61000-3-3	Compliant

NOTE

- Take note that traces of sheet metal processing be left in our power supplies.
- When disposing product, follow disposal laws of each municipality.
- Published EMI (CE, RE) or immunity is the result when measured in our standard measurement conditions and might not satisfy specification when mounted and wired inside end-user equipment. Use the product after sufficiently evaluating at actual end-user equipment.
- When exporting our products, apply for necessary permissions as required by rules and regulations of Foreign Exchange and Foreign Trade Control Act.
- Catalogue, contents of the instruction manual may be changed without a prior notice. Refer to latest catalogue or instruction manual.
- Reproduction or reprinting the instruction manual or its portion is forbidden without our permission.

LONG-TERM STORAGE METHOD AND LONG-TERM STORAGE PERIOD

- Please keep the product in carton box.
- Please do not apply excessive vibration, shock or mechanical stress applied directly to the product.
- Please keep away from direct sunlight.
- For long-term storage temperature and humidity, the following conditions shall be used as a guideline:

  Temperature range : 5℃～30℃

  Humidity range : 40%～60%RH

  Please keep away from the places where temperature and humidity can change drastically. It can cause condensation on the product or deterioration.
- For long-term storage period, we recommend to use within 2 years after receiving the product.

  < Soldering and PCB mounted products: On Board, Power Module and etc >

  For products that have been received for more than 1 year, please check lead oxidation and solderability.
  In addition, SMD type products may have MSL (Moisture Sensitivity Level) provision.
  Please be sure to read the instruction manual and delivery specifications.

  < Unit type or PCB type of products: the product is used an aluminum electrolytic capacitor >

  There is tendency that the leakage current of an aluminum electrolytic capacitor may increase when stored without using for a long time. This phenomenon can be improved by applying voltage to the aluminum electrolytic capacitor to reduce the increased leakage current through the self-recovery effect of the electrolyte. For reference, before using products that have been stored for a very long time, please warm-up first for 30 minutes or more without taking load.

  < Criterion of warm up voltage condition >

  (1) Implementation period: 1 year or above after the delivery.
  (2) Electrical continuity condition.
  Input voltage: Rating.
  Load: 0A.
  Ambient temperature: Normal temperature.
  Time: 30 minutes or more.

1. Model name identification method

CUS 600M – 12 / EF

- EF — End Fan Model (exhaust)
- 12 — Rated Output Voltage
- 600M — Output Power (actual output power refer to the specification)
- CUS — Series Name.

2. Terminal Explanation

Input side

Top side

① L : Input terminal Live line (Fuse in line.).
② N : Input terminal Neutral line (Fuse in line.).
③ ⏚ : Functional earth terminal.
④ CN61 Terminal.
⑤ V+: + Output Terminal.
⑥ V-: - Output Terminal.
⑦ VR51 : Output voltage adjustment trimmer. The output voltage rises when the trimmer is turned clockwise.

Configuration and Function of CN61 is shown as below.

CN61	Pin No.	Configuration	Function
	1	STBY+	Standby supply + (5V+).Please refer to 6-12.
	2	STBY-	Standby supply - (5V-). This pin is connected to V- internally. Please refer to 6-12.
	3	S+	Remote sense +.
	4	S-	Remote sense -.
	5	NC	No connection.
	6	PG	Power good signal. Please refer to 6-13.
	7	R+	Remote ON/OFF terminal +. Please refer to 6-14.
	8	R-	Remote ON/OFF terminal -. Please refer to 6-14.

*CN1,CN51,CN61 Connector & Housing & Terminal Pin

	Connectors used		Matching housings	Matching pins	Maker
Input (CN1)	Housing	350767-1	350766-1	350536-1	TE Connectivity
	Terminal Pin	350218-1			
Output (CN51)	M4 terminals		—	—	—
Output (CN61)	B8B-PHDSS(LF)(SN)		PHDR-08VS	SPHD-001T-P0.5	JST

Hand Crimping Tool : 91500-1(TE Connectivity),YC-610R(JST),YC-611R(JST).
Use maker recommended crimping tool.
Matching housings and pins are not included in product.

3. Block Diagram

- Fuse rating : 10A
- Circuit topology, switch frequency
  PFHC circuit: active filter 65kHz (Typ).
  Main output circuit: LLC resonant 45k~280kHz.
  Standby supply circuit: Flyback 115kHz (Typ).

4. Sequence time chart

Input voltage ON/OFF sequence time chart

Remote ON/OFF sequence time chart

Note : (*2) This sequence is using external voltage.

OVP recovery sequence time chart (1)

OVP recovery sequence time chart (2)

Main output OCP (latch) recovery sequence time chart (1)

Main output OCP (latch) recovery sequence time chart (2)

Main output OCP (not latched) recovery sequence time chart

Standby supply OCP recovery sequence time chart

Note : (*2) This sequence is using external voltage.

5. Connection Method

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

- Input must be off when making connections.
- Mounting hole and ⏚ terminal of input connector must be connected to protective earth of the equipment.
- The output load line and input line shall be separated to improve noise sensitivity.
- Do not apply stress to PCB, when connecting or removing connectors.
- Do not apply stress to the components when connecting or removing connectors.
- Remote ON/OFF control lines shall be twisted or used shielded wires. Separate from load line.
- Remote sensing lines shall be twisted or used shielded wires.

End equipment connection

Input side

Top side

6. Explanation of Function and Precautions

6-1. Input Voltage Range

Input voltage range is single phase 85-265VAC(47-63Hz). 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). If input voltage is less than 115VAC, output power need to be derated.

Derating curve of the input voltage

INPUT VOLTAGE (VAC)	MOUNTING A,B,C,D,E LOAD (%)
85	80
115~265	100

6-2. Output Voltage Range

Output voltage is set the rated value at shipment.
Trimmer (VR51) can adjust the output voltage within the specification 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 be triggered and output voltage will be shut down. Furthermore, when increasing the output voltage reduce the output current so as not to exceed the maximum output power.

6-3. Inrush Current

These products equipped power thermistor to limit the inrush current. 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.

6-4. Over Voltage Protection (OVP)

The OVP function (Inverter shut down method, manual reset type) is provided. Please refer to its specification for OVP range. When OVP triggers, the output will be shut down. 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.
Two methods to recovery from OVP:

- Turn off the input of power supply for a few minutes, and then re-input.
- Remote OFF, and then remote ON again. (Refer to 6-14.)

6-5. Over Temperature Protection (OTP)

Over temperature shut down function is provided.
When ambient or internal temperature rises abnormally, over temperature protection function operates and output will be shut down. After shut down, remove the input and cool it down to reset over temperature protection, and then re-input.
Over temperature protection function operates at out of the specification area.
This function may not activate or cannot avoid power supply damage depending on the situation.

6-6. Over Current Protection (OCP)

These products provide the Hiccup mode with automatic recovery. OCP function operates when the output current exceeds 105% of maximum DC output current at forced air cooling of specification. The outputs will be automatically recovered when the overload condition is canceled, however the outputs may be latched off when shorted condition happens. Never operate the unit under over current or shorted conditions, which may lead damage or insulation failure. OCP setting is fixed and not to be adjusted externally.

6-7. Output Ripple & Noise

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

6-8. Series Operation

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

Note: In case of (A), please select a bypass diode (*3) with maximum forward current rating more than output load current. And maximum reverse voltage must withstand each power supply output voltage.
Never use when one of the unit not operate, which may lead damage.

6-9. 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 (Vf) of diode.
Use within the specification for output voltage and output power.

(*4) Please select a reverse current prevention diode with maximum forward current rating more than output load current

6-10. Isolation Test

Isolation resistance between Output and ⏚ 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.

6-11. Withstand Voltage Test

These products are designed to withstand 4.0kVAC between input and output, 2.0kVAC between input and ⏚ and 1.5kVAC between output and ⏚ for 1 minute. When testing withstand voltage, set current limit of the withstand voltage test equipment to 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): 4kVAC, 1 minute (20mA)
Input – ⏚(Solid line) : 2kVAC,1 minute (20mA)

Output – ⏚: 1.5kVAC 1 minute (20mA)

Note : In case of using external noise filter, capacitance between "Input and ⏚" might be increased. When testing withstand voltage between "Input and Output", there is a possibility exceeding withstand voltage between "Output and ⏚" (1.5kVAC). Please check the voltage between "Output and ⏚". If the voltage exceeding withstand voltage, please add external capacitor to "Output and ⏚". It can decrease the voltage.
On the other hand, no need to check the voltage in case of "Output and ⏚" is shorted.

6-12. Standby supply

A fixed 5V Standby supply is provided through STBY+ and STBY- of CN61. And output derating should be considered according to the input voltage.

6-13. Power Good Signal

Power Good is provided warning signal before loss of output voltage since AC fail through PG and STBY-.
Power Good signal shows "High" level (4.5V~5V) to indicate power supply operating normal, and can source maximum 2mA current.
When power supply stops operating, the signal will turn to "Low" level (0V~0.5V), and the maximum sink current is 1mA.

6-14. Remote ON/OFF Control

Using this function allows the user to turn the output on and off without having to turn the AC input off and on.
It is controlled by the voltage applied to R+ and R-. This circuit is in the Secondary side of the power supply unit.
Do not connect in the primary side of power supply unit.
And this circuit is isolated from the output of power supply unit.

The control mode is shown below.

+R & -R terminal condition	Ouput condition
SW OFF (Lower than 0.5V)	ON
SW ON (Higher than 3.0V)	OFF

External voltage : E	External resistance : R
3 ~ 7VDC	No required
7 ~ 30VDC	10kΩ

Remote ON/OFF control cuicuit can be configured by supply from STBY+ terminal .
Example of connecting remote ON/OFF control application:

Sample A

Sample B

6-15. Remote Sensing (S+, S- terminal)

This function compensates the voltage drop of wiring from output terminals to load terminals. Connect "S+" terminal to "+" terminal of load and "S-" terminal to "-" terminal of load with sensing wires. The total line voltage drop (+ side line and - side line) shall be less than 0.5V. In case that sensing lines are too long, it is necessary to put an electrolytic at the load terminals.

7. Mounting Method

7-1. Mounting Directions

The standard mounting is (A). Mounting (B), (C), (D), (E) and side mounting are also possible.

(A) Standard Mounting (B) (C) (D) (E)

7-2. Output Derating vs. Ambient temperature

Make sure that the specified temperature range is maintained. Refer to the output derating below. Load (%) of derating curve indicates output power.

Note: Output Derating Curve for Main Output Channel only.
Standby supply could be operated at rated load for entire ambient temperature range.
Both Standby Supply and Main Output Channel derating versus input voltage should be considered.
Please refer to the output derating of input voltage curve 6-1 for detail.

Output derating curve according to the operating ambient temperature (Ta)

Ta (°C)	FOR ALL MODELS
	LOAD (%)
-10 - +45	100
60	50

7-3. Mounting Method

(1) These models are forced air cooling type power supply.

The power supply has ventilating holes on the front and back side panels. Keep these two areas freely as much as possible. The power supply may cause damage when it intake conductive material, dust and liquid. Never use in the dusty environment.

(2) The maximum allowable penetration of mounting screws is 4.5mm.

Incomplete thread of mounting screw should not be penetrated.

(3) Rear mounting from bottom side with 4*M3 screws is recommented to comply the vibration and shock specification.

Recommended torque for mounting screw: M3 screws : 0.49N·m (5.0kgf·cm)

(4) Recommend to connect mounting hole to protective ground of system.

8. Wiring Method

(1) The output load line, input line and signal 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 mounting hole and ⏚ with the terminal of protective earth of equipment firmly.
(5) Select the wire materials to the JST connector as follows.
Input wire :AWG#18～AWG#16

9. The life expectancy

The life of the power supply depends on the life of the built-in aluminum electrolytic capacitor being used and fan mounted products will depend on fan life. Each life is described in reliability data.
The life of the aluminum electrolytic capacitor varies depending on the load current of the power supply, and the ambient temperature. Please refer to “Electrolytic Capacitor Lifetime”.
The life of the fan depends on the fan exhaust temperature. Please refer to “Fan Life Expectancy”.
Please do not use the product which passed over the life expectancy. There is a risk of unexpected output shut down and specifications may not be satisfied.
Please contact us for maintenance or exchange the product which passed over the life expectancy.

10. 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.

CUS600M/EF series: 10A

11. 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 adjust trimmer (VR51) is properly adjusted. OVP might be triggered and output is shut down.
(6) Check if the Remote ON/OFF control circuit is connected correctly.
(7) Audible noise can be heard when input voltage waveform is not sinusoidal wave.
(8) Audible noise can be heard during Dynamic-Load operation.
(9) Ensure that a large capacitor is not connected across the output terminals. Please use within maximum capacitance shown below.

Model	CUS600M-12/EF	CUS600M-19/EF	CUS600M-24/EF	CUS600M-28/EF	CUS600M-32/EF	CUS600M-36/EF	CUS600M-48/EF
Maximum external capacitance	10000uF	10000uF	8000uF	5000uF	4000uF	4000uF	3000uF

12.Warranty Period

The warranty period applies for below conditions.
Ta≦40ºC
Output current≦90%

For damages occurring at normal operation within this warranty period, repair is free of charge.
For other mounting directions inquire to TDK-Lambda.

Following cases are not covered by warranty
(1) Improper usage like dropping products, applying shock and defects from operation exceeding specification of the unit.
(2) Defects resulting from natural disaster (fire, flood etc.)
(3) Unauthorized modifications or repair.
(4) Condition of continuously dynamic load or AC power on/off.