

**General Safety Instructions:**

READ SAFETY INSTRUCTIONS

**Servicing:**

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

**Critical Components:**

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

**Product Usage:**

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

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

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

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

**Environmental:**

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

**Environment:**

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

**Output Loading:**

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

**Input Parameters:**

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

**End of Life Disposal:**

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



RISK OF ELECTRIC SHOCK

**High Voltage Warning:**

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

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

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

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

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

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

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

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

**Energy Hazards:**

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

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

**Allgemeine Sicherheitsvorschriften:**

LESEN SIE DIE SICHERHEITSVORSCHRIFTEN

**Wartung:**

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

**Kritische Komponenten:**

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

**Produktverwendung:**

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

Dieses Produkt ist eine Stromversorgungs-Komponente und sie darf nur von qualifiziertem Personal in andere Geräte eingebaut werden und sie darf NICHT als eigenständiges ("Stand-Alone") Gerät betrieben werden. Dieses Produkt ist für den Verkauf an Geschäftskunden entwickelt worden und es kann über Distributionskanäle bezogen werden.

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

Dieses Produkt ist eine Stromversorgungsbaugruppe und sie fällt NICHT in den Bereich der EMV Direktive. Die Konformität mit der EMV Richtlinie muss in der finalen Gesamtinstallation betrachtet werden. Bitte kontaktieren Sie Ihr regionales TDK-Lambda Vertriebsbüro im Falle von Rückfragen.

**Umwelt:**

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

**Umgebung:**

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

**Ausgangsstrom:**

Der Ausgangsstrom des 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 Netztesiles 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 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.

Gefahren durch elektrische Energie:

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

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

**Consignes générales de sécurité:**

LIRE LES CONSIGNES DE SECURITE

**Entretien:**

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

**Composants critiques:**

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

**Utilisation du produit:**

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

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

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

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

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

**Environnement:**

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

**Environnement fonctionnel :**

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

**Intensité soutirée:**

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

**Paramètres d'entrée:**

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

**Elimination en fin de vie:**

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



RISQUE DE CHOC ELECTRIQUE

**Attention-Danger haute tension:**

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

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

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

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

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

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

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

Energies dangereuses :

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

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

**Norme generali di sicurezza:**

SI PREGA DI LEGGERE LE NORME DI SICUREZZA

**Manutenzione:**

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

**Componenti critici:**

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

**Uso dei prodotti:**

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

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

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

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

**Condizioni ambientali:**

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

**Ambiente:**

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

**Carico in uscita:**

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

**Parametri di alimentazione:**

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

**Smaltimento:**

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



RISCHIO DI SCOSSA ELETTRICA

**Avvertimento di alta tensione:**

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

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

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

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

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

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

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

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

Pericoli energetici:

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

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



**Instrucciones generales de seguridad:**

LEA LAS INSTRUCCIONES DE SEGURIDAD

**Servicio:**

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

**Componentes fundamentales:**

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

**Uso de los productos:**

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

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

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

**Medioambiental:**

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

**Medio ambiente:**

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

**Carga de salida:**

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

**Parámetros de entrada:**

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

**Desecho de la unidad:**

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



PELIGRO DE DESCARGAS ELÉCTRICAS

**Advertencia de alta tensión:**

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

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

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

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

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

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

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

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

Peligros de energía:

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

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

**Instruções gerais de segurança:**

LEIA AS INSTRUÇÕES DE SEGURANÇA

**Manutenção:**

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

**Componentes essenciais:**

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

**Utilização do produto:**

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

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

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

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

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

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

**Ambiental:**

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

**Ambiente:**

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

**Carga de saída:**

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

**Parâmetros de entrada:**

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

**Eliminação no fim de vida:**

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



RISCO DE CHOQUE ELÉCTRICO

**Aviso de alta tensão:**

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

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

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

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

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

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

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

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

Perigos de energia:

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

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

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# ***LZS-A1500-4 POWER SUPPLY***

## ***Installation, Operation, and Maintenance Manual***

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**IM-LZSA1500-4**

November 2013

Revision B

***TDK-Lambda***



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## 1 Safety and Recommended Practices

### 1.1 General Safety Instructions

This power supply is a switch mode power supply for use in applications meeting a Pollution Degree 2 environment. A suitable mechanical and fire enclosure must be provided by the end use equipment for shock hazard protection, fire protection and protection from hazardous energy levels.



READ SAFETY INSTRUCTIONS carefully before working on the unit.



HIGH VOLTAGE WARNING: Dangerous voltages are present within the power supply.

NO USER SERVICEABLE PARTS INSIDE.

1. Do not install, test or operate this product near water, and do not spill any liquid on it.
2. Do not operate this product unless it is in a secure position.
3. This product must be installed and put into service by authorized competent personnel only who are fully conversant with the hazards of AC line operated equipment and with the particular dangers associated with switch mode power supplies.
4. This product is designed for use within other equipment or enclosures which restrict access to authorized competent personnel only and must not be user accessible.
5. This product must be reliably earthed and professionally installed in accordance with the prevailing electrical wiring regulations and safety standards. The product's PE connection is via the tapped standoff and screw on the front panel marked with IEC 60417-1 Symbol 5019.
6. The case is connected to the product's PE connection with screws. Therefore, screws at the case must not be removed or loosened.
7. The output power taken from the power supply must not exceed the rating stated on the power supply label.

## 1 Sicherheitsvorschriften und Vorsichtsmassnahmen

### 1.1 Allgemeine Sicherheitsanweisungen

Dieses Netzteil ist ein Primaerschaltregler Gerat für Applikationen mit Verschmutzungsgrad 2. Eine passende mechanische Abdeckung und Brandschutzumhuellung ist in der Endanwendung sicherzustellen zum Schutz gegen Beruehren gefaehrlicher Spannungen, als Brandschutz und zum Schutz vor Personenschaeden durch gefaehrliche Energieinhalte.



DIE SICHERHEITSHINWEISE SIND gruendlich zu beachten bevor Arbeiten am Gerat vorgenommen werden.



ACHTUNG HOCHSPANNUNG: Gefaehrliche Spannungen sind im Gerat vorhanden.

ES SIND KEINE SERVICETEILE INNERHALB DES GERAETES VORHANDEN.

1. Dieses Produkt darf nicht in der Naehе von Wasser betrieben werden. Fluessigkeiten duerfen darauf nicht verschuettet werden.
2. Schalten Sie das Gerat nicht ein bevor es sicher eingebaut ist und im bestimmungsgemaessen Einsatz installiert ist.
3. Die Installation sowie Servicearbeiten sind nur durch geschultes und zugelassenes Personal zulaessig, welches sowohl die Gefahren von gefaehrlichen AC-Netzspannungen kennt und die besonderen Gefahren die in einem Primaerschaltreglernetzteil auftreten erfahrungsgemaess einschaeetzen kann.
4. Dieses Gerat ist eine Einbaukomponente für Endanwendungen mit Gehaeuse, welches nur limitierten Zugang für autorisiertes Personal zulaesst. Die Gerateabdeckung darf nicht durch Endanwender geoeffnet werden.
5. Dieses Gerat ist zuverlaessig zu erden nach Schutzklasse 1. Die Installation ist nach den allgemein gueltigen und zutreffenden elektrischen Sicherheitsrichtlinien professionell durchzufuehren. Der PE Anschluss, Gewindebolzen bzw./und Schraube auf der Frontplatte gekennzeichnet mit IEC 60417-1 Symbol 5019 sind dafür vorgesehen.
6. Das Gerategehaeuse ist durch Schrauben mit der Schutz Erde verbunden. Gehaeuseschrauben duerfen daher weder gelockert noch entfernt werden.
7. Die entnommene Ausgangsleistung darf nicht hoeher sein als die auf dem Geratelabel angegebene Ausgangsleistung.



8. Openings in the product case are designed for ventilation and must not be obstructed when the product is installed and/or operated.

9. Never push objects of any kind into the product through openings in its case as this could result in electric shock or fire hazard.

10. Use copper stranded wire only, 12 to 14 AWG rated at 105°C for the AC input. All strands must be secured in the terminal block to avoid potential danger of short circuit.

11. Properly torque AC input terminals to 9 in.-lb.

12. An internal fuse protects the unit and must not be replaced by the user. In case of internal defect, the unit must be returned to the manufacturer.

13. The output of this power supply is hazardous and must not be user accessible in the end use equipment. The (+) or (-) output can be earthed. Use wire rated at 105°C and sized for 150% of the rated load.

14. The unit contains components that require special disposal. Make sure that the unit is properly disposed of at the end of its service life.

## 1.2 Safety Agency Approvals

Regulatory agency compliance applies only for operating frequencies between 47-63Hz.

No safety agency approvals for 100-380VDC operation.

This product is approved to UL 60950-1/CAN CSA C 22.2 No. 60950-1-07 Second Edition, UL 508, Seventeenth Edition, EN 60950-1:2006+A11, IEC 60950-1:2005, FM.

The CE Marking, when applied to the product, indicates conformance to the provisions of the following European Directives:

2006/95/EC	Low Voltage Directive
2008/108/EC	EMC Directive

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8. Oeffnungen und Lochungen am Gehaeuse sind fuer Lueftungszwecke vorgesehen und duerfen nicht abgedeckt werden.

9. Fremdgegenstände oder Teile niemals in Gehaeuseoeffnungen bringen, es besteht Gefahr durch moeglichen elektrischen Schlag der ggf. Personenschaden zur Folge haette.

10. Als Netzanschluss ist eine flexible Kupferleitung (Litze) mit 2,5 mm<sup>2</sup> Mindest-Querschnitt zu verwenden die bis 105°C zugelassen ist. Alle Adern sind im Anschlussklemmblock zu sichern damit Gefahren von Kurzschlussen vermieden werden.

11. Empfohlenes Drehmoment für die AC Anschlussklemmen ist 1,2Nm.

12. Eine interne Geraete - Absicherung ist eingebaut. Diese sollte nicht durch den Anwender getauscht werden. Bei Defekt des Geraetes ist dieses zu Servicezwecken an den Hersteller oder dessen zugelassene Servicestelle zurueckzugeben.

13. Das Geraet liefert gefaehrliche Energieinhalte und Spannungen, die Anschluesse sind in der Endanwendung beruehrungsfrei einzubauen. Es kann entweder der (+) oder der (-) Anschluss geerdet werden. Dafuer sind geeignete Kabel mit 105°C Temperaturfestigkeit und 150% Ueberlastfestigkeit zu beruecksichtigen.

14. Das Geraet enthaelt Bauteile die nach geltendem nationalem Recht getrennt zu entsorgen sind. Bitte beachten Sie die sichere und bestimmungsgemaesse Entsorgung am Ende der Produktlebenszeit.

## 1.2 Sicherheitszulassungen

Die amtlichen Zulassungen treffen zu für Anwendungen im Frequenzbereich von 47 bis 63 Hz.

Es bestehen keine Zulassungen für den DC- Betrieb im Bereich 100 bis 380VDC.

Das Geraet is zugelassen nach UL 60950-1/CAN CSA C 22.2 No. 60950-1-07 Second Edition, UL 508, Seventeenth Edition, EN 60950-1:2006+A11, IEC 60950-1:2005, FM.

Die CE Kennzeichnung, wenn auf dem Geraet angebracht, zeigt Uebereinstimmung mit den folgenden EU Richtlinien:

2006/95/EC	Niederspannungsrichtlinie
2008/108/EC	EMV Richtlinie

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<b>Emissions</b>		
AC Line Conducted Emissions	EN55022/EN55011	(0.15-30 MHz) Class B
Radiated RF Emissions	EN55022/EN55011	30-1000 MHz Class B
Powerline Harmonics	EN61000-3-2	Class A Limits
Powerline Fluctuation/Flicker	EN61000-3-3	Complies
<b>Immunity</b>		
Electrostatic Discharge	IEC61000-4-2	+/-8 kV Air +/-6 kV Contact
RF Radiated Fields	IEC61000-4-3	10 V/m, 80 MHz-2.5GHz 80% AM @ 1kHz
Electrical Fast Transients	IEC61000-4-4	+/-2 kV AC Line, Criteria A +/-1 kV I/O Line > 3m, Criteria A
Lightning Surge	IEC61000-4-5	+/-2 kV line to GND (CM), Criteria A +/-1 kV line to line (DM), Criteria A
Conducted RF Common Mode	IEC61000-4-6	10 V/m RMS, 150 kHz-80 MHz 80% AM at 1kHz
Power Frequency Magnetic Field	IEC61000-4-8	3 A/m
Voltage Dips/Short Variations	IEC61000-4-11	5% of nom. line for .5 cycles - Criteria A 40% for 5 cycles - Criteria A 70% for 25 cycles - Criteria A 95% Dip for 5 seconds - Unit should not latch
	SEMI-F47 (100 VAC)	50% of nom. line for 200 msec 70% for 500 msec 80% for 10 seconds 90% for 15 seconds 0% for 1 cycle or 20mS
<b>Additional Immunity</b>		
Ring Wave Lightning Surge Test	IEEE C62.41	6 kV/30 Ohm Criteria A

Table 1

This manual is a description of specifications, features and applications of LZS-A1500-4 power supplies.

**RATINGS AND SPECIFICATIONS \***

<b>Maximum Ratings</b>		
	Units	LZS-A1500-4
Output Voltage Range	V	36-56
Output Current (Power) @ 60°C**	A(W)	31.5 (1512)
DC Output @ 48V		
Output Current (Power) @ 70°C**	A(W)	18.9 (907)
Operating Temperature	°C	47-63Hz 100% rated load from -30°C to 60°C derate linearly to 60% @ 70°C (4%/°C)
Start-up Temperature	°C	-40° to +70°

Table 2

\* Refer to figures 1-7 for supply-load connection information.

\*\* Output current and power, as measured at output terminals, must be less than or equal to quoted maximum values for a given ambient temperature and input voltage. See Table 4.

Input Specifications		
	Units	LZS-A1500-4
Input Voltage Range***	VAC VDC	85-265 (47-440Hz) Single Phase 100-380
Input Current (RMS, maximum)	A	18 RMS
Inrush Current (Peak, at cold start)	A	30A /110VAC; 40A / 220VAC
Power Factor Harmonics	-	EN61000-3-2 Compliant
Power Factor (at max output power)	-	0.98 typical @ 170VAC
Input Power (maximum)	W	1800W @ 31.5A (1512W) and 170VAC line
Input Surge Protection	-	1kV Differential Mode; 2kV common mode
Input EMI Conducted Emissions	-	FCC Class B, CISPR 22 Class B
Efficiency (at max.output power)	%	84 typical @ 110VAC line

\*\*\* Regulatory agency compliance applies only for operating frequencies between 47-63Hz. No safety agency approvals for 100-380 VDC operation. Minimum turn-ON voltage for DC Input is 110 VDC, unit will operate as low as 65 VDC after Power-up. Lambda doesn't recommend operation below 100 VDC for more than one minute, or damage may occur.

Table 3

LZS-A1500-4 Output De-rating							
	Max. Ambient 50°C		Max. Ambient 60°C		Max. Ambient 70°C		
Input Voltage	Output Voltage (VDC)	Max. Output Current (A)	Max. Output Power (W)	Max. Output Current (A)	Max. Output Power (W)	Max. Output Current (A)	Max. Output Power (W)
85 VAC (120 VDC)	36	31.50	1134	31.25	1125	18.15	675
	48	25.00	1200	23.45	1125	14.10	675
	56	21.45	1200	20.10	1125	12.05	675
90 VAC (127 VDC)	36	31.50	1134	31.50	1134	20.00	720
	48	27.08	1300	25.00	1200	15.00	720
	56	23.25	1300	21.45	1200	12.90	720
95 VAC (134 VDC)	36	31.50	1134	31.50	1134	21.25	765
	48	29.20	1400	26.60	1275	15.95	765
	56	25.00	1400	22.80	1275	13.70	765
100 VAC (142 VDC)	36	31.50	1134	31.50	1134	22.50	810
	48	31.50	1512	28.15	1350	16.90	810
	56	27.00	1512	24.15	1350	14.50	810
105 VAC (148 VDC)	36	31.50	1134	31.50	1134	23.75	855
	48	31.50	1512	29.70	1425	17.85	855
	56	27.00	1512	25.45	1425	15.30	855
110-265 VAC (155-380 VDC)	36			31.50	1134	25.20	907
	48			31.50	1512	18.90	907
	56			27.00	1512	16.20	907

Table 4

Output Performance Specifications		
	Units	LZS-A1500-4
Voltage Line Regulation	%	0.1
Voltage Load Regulation	%	0.1
Ripple and Noise @ 20 MHz measurement Bandwidth.	(PARD-mVP-P)	150
Temperature Coefficient	%/°C	.01
Startup Time (at 110 VAC input)	Sec.	Less than 1 second
Overshoot	mV	No overshoot at turn on or turn off
Holdup Time (Full Power/220VAC)	mS	10
Ride through (Full Power/220VAC)	mS	20
Voltage Sag Immunity (Full Power/110VAC)	-	Semi-F47 compliant
Load Transient Response (25% step load change)	-	+/-1% of Vo ; 1A/μS; Recovers to within +/-0.2% in < 1.25 mS

Table 5

**Operating Modes**

Series Operation	Yes (see Fig. 7)
Parallel Operation (with current sharing)	Two or more identical units (see Fig. 6). (Use of D. con. terminal 5 will provide current sharing to within 10% nominal of rated 60°C current.)

\* Not backward compatible with the LZS-1500-4 power supply.

Table 6

**FEATURES****DC Output Controls and Indicators**

Output Voltage Adjust	Screwdriver adjustment over entire range. Output voltage range is from 36-56V. (Multi-turn potentiometer accessible from terminal end of chassis.)
Oversvoltage Protection Adjust	Screwdriver adjustment over entire range. Oversvoltage trip range is from 43-60V. Factory setpoint is 59V. (Multi-turn potentiometer accessible from terminal end of chassis.)
Output Good Indicator Fault Indicator	Green colored LED illuminates when output is within specified operating range Red colored LED illuminates if oversvoltage, overtemperature, or overcurrent shutdown occurs. The LED is also illuminated if the output is less than approximately 95% of its adjusted output or if the output is inhibited (stand-by mode).

Table 7

**Remote Control Features**

Remote Voltage Sensing	Provides precise regulation directly at load (see Fig. 3). Maximum total DC voltage drop between output terminals and load must be limited to <1.0V. In addition, the voltage at the output terminals must be limited to 56V.
Remote Voltage Programming external resistor.	1000 ohms per volt for resistor connected between pins 1 and 2 on TB201 (see Figs. 4 and 5).
Remote Voltage Programming external voltage source.	Volt per volt for voltage source connected between pins 1 and 2 on TB201 (see Figs. 4 and 5).
Remote On/Off Control	Enable/Disable output via TTL compatible signal connected between pins 6 and 7 of "D" connector (see Fig. 9).
Signals Isolation Signal Logic	Pins 6 and 7 are fully isolated from all other power supply terminals. Logic zero (below 0.7 V), short circuit or open circuit disables power supply output. Logic one (above 2.5 V) enables power supply output.
Signal Current Draw	Current draw from Logic 1 input is less than 4mA.
Output Response Time	Output will be within specified limits within 100 ms. of application of logic "1" signal.
Signal Enable	Remote on/off function must be enabled by moving "OUTPUT ENABLE" switch at terminal end of chassis from "LOCAL" to "REMOTE" position (see Fig. 9).

Table 8

**Auxiliary Monitoring and Alarm Signals**

Optically coupled, conductance outputs. (Conduct up to 1mA at a voltage of <0.4 V, when active.)	
Input Power Good Signal	Conductance signal which indicates adequate input capacitor voltage to provide 10 ms holdup time when operating at full output power. Signal will be asserted when the unit is remotely disabled (AC still present) or when unit shuts down due to overtemperature (see Fig. 10).
Output Good Alarm Signal	Conductance signal which indicates that delivered output voltage, as measured at the +V and -V terminals, is above its minimum specified value (see Fig. 10).
Inverter Good Signal	Conductance signal which indicates that the power supply's inverter is functional. At very light loads, this signal may be indeterminate (see Fig. 10).
Signal Isolation	Input power good, output UV/OV alarms, inverter good and remote on/off signals are isolated from power supply output and each other for voltages up to 500 volts, minimum. 3000 VAC isolation from AC input to all auxiliary signals.
Synchronization (Sync)	Auxiliary signal at approximately 200khz (switching frequency of unit) used for synchronizing with other equipment.

Table 9

<b>Protection Features</b>		
Output Voltage Range	V	36-56V
Nominal Factory Set Point	V	48V
Overvoltage Protection (adjustable)	V	43-60V (Factory set to 59.0V)
Overcurrent Protection	-	Factory set to 110% min. and 130% max.
Thermal Protection	-	Self-resetting thermostat.*
Fusing	-	Internal
Isolation Voltages	-	4242 VDC, Input to Output 2121 VDC, Input to Chassis Ground 500 VDC, Output to Chassis Ground
Regulatory Agency Compliance	-	UL 60950-1/CAN CSA C22.2 No. 60950-1-03, First Edition UL 508, Seventeenth Edition EN 60950-1:2001+A11, IEC 60950-1:2001, IEC61000 2nd Edition FM 3600, FM 3611, FM 3810, Semi F47
Leakage current (AC line to chassis ground)	$\mu$ A	Less than 1.5 mA @ 265 VAC, 60 Hz

\* See "Overtemperature and Overvoltage Shutdown" on page 7

Table 10

<b>Mechanical Features</b>		
	Units	
Storage Temperature (non-operating)	$^{\circ}$ C	-40 $^{\circ}$ C - +85 $^{\circ}$ C
Weight	lbs	8.1 lb net
Size	inches	5.62" x 4.75" x 10.5"
Finish	-	Textured gray - painted
Mounting	-	One mounting surface (mounting position not restricted) Maximum allowable penetration into power supply is 1/4". Requires No. M4 (metric) hardware - supplied with unit.)

Table 11

<b>Input and Output Connections</b>	
Input	Heavy duty terminal block
Chassis Ground	Tapped hole and screw provided in chassis.
DC Output	Heavy-duty bus bars with 1/4" clearance holes for load connections. (Connection hardware supplied with unit.)
Local/Remote voltage sensing, Remote on/off, Parallel operation.	Four-position lugless connector (TB201), see Fig. 1. (Accepts up to #14 AWG size stripped wire).
Auxiliary Control and Alarm Signals	Connections for remote and local sensing, remote on/off, parallel operation current sharing, input power good signal, OV alarm, UV alarm, inverter good signal and chassis are available via chassis mounted, 15-pin, female, sub-miniature "D" connector (see Fig. 1).

Table 12

<b>Other Features</b>	
Warranty	5 years
Cooling	Variable speed, Ball Bearing Fan
Fungus Inert	All LZS power supplies are inherently fungus inert.
Humidity	10%-90% Non-condensing
Altitude	0-10,000 Ft (Operating); 40,000 Ft (Non-Operating)

Table 13

## 4. GUIDE TO APPLICATION

### 4.1 SAFETY NOTICE

Dangerous voltages exist in this equipment. Observe the usual safety precautions when operating, wiring, or servicing to reduce the risk of shock or injury.

### 4.2 INPUT VOLTAGE

See Table 3 on page 4.

### 4.3 OUTPUT VOLTAGE

This power supply operates as a constant-voltage source with maximum load ratings as listed on page 3. If the load current tries to exceed 110% of the 60°C rating, the output voltage will begin to decrease, thereby limiting the power delivered to the load. Upon removal of overload, normal operation will resume.

When shipped from the factory, the power supply is ready for use with output voltage (Vout) set to its nominal rating of 48V. Jumpers are in place on TB201 for local voltage sensing. Where precise regulation is required directly at the load, remote voltage sensing can be utilized. This can be achieved by utilizing the remote sense terminals on TB201 or "D" connector (see Figs. 2 and 3). The output voltage can be increased by turning the Vout adjust potentiometer clockwise. The output voltage is decreased by turning the Vout adjust potentiometer counter clockwise.

As shown on page 4, LZSA power supplies have both a maximum current rating and a maximum output power rating (as a function of ambient temperature and input voltage). Care should be taken to limit both output current and output power to be within specified limits. If these limitations are not adhered to, the internal thermal protection circuit may shut down the power supply's operation. For remote voltage sensing, the maximum limits for output power, as given on page 4, apply at the power supply output terminals, not at the remote sensing point.

When adjusting the output voltage above 48.0V, ensure that there is sufficient OVP margin with respect to the output voltage, to avoid nuisance tripping.

### 4.4 OVERVOLTAGE PROTECTION CIRCUIT ADJUSTMENT

The overvoltage protection circuit provides an adjustable means of disabling the DC output if it should exceed a pre-determined safe value. When shipped from the factory, the overvoltage level on each LZSA unit is set as given in table 7 on page 5. If a different OVP threshold is required, it can be adjusted using the following method:

1. Turn the OVP Adjust potentiometer fully clockwise (at least 10 turns).
2. With the power supply unloaded, set Vout to the OVP threshold desired. In cases where the desired OVP threshold exceeds the unit's adjustment range maximum of 56.0V, a programming resistor (see figures 4 & 5) will temporarily be needed to provide the higher output voltage to perform the adjustment. Once adjusted, remove the programming resistor. Alternatively, you may use an external voltage source to set the OVP threshold as shown in figures 4 & 5.
3. Slowly turn the OVP adjust control counter clockwise while monitoring the output voltage. Stop turning the control immediately when the red FAULT indicator lights, indicating an OVP shutdown. At that point, the OVP threshold is set to the desired value.

### 4.5 OVERTEMPERATURE AND OVERVOLTAGE SHUTDOWN

LZSA power supplies will automatically shut down if operating conditions cause excessive internal heating or excessive output voltage. After the occurrence of an overvoltage shut down, input power must be interrupted or the remote on/off feature must be toggled to re-establish the output. Overtemp shutdown resets itself once the unit has cooled off by approximately 10°C.

### 4.6 AUXILIARY CONTROL AND ALARM SIGNALS

LZSa power supplies provide auxiliary control and alarm signals per page 5. These signals are accessible via the 15-pin, sub miniature "D" connector, located below the output terminals of the unit.

5. Figures

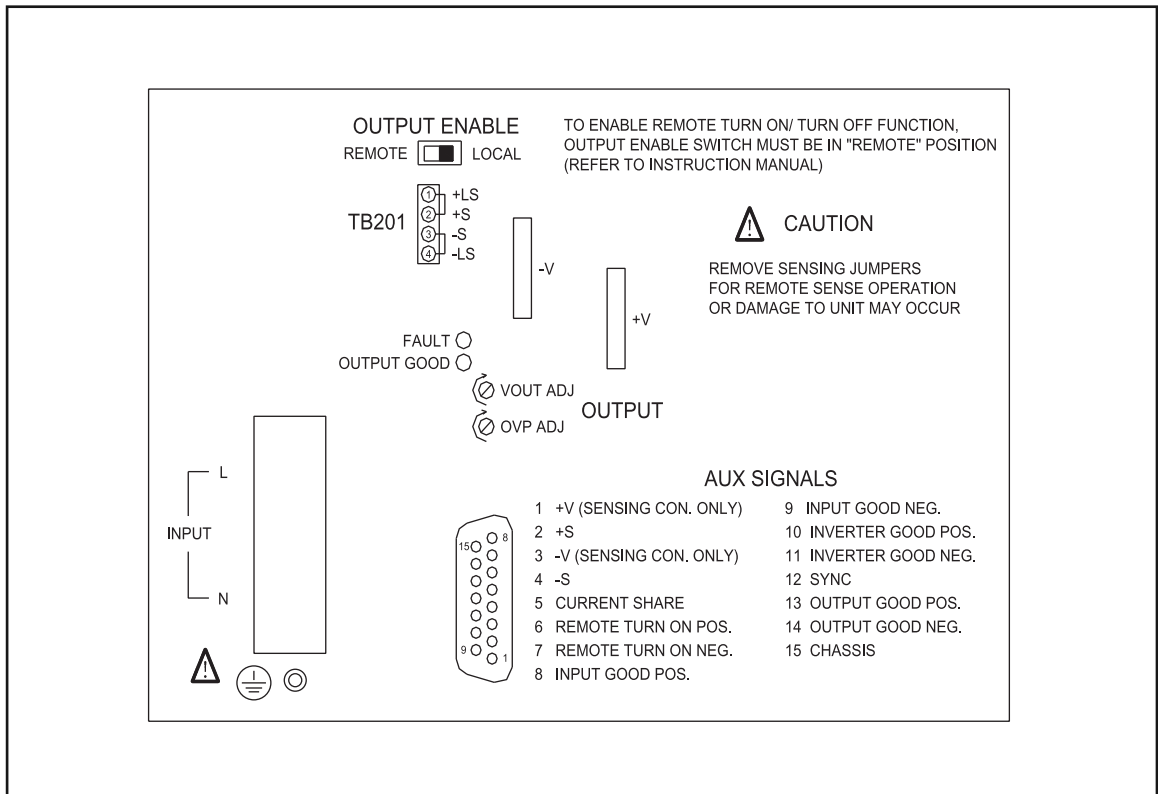


Figure 1 - PIN Assignments for TB201 and chassis mounted "D" connector

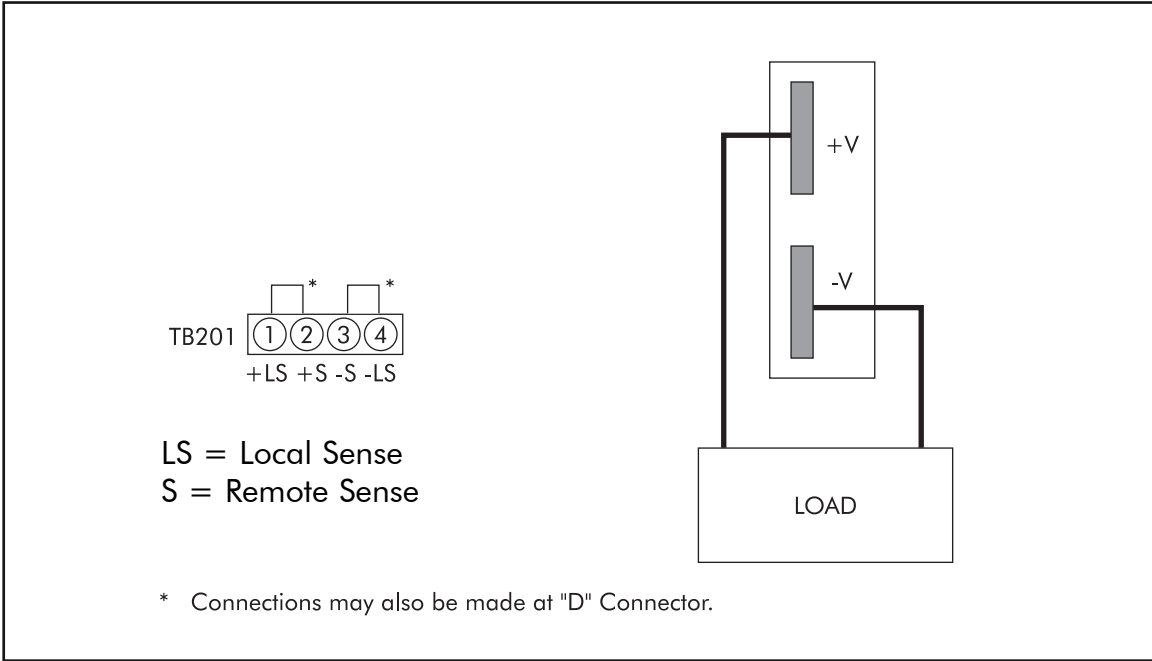


Figure 2 - Typical Local Sense Connection

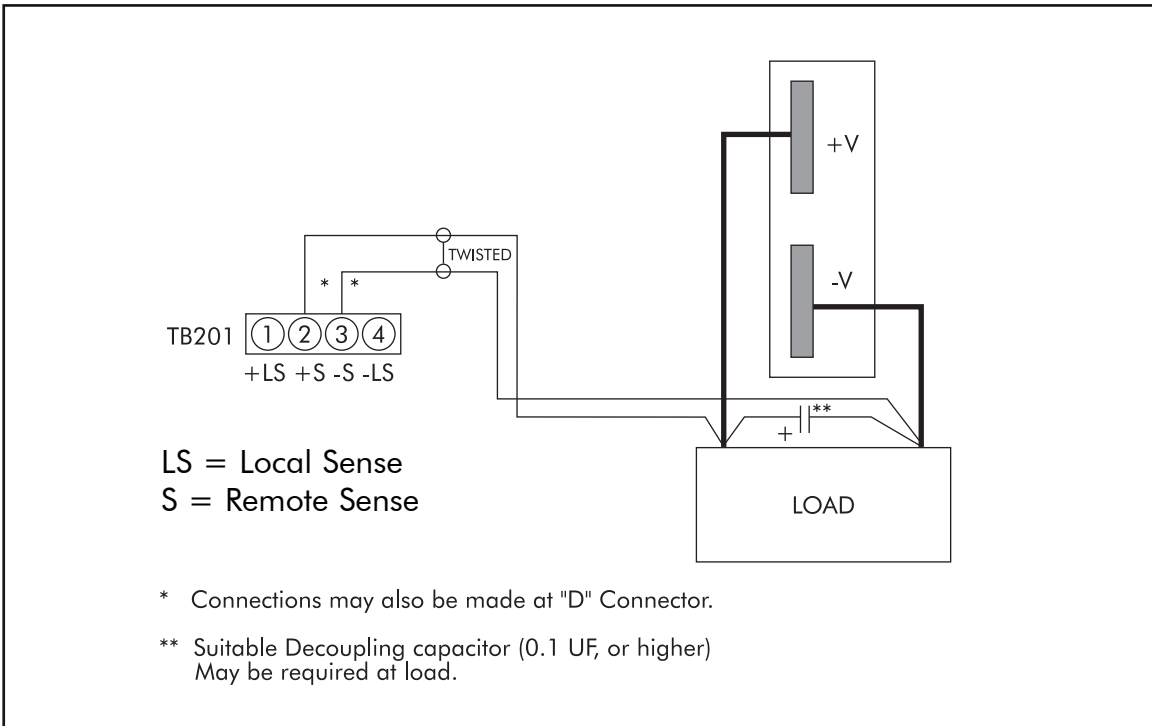
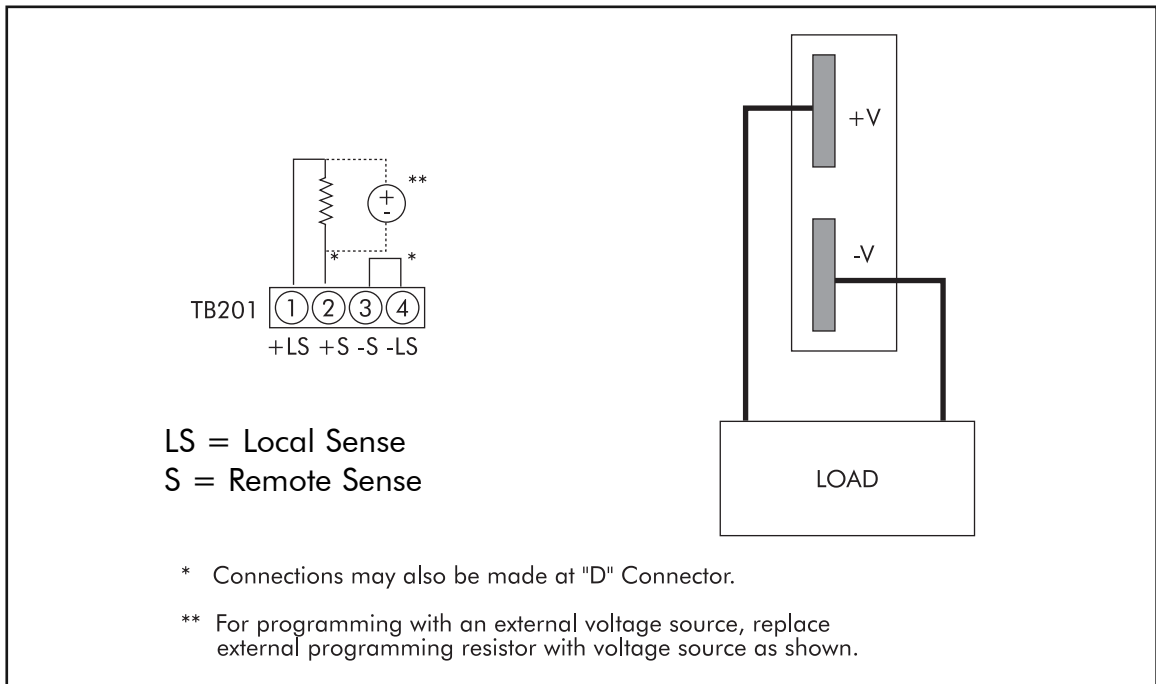
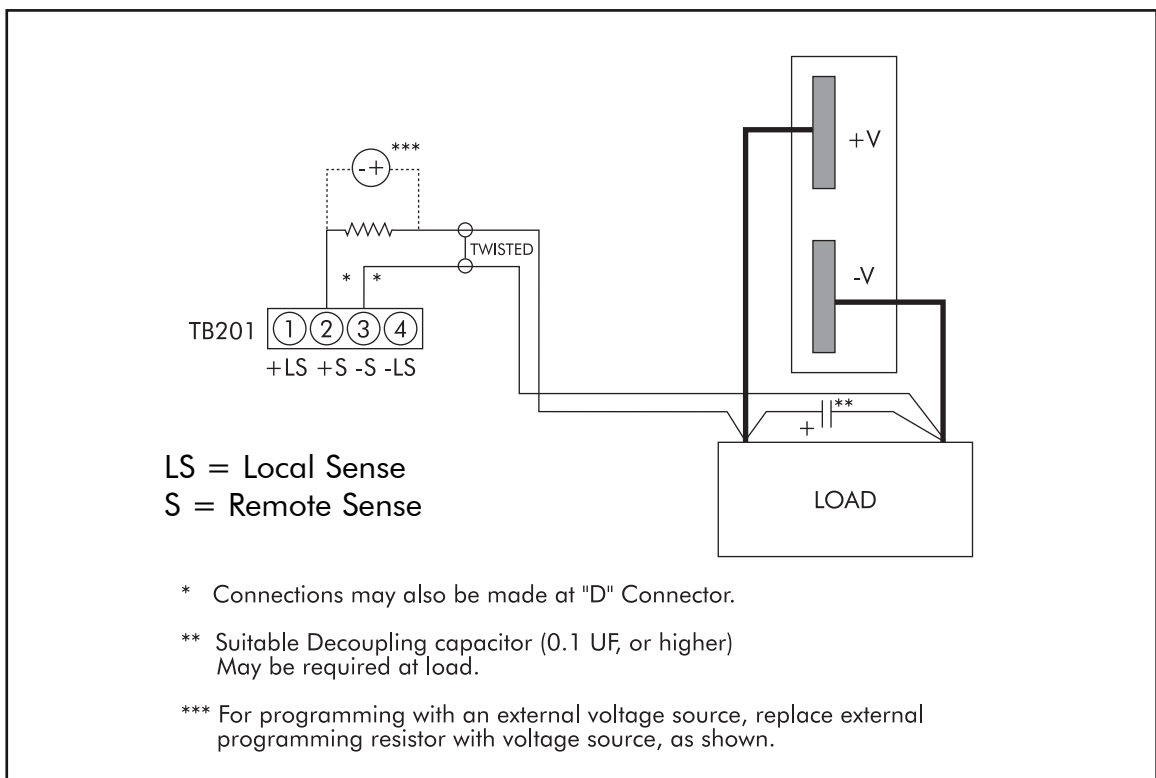


Figure 3 - Typical Remote Sense Connection





**Figure 4 - Remote Voltage Control with an External Programming Resistor or Voltage Source (Local Sensing)**



**Figure 5 - Remote Voltage Control with an External Programming Resistor or Voltage Source (Remote Sensing)**

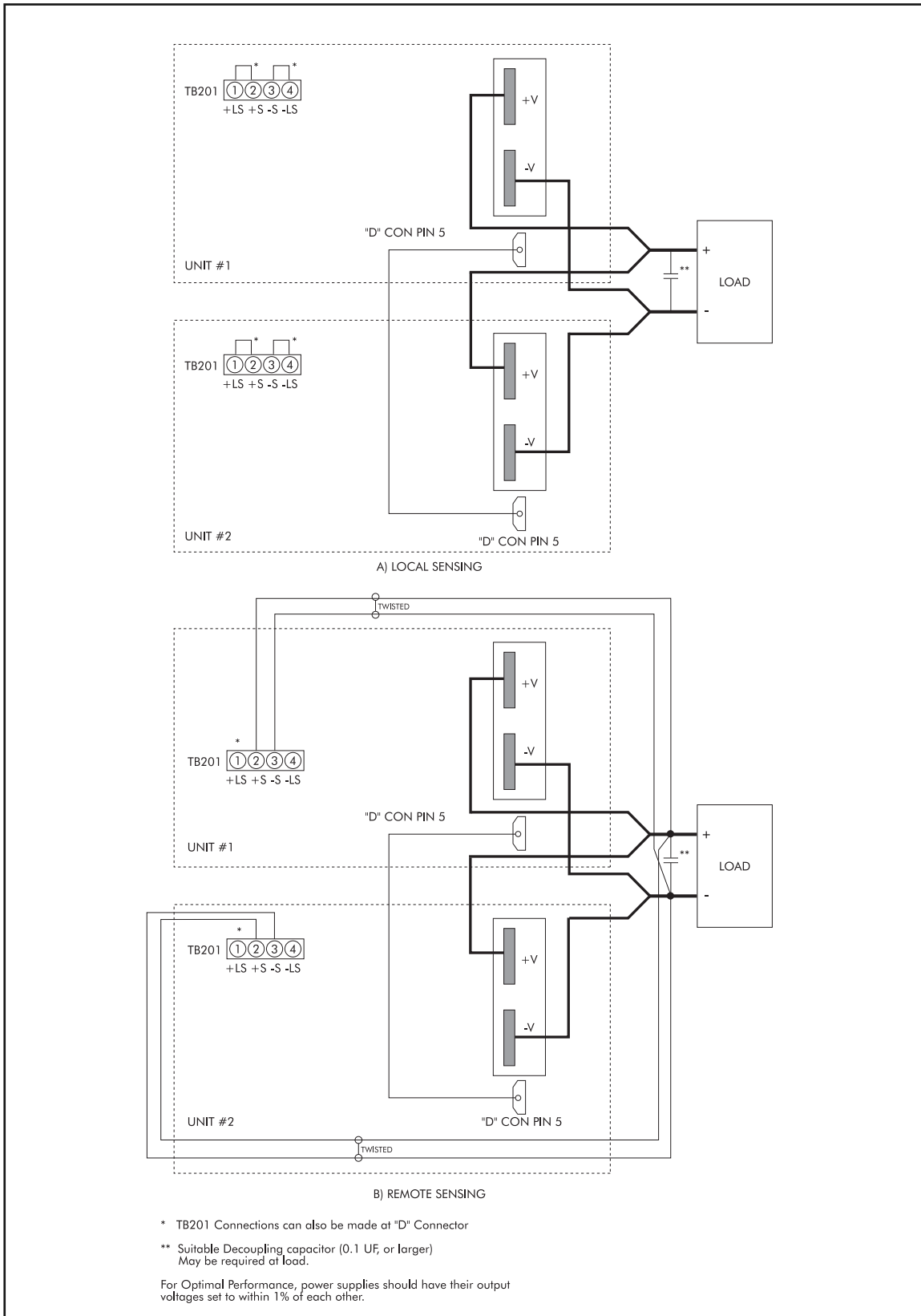


Figure 6 - Parallel Operation

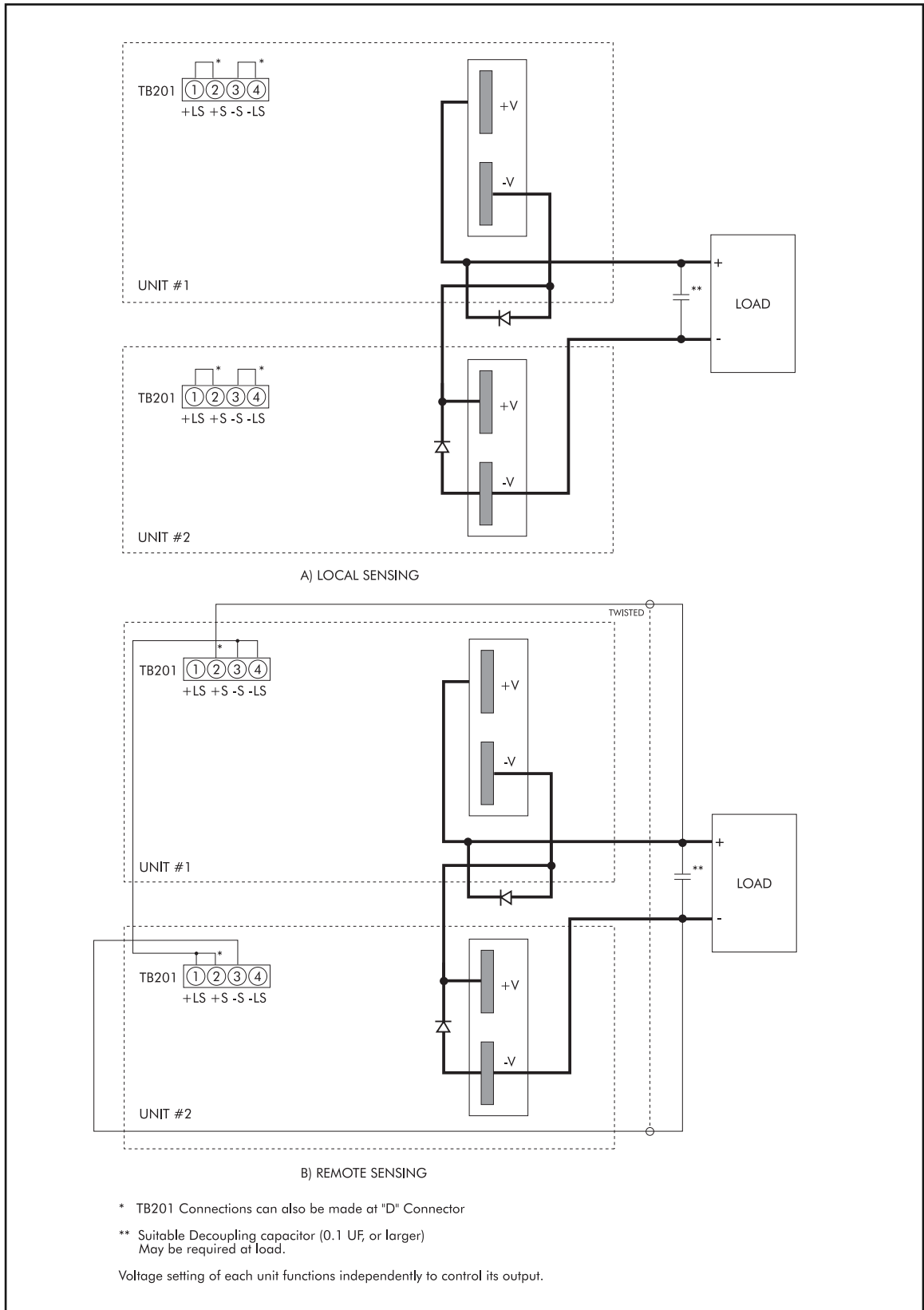


Figure 7 - Series Operation

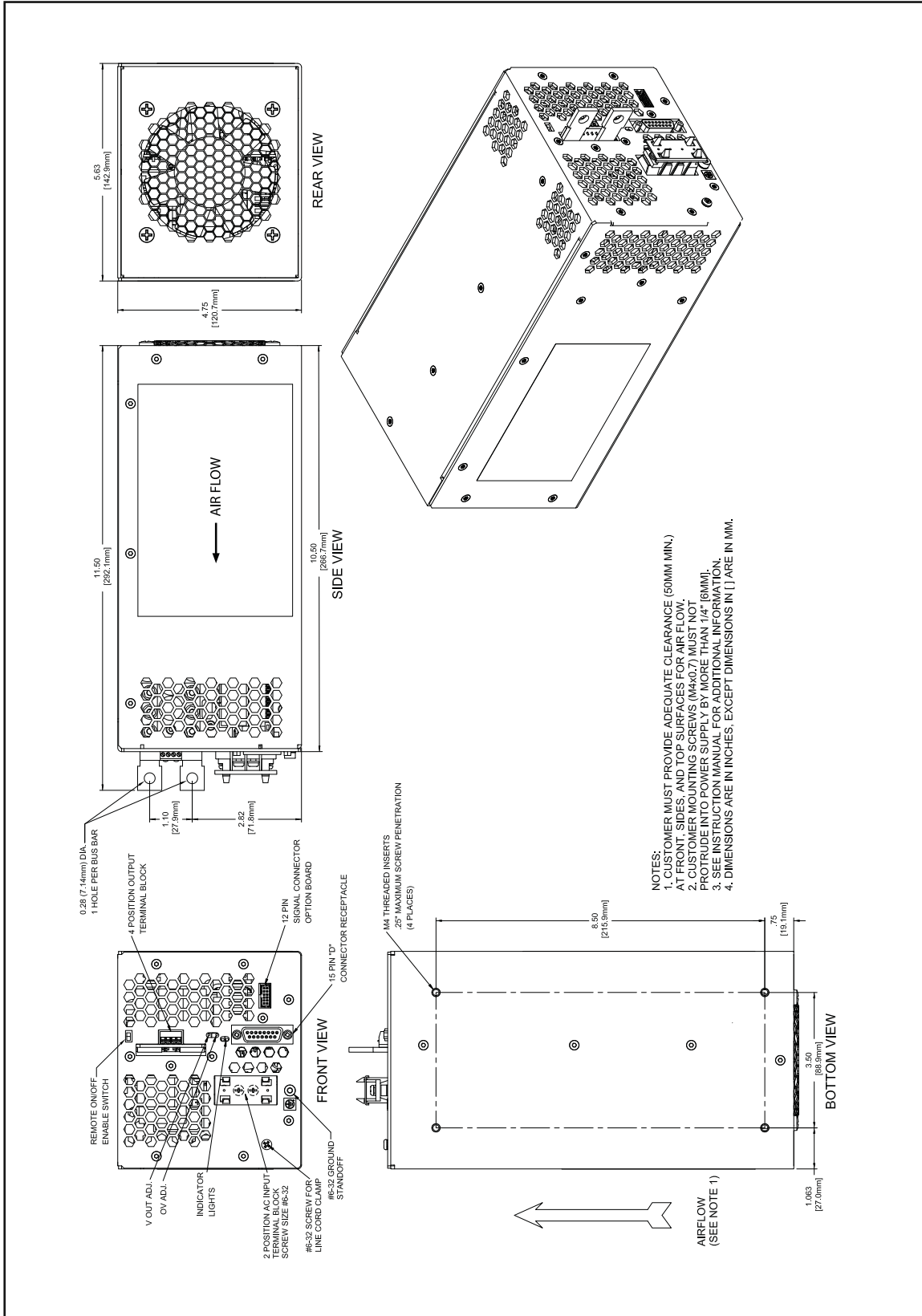


Figure 8 - Outline Drawing

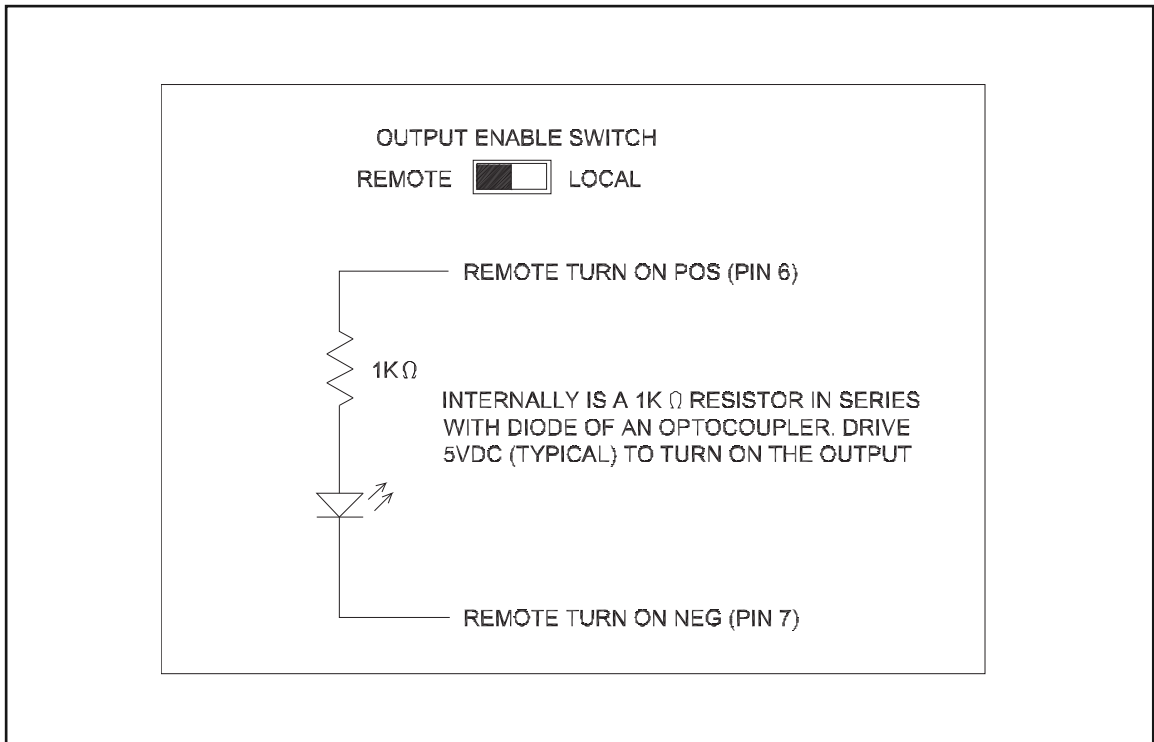


Figure 9 - Remote Output On/Off Control

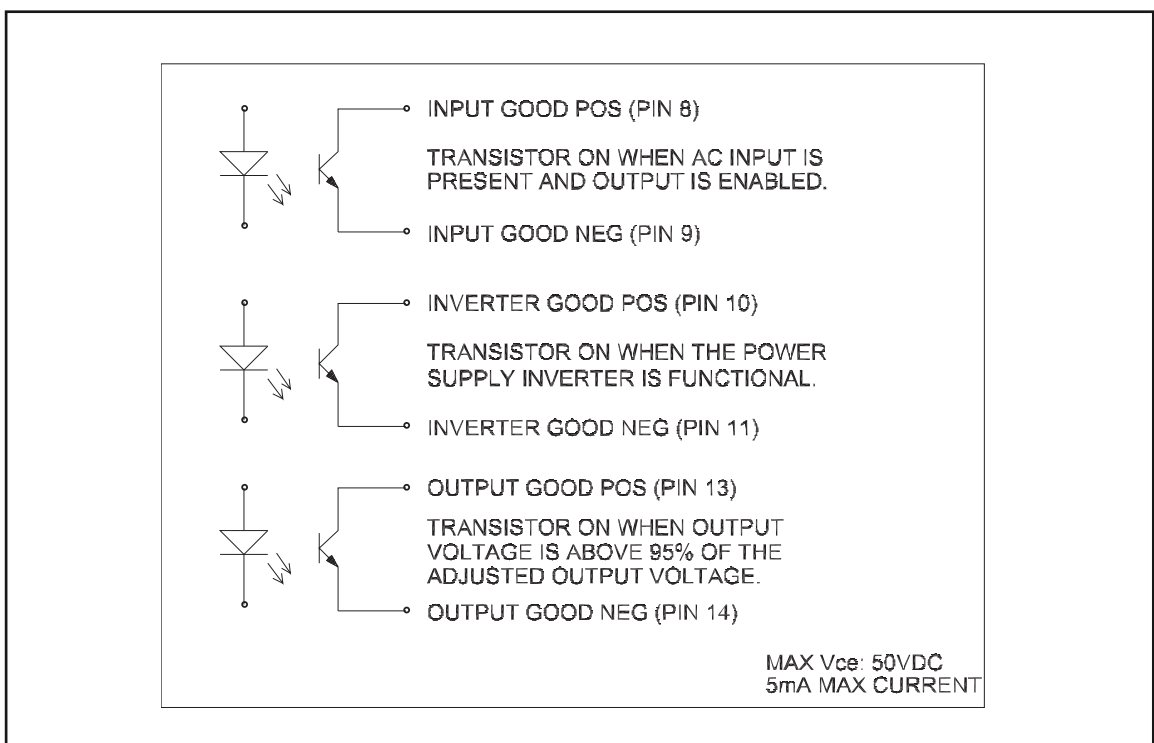


Figure 10 - Input Good, Inverter Good & Output Good Signals