

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 considered apparatus and is only to be installed by qualified persons within other equipment and must not be 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 considered to be apparatus and complies with 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.

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.

The ventilation openings on these products must not be impeded.

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 als eine Stromversorgungs-Baugruppe / Stromversorgungs-Einheit zu betrachten und es darf nur von qualifiziertem Personal in andere Geräte eingebaut werden und es darf NICHT als eigenständiges Gerät ("Stand-Alone") 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 als Gerät zu betrachten and entspricht der EMV Direktive. Die Konformität mit der EMV Direktive muss in der finalen Installation betrachtet werden. Bitte kontaktieren Sie Ihr regionales TDK-Lambda Vertriebsbüro bei 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 Netztesiles darf die Leistung, die auf dem Label des Netztesiles 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.

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 Vertriebs Händler 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.

Die Belüftungsöffnungen an diesem Produkt dürfen nicht blockiert werden.

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 appareil 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 considéré comme un appareil conforme à la directive CEM. Le respect de la directive CEM doit être pris en compte dans l'installation finale. Veuillez contacter votre bureau TDK-Lambda le plus proche.

Environnement:

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

Environnement fonctionnel :

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

Intensité soutirée:

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

Paramètres d'entrée:

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

Elimination en fin de vie:

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

**RISQUE DE CHOC ELECTRIQUE****Attention-Danger haute tension :**

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

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

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

Le couvercle/châssis de l'alimentation ne doit pas être accessible à l'utilisateur.

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.

Les orifices de ventilation sur ces produits ne doivent pas être obstrués.

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

Questo prodotto è vendibile solo ad utilizzatori e compratori professionali, attraverso i vari canali di distribuzione. Questo prodotto non è inteso per la vendita al dettaglio o agli utilizzatori finali.

Questo prodotto è da considerarsi come apparato e conforme con la direttiva EMC. Conformità alla direttiva EMC deve essere considerata nell'installazione finale. 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 il prodotto specificati in questo manuale.

Parametri di alimentazione:

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

Smaltimento:

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

**RISCHIO DI SCOSSA ELETTRICA****Avvertimento di alta tensione:**

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

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

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

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

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.

Le griglie di ventilazione su questi prodotti non devono essere ostruite.

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 un aparato considerado fuente de alimentación y sólo para ser instalado por personas cualificadas dentro de otros equipos y no debe ser operado como un producto independiente .

Este producto está a la venta entre profesionales y se puede obtener a través de los canales de distribución .

No está destinado para la venta a los usuarios finales .

Este producto es considerado un producto electrónico y cumple con la directiva EMC. Dicho cumplimiento debe ser considerado sobre la instalación final. Por favor, contacte con su oficina o distribuidor 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.

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.

Las aberturas de ventilación de estos productos no deben obstruirse jamás.

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

Componentes essenciais:

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

Utilização do produto:

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

Este produto é uma alimentação considerado com um aparelho 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 considerado com um aparelho de acordo com a 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.

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.

As aberturas de ventilação destes produtos não devem ser obstruídas.

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.

DBM20 Instruction Manual

BEFORE USING THE PRODUCT

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 may 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.

DANGER

Ne jamais utiliser ce produit en présence de substances inflammables ou explosives.



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 paper or 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.
- There are cases where high residual voltage remains inside the product. Therefore, do not touch even if they are not in operation as you may get injured due to high voltage and high temperature. You may also get electric shock or burn.
- Do not make unauthorized changes to this product nor remove the cover as you may get an electric shock or may damage the product. We will not be held responsible after the product has been modified, changed or disassembled.
- 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 turn off the product. It may lead to fire and electric shock. In such cases, please contact us. Do not attempt to repair, 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 may lead to fire or electric shock.
- Do not drop or apply shock to this product. It may cause failure. Do not operate these products when mechanical stress is applied.

PRECAUTIONS D'USAGE

- Ne pas toucher ce produit ou l'un de ses composants internes pendant qu'il est sous tension, ou peu après la mise hors tension. Vous pourriez vous brûler.
- Ne pas modifier ce produit sans autorisation ni retirer son capot, vous pourriez recevoir une décharge électrique ou endommager le produit. Nous ne saurions être tenus responsables après que le produit ait été modifié, changé ou démonté.
- Ne pas utiliser ce produit dans des conditions anormales comme la présence de fumées ou d'odeurs inhabituelles ou de bruits suspects etc. Merci d'arrêter l'utilisation immédiatement et d'éteindre le produit. Il pourrait se produire un feu ou un choc électrique. Dans de tels cas, merci de nous contacter. Ne pas essayer de réparer le produit, c'est dangereux pour l'utilisateur.
- Ne pas utiliser ou stocker le produit dans un environnement exposé à la condensation ou à l'humidité. Cela peut provoquer un feu ou un choc électrique.



CAUTION ON MOUNTING

- Follow connections to input/output terminals indicated in the instruction manual before switching on.
- Input/output wires are to be 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 ventilated.
- Please turn off the input power when doing wiring to connect to the input/output of the product.
- When installing in environment where conductive foreign, dust and liquid may be present, please consider penetration and take actions to prevent the above foreign material from entering the buffer module by installing filter. In order 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, Buffer current, Buffer 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. Kindly request repair to our company.
- This product with built-in protection circuit, depending on usage conditions, built-in protection circuit may not work. It is recommended to provide a separate protection circuit (element, fuse, etc.), insert fuse at the input to prevent smoke, fire during abnormal operation.
- This product is 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).
- When used in environments with strong electromagnetic field, there is possibility of product malfunction.

CAUTION ON USE

- 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 a 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 a risk of electric shock.
- Take care not to apply external abnormal voltage to the input/output. Especially, applying reverse voltage or overvoltage more than the rated voltage to the input/output as it may cause failure, electric shock or fire.
- Depending on product failure mode, there is possibility of hazardous voltage occurrence at the input/output terminal. Therefore, the input/output of this product must be protected in the end use equipment to maintain SELV.
- This product contains a printed circuit board utilizing surface mounted devices. PCB stress such as bending, twisting, etc., could cause damage. Please handle with care.

NOTE

- When disposing product, follow disposal laws of each municipality.
- Published EMI (RE) or immunity is the result when measured in our standard measurement conditions and may not satisfy specification when mounted and wired inside end-user equipment. Use the product after sufficient evaluation is done at the actual end-user equipment.
- When exporting our products, apply the necessary permissions as required by rules and regulations of Foreign Exchange and Foreign Trade Control Act.
- Catalogue or 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 not allowed without our permission.

PRECAUTIONS DE MONTAGE ET D'UTILISATION

- Respecter les connexions des borniers d'entrée/sortie décrites dans le manuel utilisateur avant de mettre sous tension.
- Ne pas utiliser ce produit dans un environnement exposé à un fort champ électromagnétique, à des substances corrosives ou conductrices, à la lumière directe du soleil ou à la pluie et l'humidité.
- En cas d'installation dans un environnement où des particules conductrices, de la poussière ou des liquides peuvent être présents, merci d'installer des filtres afin de prévenir toute intrusion de corps étrangers à l'intérieur du produit et d'éviter pannes et dysfonctionnements.
- Ce produit est destiné aux équipements électroniques à usage general et il n'est pas conçu pour des applications à hauts risques (telles que les applications de sécurité ou de grande fiabilité. Même si une grande fiabilité ou une grande sécurité ne sont pas requises, ce produit ne doit pas être utilisé directement dans des applications présentant des risques sérieux pour la vie ou l'intégrité physique). Le principe de défaillance sécuritaire doit être appliqué à la conception (tels que l'installation de circuits ou de composants de protection).
- Connecter la masse du châssis et la borne de terre de l'équipement pour la sécurité et la réduction de bruit. Si cette connexion n'est pas faite, il existe un risque de choc électrique.
- En fonction du type de défaillance, il existe une possibilité de présence d'une tension dangereuse sur les bornes de sortie. Ainsi, la sortie de ce produit doit être protégée dans l'équipement final pour conserver la TBTS.

LONG-TERM STORAGE METHOD AND LONG-TERM STORAGE PERIOD

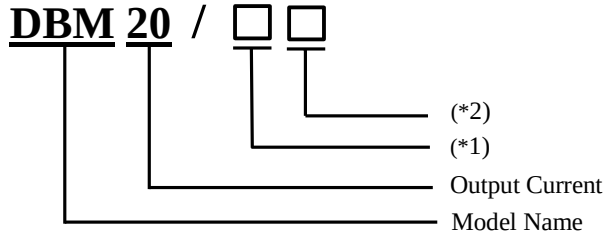
- Please keep the product in carton box.
- Please do not apply excessive vibration, shock or mechanical stress applied directly to the product.
- Please keep away from direct sunlight.
- Temperature and humidity should be within range of product specification (with no condensation)
- For long-term storage temperature and humidity, the following conditions shall be used as a guideline :
 Temperature range : 5°C~30°C
 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 recommended to use within 2 years after receiving the product.
 There is tendency that the leakage current of the aluminium electrolytic capacitors may increase over time when stored without using for long time.
 This phenomenon can be improved by applying voltage to the aluminium electrolytic capacitors in order to reduce the increased of leakage current through the self-recovery effect of the electrolyte.
 For reference, before using products that have been stored for a long time, please warm-up first for 30 minutes or more without taking load.
 < Criterion for warm up voltage condition >
 (1) Implementation period : 1 year or above after product delivery
 (2) Electrical continuity condition
 Input voltage : rated
 Load : 0A
 Ambient temperature : Normal temperature
 Time : 30 minutes or more

Note: CE MARKING

CE Marking, when applied to a product covered by this handbook indicates compliance with the following:

- Low Voltage Directive in that it complies with EN62368-1.
- EMC Directive
- Restriction of the use of certain Hazardous Substances Directive

1. Model Name Identification Method



(*1) Type of input and output connector:

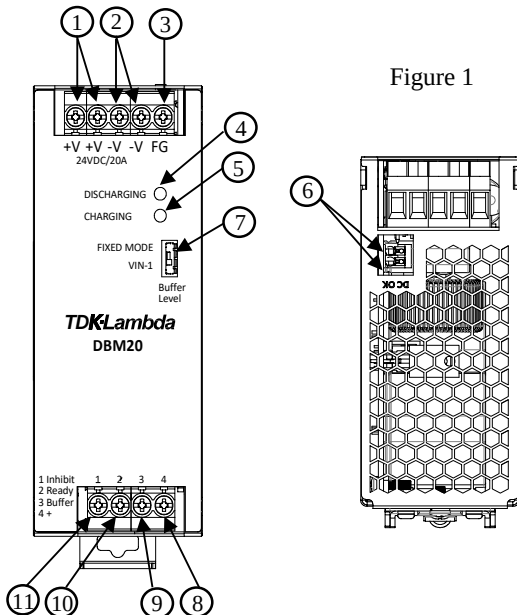
Blank : Standard type

/E : Spring type

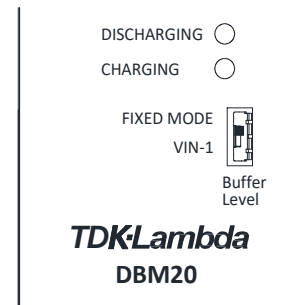
(*2) Conformance coating option :

CO/CO2

2. Terminal Explanation



- ① +V: +Input/Output terminal
- ② - V: - Input/Output terminal
- ③ FG: Earth Terminal
- ④ RED LED: Discharging Indicator. LED will be Off if the bulk electrolytic capacitor is less than 50V typical.
- ⑤ GREEN LED: Charged Indicator. LED will be ON if the bulk electrolytic capacitor is more than 220V typical.
- ⑥ DC OK: Relay (Photo Mosfet). Logic low when input voltage is within specification.
- ⑦ Buffer Level: Switch up for Fixed mode and switch down for VIN-1 mode.



- ⑧ + : Common supply 3.3 - 30V(max)
- ⑨ Buffer: signal will turn "high" during discharging mode.
- ⑩ Ready: signal will turn "high" after bulk electrolytic capacitors are charged up.
- ⑪ Inhibit: pull to TTL "low" to activate the inhibit mode.

3. Terminal Connecting Method

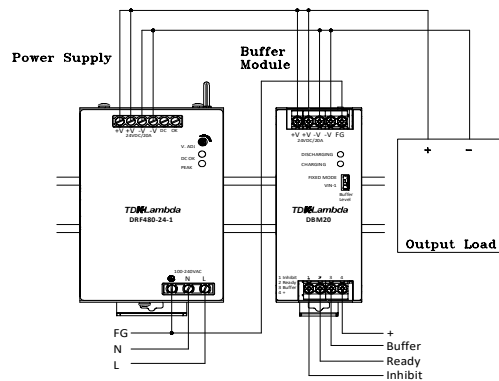
Pay attention to the input/output wiring. If it is connected to wrong terminal, the buffer module will be damaged.

- When connecting input and output wiring, input voltage should be off
- The FG terminal must be connected to the  protective earth terminal or chassis of the equipment.
- When connecting or removing input and output wires, do not apply stress to unit.
- Power supply should be fixed directly to the input connector of the buffer module. Please refer to wiring diagram shown in 3.1 below.

3.1 Wiring for power supply and buffer module.

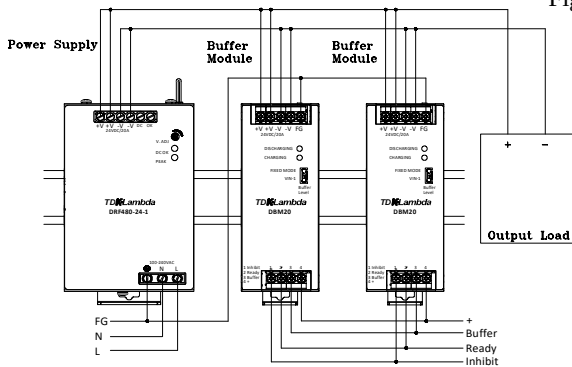
(1) General input/output wiring

Figure 2



(2) Parallel of buffer units

Figure 3



(3) Signal wiring with internal voltage supply

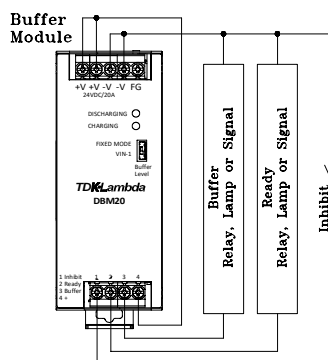


Figure 4

(4) Signals wiring with external voltage supply

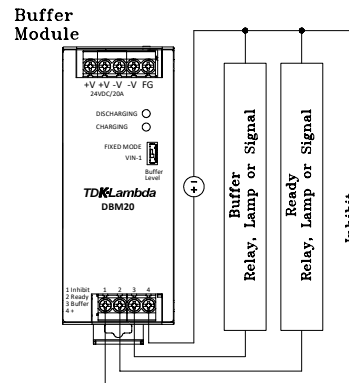


Figure 5

4. Explanation of Functions and Precautions

4-1. Input Voltage Range

4-1.1 Fixed mode: input voltage range is 23 – 30VDC.

4-1.2 VIN-1 mode: input voltage range is 24 – 30VDC

Input voltage which is out of specification or reversed, may damage the unit.

4-2. Nominal Buffer Voltage Range

4-2.1 Fixed mode: during buffering mode the nominal buffer voltage level : 22.4VDC.

4-2.2 VIN-1 mode: during buffering mode the nominal buffer voltage range : 22 - 29.4 VDC (at 20A).

Caution on use :

- Kindly take note that the buffer voltage is equal to the input voltage during Ready mode.

4-3. Signal Output

4-3.1 Relay signal is present at the DC OK terminals as indication of the status of input voltage at the input terminal. In normal operation relay DC OK is close if it is greater, or open if it is lower then the threshold voltage : $18.8 \pm 0.5V$. DC OK relay rating : 30V(max) / 200mA(max).

4-3.2 Ready and buffer signals as indicator of the operation status of the buffer module. Ready signal will change to logic high when the bulk electrolytic capacitors charged up to more than 220Vdc typical after starts up, and the green LED lights up. The RED LED will only light up during buffering mode and at the same time the buffer signal change to logic high. RED LED will be off when the bulk electrolytic capacitors discharged to less than 50Vdc typical.

Ready and buffer signals with 10mA max. are common supply type with voltage range 3.3 - 30V.

Caution on use :

- Kindly take note that both signals may be mistriggered during brown out conditions.
- In Ready mode, buffer signal may appear if dynamic load occurred.

4-3.3 Inhibit signal with 10mA max. is common supply type with voltage range 3.3 - 30V.

Inhibit function can be activated by simply pulling the inhibit signal line to logic low. The buffer unit will immediate stop the existing charging/buffering operation and start to discharge the energy stored in the bulk electrolytic capacitors to the safe level in about 3 ~ 5 seconds.

Caution on use :

- a) Please do not touch the buffer module immediately after the inhibit function because of high voltage might still present across the bulk electrolytic capacitors.

Please refer to figure 6 for general connection diagram for signals.

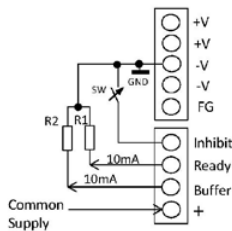


Figure 6

For example :

Common supply	$R1 = R2$
12V±10%	1500Ω ±5% (1W)

4-4. Input Over Voltage Protection (OVP)

Input OVP circuit will shut down the boost converter if the input to the buffer module is greater than 30V. If the input voltage drops back to the normal operating range of 23 - 30V, the buffer module will operate as per normal again.

4-5. Over Current Protection (OCP)

The OCP function is provided for the buffer voltage. When the buffering current exceeds 105% of the maximum DC buffer current specification, OCP operation will be activated. The buffering current will be automatically recovered when overload condition is removed.

4-6. Parallel Operation

The buffer module can be connected in parallel to increase the hold up time. Please refer to wiring diagram shown in 3-1.2 for parallel connection.

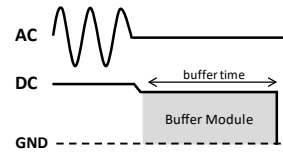
4-7. Series Operation

Not possible.

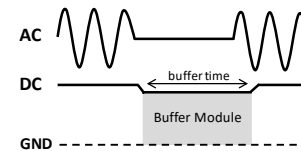
4-8. Buffer Module Operation

The product can be used to :

- a) To extend the hold up time after AC loss.

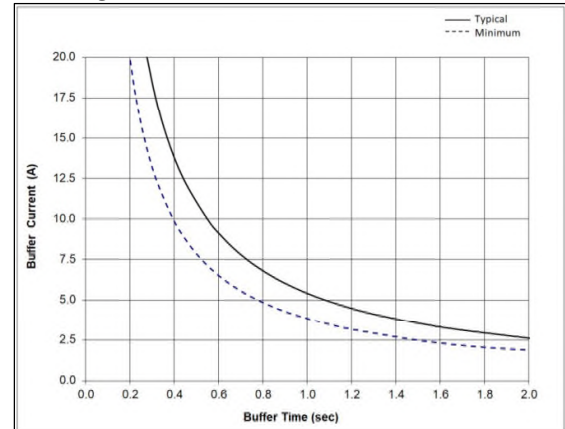


b) To bridge the mains failure



4-9. The Buffer Current versus Buffer Time for Fixed Mode and Nominal buffer Voltage.

Buffering time 0 – 2 seconds

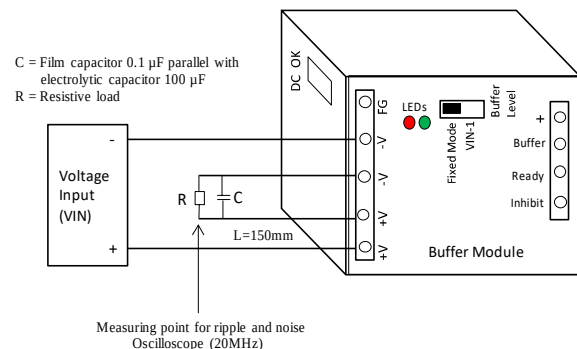


Kindly refer to product specifications for more details regarding hold up time.

4-10. Buffer Ripple & Noise

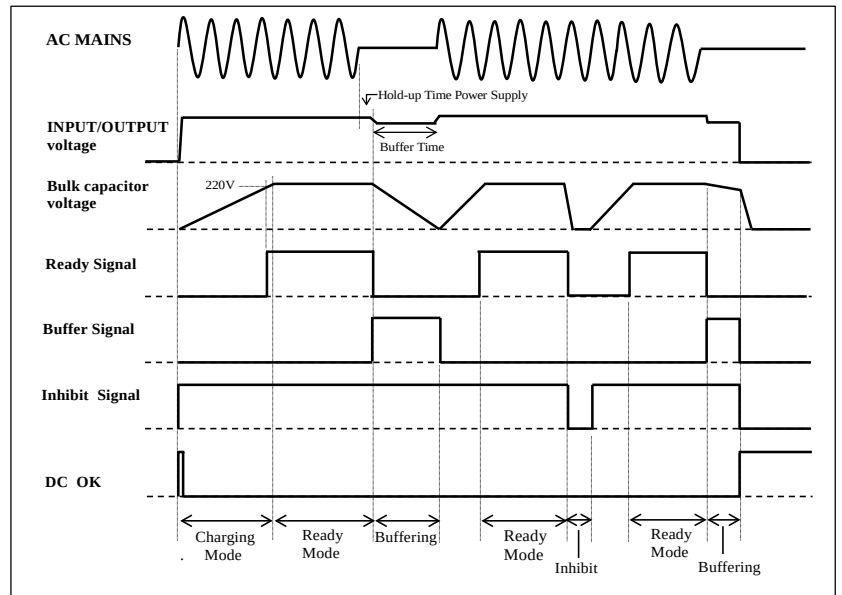
The standard specification for maximum ripple value is measured according to measurement circuit shows in figure 7 below. When load lines are longer, ripple becomes larger. In this case, electrolytic capacitor, film capacitor, etc might be necessary across the load terminal.

Figure 7



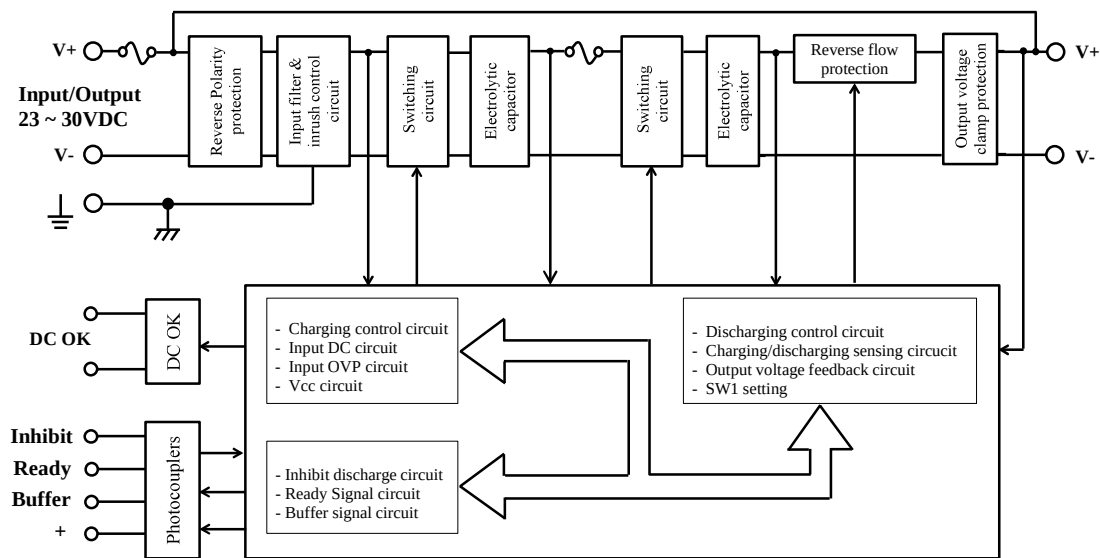
4-11. The Timing Sequence Chart

- (1) The buffer module is connected to the upstream power supply. After AC input to the power supply, the output from the power supply which is connected to the input/output of the buffer module will charge up the internal circuit of the buffer module.
- (2) Once the input/output voltage reaches the threshold voltage of DC OK circuit, the DC OK signal will change from logic high to logic low.
- (3) After approximately 40s, the bulk electrolytic capacitors voltage will be charged up to 220Vdc typical and the Ready signal change from logic low to logic high.
- (4) If the AC input shutdown or brown out conditions, the output voltage from the upstream power supply will go down. In this case, the input/output voltage of the buffer module will go down as well. The buffer module senses this change and it will activate buffer mode. Please refer to section 4-2. for the nominal buffer voltage level that the buffer module to supply back to the output line of the upstream power supply.



- (5) While buffering take place, buffer signal will change from logic low to high. And Ready signal will change from logic high to low.
- (6) During the upstream power supply is still turn ON case and customer system will like to activate the inhibit function by pulling inhibit signal from logic high to logic low, the buffer module will shut down the internal converters and bulk electrolytic capacitors will be discharged in 3 ~ 5s.
- (7) Once the inhibit function is deactivated, buffer module will resume to normal operation automatically.

4-12. The Block Diagram



- Circuit topology, switching frequency
Boost converter, Typ 100kHz
Buck converter, Typ 70kHz
- Fuse rating
2.5A and 12A

4-13. Isolation Test

Isolation resistance between input/output & signal ports to FG (Chassis) shall be more than 100M Ω at 500VDC. For safety purposes, voltage setting on DC isolation tester must be done before the test. Ensure that the unit is fully discharged after the test.

Input/Output & signal ports ~ FG (chassis): 500VDC, 100M Ω or more

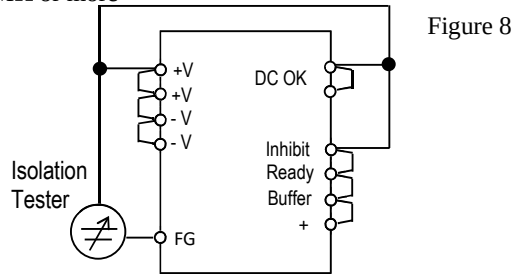


Figure 8

4-13. Withstand Voltage

This model is designed to withstand 500VAC between input/output & signal ports to FG (chassis) each for 1 minute. When testing withstands voltage, set current limit of withstand voltage test equipment at 100mA. The applied voltage must be gradually increased from zero to testing value and then gradually decreased for shut down. When timer is used, the buffer module may be damaged by high impulse voltage at timer switch on and off. Connect input/output & signal ports as follows :

Input/Output & signal ports ~ FG (chassis) : 500VAC
1min 100mA

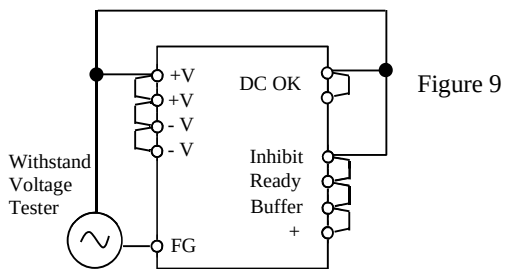


Figure 9

5. Mounting Directions

5.1. There are 3 mounting methods recommended.

(A) Standard Mounting

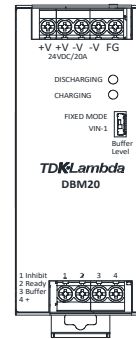


Figure 10

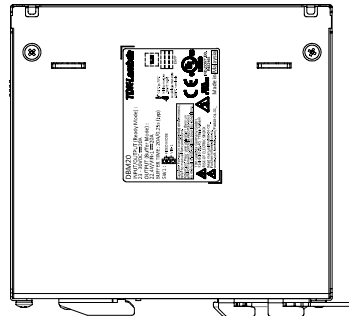
(B)

Figure 11



(C)

Figure 12



5.2. Mounting spacing vs. airflow

Do not exceed the buffer derating. Please refer to section 6. Leave enough space surround the units to ventilate heat efficiently.

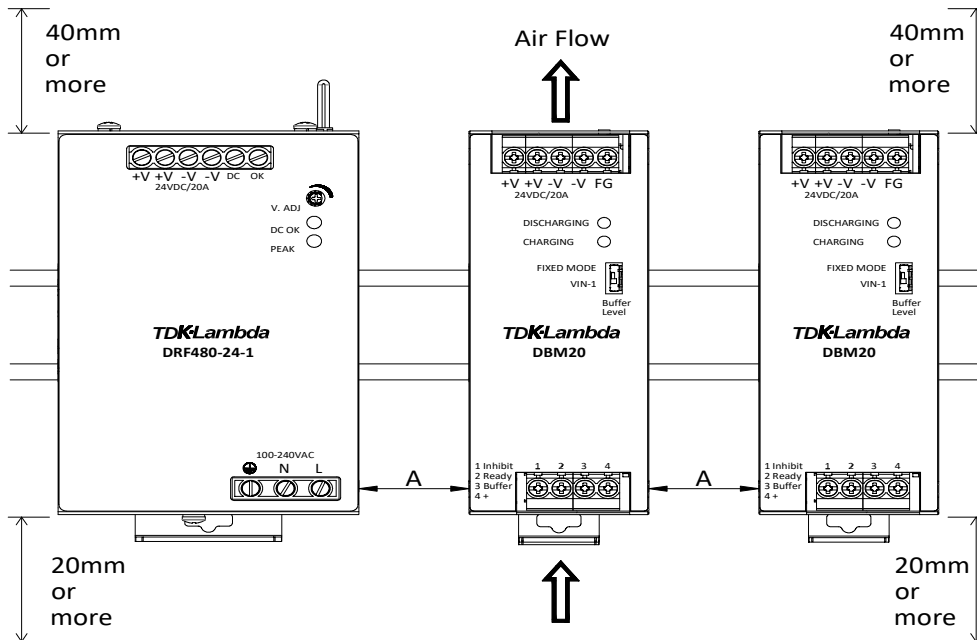


Figure 13

Minimum Installation clearances:

40mm on top, 20mm at the bottom, A=5mm which is recommended on the left and right side when products are permanently loaded with full 480W in Ready mode.

In case the adjacent device is a heat source, A=15mm clearance is recommended.

The ambient temperature (T_a) is reference 20mm from the bottom of the unit.

5.3. FG terminal on input/output connector

FG terminal must be connected to the Protective earth terminal of the equipment. If not connected to the Chassis(Conductor), the conducted noise, radiation noise and output noise will increase.

5.4. Buffer Module mounting on DIN RAIL (TS35 or equivalent)

Make sure input and output wires are disconnected before mounting buffer module onto rail

5.4.1 Refer to figure 14.

5.4.2 Tilt the unit slightly rearwards, fit the unit over top hat rail

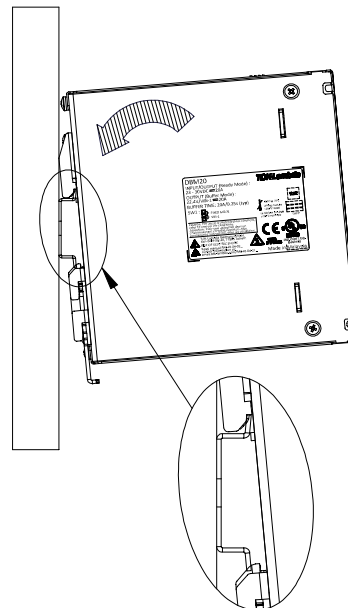


Figure 14

- 5.4.3 Refer to figure 15 below.
 5.4.4 Slide it downward until it hits the stop.
 5.4.5 Press against the bottom front side for locking.
 Shake the unit slightly to check the locking action.
 5.4.6 In order to tighten the unit mounting, the Din rail stopper attached on both sides of the unit is recommended.

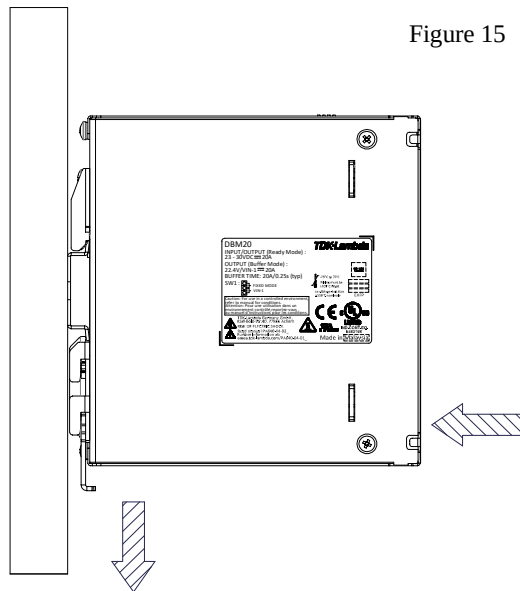


Figure 15

5.5. Buffer Module removal from DIN RAIL

- 5.5.1 Refer to figure 16.
 5.5.2 Switch off power and disconnect your system from the supply network. Pull the Latch on the rear lower edge of the unit downwards and gently lift lower front edge of the unit (tipping upwards) and remove it.

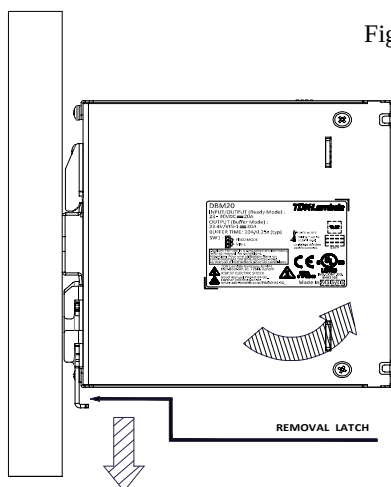
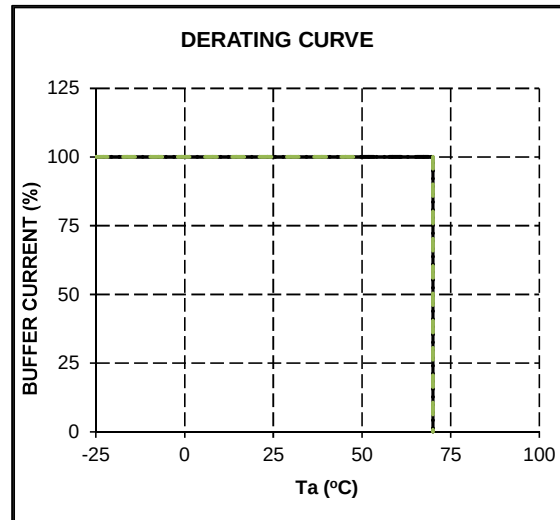


Figure 16

6. Buffer Derating – DBM20



7. The Life Expectancy

The life expectancy of buffer module depends on the life of the built-in aluminium electrolytic capacitors. The life is described in reliability data.

The life of the aluminium electrolytic capacitor varies depending on the method of mounting the buffer module, the load current and the ambient temperature. Please refer to the “Electronic Capacitor Lifetime”.

Please do not use the product which passed over the life expectancy. There is a risk of unexpected buffer shutdown and specifications may not be satisfied.

Please contact us for maintenance or exchange the product which exceeded the life expectancy.

8. Wiring Method

Use all wires as thick and short as possible to make lower impedance. Noise can be eliminated by attaching capacitor to the load terminals.

For safety and EMI considerations, connect FG (Earth terminal) of input/output connector to ground terminal of equipment.

Caution on use :

- Kindly keep the input wires as short as possible, this is to avoid mistriggering of signals during dynamic load conditions.

9. EMC

This model complies with the provisions of the EMC directive and meets the following standards :

Emissions: EN55032 Class B, CISPR32-B

Immunity: EN61000-4-2, -3, -4, -5, -6

EMI (CE) compliance to be confirmed at system level.
 Product is considered as a peripheral accessory to
 Power supply.

10. DBM20 UL508 Listed Condition

Wiring/Torque recommendation

Model Type	Connector	Wire (AWG)	Max. Torque
DBM20	Input/Output (+V, -V, FG)	10 - 24	8.06 kgf.cm (7lbf.in)
	Signal (Inhibit, Ready, Buffer, +)	16 - 24	8.06 kgf.cm (7lbf.in)
	Signal (DC OK)	16 - 24	N.A
DBM20/E	Input/Output (+V, -V, FG)	10 - 20	N.A
	Signal (DC OK, Inhibit, Ready, Buffer, +)	16 - 20	N.A

Note : According to EN/UL62368-1 multi-stand flexible cables connected to the input require ferrule.

- 1) Wire requirement is rated at minimum 105°C and to use copper conductor only.
- 2) For use in a Pollution degree 2 environment only.
- 3) These products are considered for use where maximum surrounding air temperature does not exceed 70°C.
When installing these products please refer to section 6 for derating.
- 4) Recommended for indoor use only.

11. Warranty period

This product is warranty for a period of 5 years from the date of shipment.

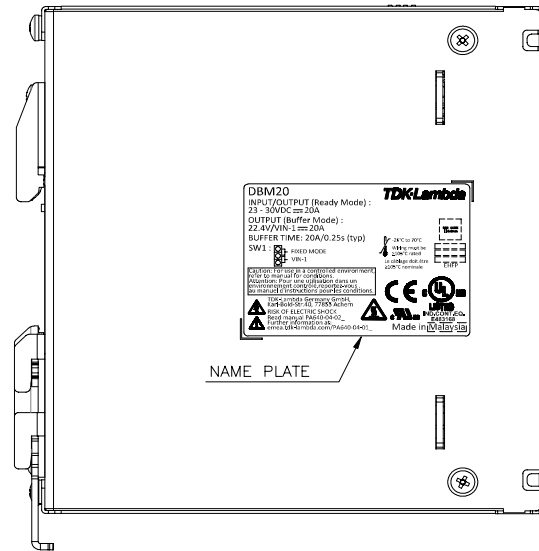
For damage occurring at normal operation within this warranty period, repair is free of charge.
 Please read the General Safety Instruction before using the products.

Product marking:

TDK-Lambda

TDK-Lambda Singapore Pte. Ltd.
 (Sales, Services and R&D)
 1008 Toa Payoh North #06-01/08, #07-01/03
 Singapore 318996
 Telephone: +65 62517211
 Facsimile: +65 62509171
 WEBSITE: www.tdk-lambda.com.sg

Figure 17



Note : Name plate's contents shown in this instruction manual is for reference only.

12. Before concluding that the unit is at fault...

Before concluding that the unit is at fault, make the following checks.

- Check if the rated input voltage is connected.
- Check if the wiring of input and output is correct.
- Check if the wire size is not too thin.
- Check if the buffering current and wattage is not over specification.
- Check if the GREEN LED lights up during Ready mode and RED LED lights up during Buffer mode.
- Audible noise can be heard during Dynamic-Load Buffer mode operation.

13. Returns

Please contact your local sales office or visit our website to arrange return of any faulty product.