Thank you for purchasing IOTA’s DLS-X Series Power Converter/Battery Charger. When utilized properly, your DLS-X Power Converter/Battery Charger will provide years of dependable service. This Owner’s Manual contains important safety and operating instructions. READ ALL INSTRUCTIONS AND SAFETY PRECAUTIONS CAREFULLY BEFORE INSTALLING AND OPERATING THE UNIT.

**WARNING**

**Risk of SERIOUS INJURY OR DEATH**

This unit is an electrical device. When working with this, or any electrical device, there exists the potential for ELECTRICAL SHOCK, EXPLOSION and FIRE hazards. Before using this equipment, READ AND UNDERSTAND the instructions, warnings, and safety precautions in this Owner’s Manual. Failure to read and understand these instructions could result in SERIOUS INJURY or DEATH.

SAVE THESE INSTRUCTIONS

**CAUTION**

When working with the DLS-X unit, always observe the following guidelines:

- The DLS-X is designed for indoor use. Do not use outdoors.
- DO NOT expose the DLS-X unit to rain, snow, or other inclement weather.
- Do not mount the DLS-X in a zero clearance compartment or in compartments with flammable items such as gasoline or batteries.
- Do not mount the DLS-X in an area with the potential of dust, debris, or other foreign materials entering the vents of the DLS-X.
- Use of an attachment or device with the DLS-X not recommended by IOTA Engineering will void the warranty and may result in a risk of fire, electrical shock, or injury to persons.
- To reduce the risk of damage to the electric plug and cord, always pull by the plug and not the cord when disconnecting the unit.
- DO NOT operate the DLS-X with a damaged cord or plug.
- DO NOT operate the DLS-X if it has been dropped, received a sharp blow, or has been otherwise damaged in any way.
- DO NOT disassemble the DLS-X unit.
- To reduce the risk of electric shock, DISCONNECT the DLS-X charger from ALL power sources before attempting any maintenance or cleaning. Turning off any electrical supply or load to the unit is not sufficient and will not reduce this risk.
- DO NOT use extension cords. Using an improper extension cord could result in a risk of fire and electric shock, and may result in property damage, personal injury or death.

**DANGER**

**ELECTRICAL SHOCK HAZARD**

THIS CHARGER IS AN ELECTRICAL DEVICE THAT CAN SHOCK AND CAUSE SERIOUS INJURY.

DO NOT CUT POWER CORDS.

DO NOT SUBMERGE IN WATER OR GET THE CHARGER WET.

**EXPLOSION HAZARD**

UNSUPERVISED, INCOMPATIBLE, OR DAMAGED BATTERIES CAN EXPLODE IF USED WITH A CHARGER.

DO NOT ATTEMPT TO CHARGE DAMAGED OR FROZEN BATTERIES.

USE THE CHARGER ONLY WITH BATTERIES OF RECOMMENDED VOLTAGE.

OPERATE THE CHARGER IN WELL-VENTILATED AREAS ONLY.

**WARNING**

**FIRE HAZARD**

A CHARGER IS AN ELECTRICAL DEVICE THAT EMITS HEAT AND CAN BURN.

DO NOT COVER THE CHARGER.

KEEP THE CHARGER AWAY FROM COMBUSTIBLE MATERIALS.

DO NOT SMOKE OR USE ANY OTHER SOURCE OF ELECTRICAL SPARK OR FIRE WHEN OPERATING THE CHARGER.

**RISK OF EXPLOSIVE GASES**

WORKING IN THE VICINITY OF LEAD-ACID BATTERIES IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT YOU FOLLOW THE INSTRUCTIONS WHEN USING THE BATTERY CHARGER.

To reduce the risk of battery explosion, follow these instructions and those published by the battery manufacturer and review all Cautions and Warnings associated with these products.
IOTA DLS-X Series Power Converter/Battery Chargers convert 120 volts nominal A.C. to 13.6 volts D.C. As a power supply, its tightly controlled regulation allows the user to operate any 12 volt nominal D.C. load up to the converter’s rated output current. As a battery charger, the converter will maintain the battery, delivering its full-rated current when the battery capacity falls sufficiently low. The voltage is set to deliver its maximum current for the necessary period of time that minimizes undue stress to the battery caused by heating of its cells. This helps to ensure the longest possible life of the battery. Over time, as the battery nears its full capacity, the converter will float-charge the battery to prevent self-discharge of its cells.

The IOTA Power Converters/Battery Chargers are designed with high quality components to help ensure years of continuous use. The unit is protected by multiple protection features for a long, trouble-free life.

1) Reverse Battery Polarity Protection. 2) Brown-Out Input Protection. 3) Over-Current Protection - cycle by cycle peak limiting as well as rated current limiting to maximize the life of the converter. 4) Over-Temperature Protection. In addition, it is designed with a unique “proportional” fan control circuit. Fan speed is directly proportional to the converter’s internal ambient temperature. This enables the fan to turn on and off very slowly, minimizing unwanted fan-starting noise.

MOUNTING LOCATION

The IOTA Power Converter/Battery Charger can be mounted in any position within an enclosed or interior compartment. Provide sufficient air space to allow unrestricted airflow in and around the unit. Provide at least 4” around the fan of the DLS-X to allow for proper air intake.

IF USING AN OPTIONAL MOUNTING PLATE - Attach the mounting plate to the mounting location prior to attaching the unit.

DO NOT mount the unit in a zero clearance compartment. DO NOT mount the DLS-X in the same compartment with flammable items such as gasoline or batteries. There are no components within the DLS-X unit that, during normal operation, produce arcs or sparks. However, all electronic devices have some potential for generating sparks in the event of failure which can result in explosion or fire. DO NOT mount the DLS-X in an area that has the potential of dust, debris, or other foreign materials to enter in through the DLS-X vents.

DO NOT place the DLS-X directly above the battery; the gases from the battery can corrode and damage the DLS-X.

BATTERY CONNECTION

Before you connect the DLS-X to the battery, make sure that the AC power cord is NOT plugged into an electrical outlet. Disconnect the positive side of the battery before installation. Connect the positive and negative terminal lugs to battery or load. Always use the proper size wire based on the amperage of the converter and the battery. Torque the connections to the proper rating according to the wire manufacturer’s specifications. Refer to Illustration 1. Recreational vehicle applications require a type III circuit breaker be installed within 18” of the battery, connecting the battery positive to the line side of the breaker, and the IOTA unit to the load side. Connect “Chassis Bonding Lug” on the IOTA unit to vehicle chassis or other grounding source. Refer to Illustration 1.

120 VOLT A.C. INPUT

Plug the unit A.C. input cord into an appropriate 120-volt 3-wire grounded source. The blue LED indicator light will illuminate, indicating the presence of AC power. Refer to Illustration 2 for specifications of the cord provided with your DLS-X unit. See the Technical Specifications Chart on page 4 for maximum current draw and required input voltages.

DO NOT USE EXTENSION CORDS - Using an improper extension cord could result in a risk of fire and electric shock, and may result in property damage, personal injury or death. DO NOT OPERATE THE DLS-X WITH A DAMAGED CORD OR PLUG. Have the cord or plug replaced immediately by qualified service personnel.

REVERSE POLARITY FUSES

The IOTA Battery Charger/Power Supply is protected against reverse polarity on the DC output. If a battery or the unit is hooked up incorrectly, the fuses will blow and can be easily replaced. Always use the same size and style fuse that came with the converter.

NOTE: Depending on the amperage model of the DLS-X, fuses may not be present in all slots. Refer to the chart below for the rating and number of fuses per model:

<table>
<thead>
<tr>
<th>Model</th>
<th>Fuse Rating</th>
<th>Fuse Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLS-15-X</td>
<td>7.5A</td>
<td>2</td>
</tr>
<tr>
<td>DLS-30-X</td>
<td>15A</td>
<td>2</td>
</tr>
<tr>
<td>DLS-45-X</td>
<td>25A</td>
<td>2</td>
</tr>
<tr>
<td>DLS-55-X</td>
<td>20A</td>
<td>3</td>
</tr>
<tr>
<td>DLS-75-X</td>
<td>25A</td>
<td>3</td>
</tr>
<tr>
<td>DLS-90-X</td>
<td>30A</td>
<td>3</td>
</tr>
</tbody>
</table>

WARRANTY

The IOTA DLS-X Series Power Converters/Battery Chargers are warranted from defects in materials or workmanship for three years from date of retail purchase, and limits the remedies to repair or replacement. This warranty is valid only in the continental United States and Canada. For complete warranty details, contact Customer Service or visit www.iotaengineering.com.
The DLS-X features an accessory port on the fan end of the unit for installing an IQ4-X Charge Control Module for automatic four-stage charging.

Installing the IQ4-X Charge Control Module gives the user the benefit of automatic Bulk, Absorption, and Float stage charging. This increases the charging capacity of the IOTA charger, decreases charge times and insures proper and safe battery charging without over-charging. The green LED on the module will indicate which charging phase the IOTA charger is currently in. When the unit is first activated, the LED will flash as it reads the number of cells in the battery. The unit will then initiate the four-stage charging algorithms. The LED indicator will flash according to the active charging stage of the unit. Use the LED CODE TABLE for reference when checking the LED.

To install an IQ4-X module into the charger, remove the fastening screw on the top of the port faceplate and detach the faceplate. Plug the control module into the port and secure in place using the original fastening screw. NOTE: the port faceplate and IQ4-X control module are similar in appearance. You can recognize the IQ4-X Charge Control Module by the presence of the LED indicator on the face.

The DLS-X features an accessory port on the fan end of the unit for installing an IQ4-X Charge Control Module for automatic four-stage charging.

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### Accessory Port and IQ4-X Charge Control Module

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### ILLUSTRATION 3 - IQ4-X Module Installation
### RATINGS AND SPECIFICATIONS

<table>
<thead>
<tr>
<th>DLS-15-X</th>
<th>DLS-30-X</th>
<th>DLS-45-X</th>
<th>DLS-55-X</th>
<th>DLS-75-X</th>
<th>DLS-90-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Output Voltage (No Load) approx.</td>
<td>13.6V (DC)</td>
<td>13.6V (DC)</td>
<td>13.6V (DC)</td>
<td>13.6V (DC)</td>
<td>13.6V (DC)</td>
</tr>
<tr>
<td>Output Voltage Tolerance (No Load)</td>
<td>+ or - .7%</td>
<td>+ or - .7%</td>
<td>+ or - .7%</td>
<td>+ or - .7%</td>
<td>+ or - .7%</td>
</tr>
<tr>
<td>Output Amperage, Max Continuous</td>
<td>15 Amps</td>
<td>30 Amps</td>
<td>45 Amps</td>
<td>55 Amps</td>
<td>75 Amps</td>
</tr>
<tr>
<td>Output Voltage (Full Load) approx.</td>
<td>&gt;13.4V (DC)</td>
<td>&gt;13.4V (DC)</td>
<td>&gt;13.4V (DC)</td>
<td>&gt;13.4V (DC)</td>
<td>&gt;13.4V (DC)</td>
</tr>
<tr>
<td>Maximum Power Output, Continuous</td>
<td>200 Watts</td>
<td>450 Watts</td>
<td>650 Watts</td>
<td>800 Watts</td>
<td>1125 Watts</td>
</tr>
<tr>
<td>Ripple and Noise</td>
<td>&lt;50 mV rms</td>
<td>&lt;50 mV rms</td>
<td>&lt;50 mV rms</td>
<td>&lt;50 mV rms</td>
<td>&lt;50 mV rms</td>
</tr>
<tr>
<td>Input Voltage Frequency</td>
<td>47-63</td>
<td>47-63</td>
<td>47-63</td>
<td>47-63</td>
<td>47-63</td>
</tr>
<tr>
<td>Maximum AC Current (@108Vac)</td>
<td>3.7 Amps</td>
<td>7.3 Amps</td>
<td>11 Amps</td>
<td>13.4 Amps</td>
<td>18.2 Amps</td>
</tr>
<tr>
<td>Typical Efficiency</td>
<td>&gt;80%</td>
<td>&gt;80%</td>
<td>&gt;80%</td>
<td>&gt;80%</td>
<td>&gt;80%</td>
</tr>
<tr>
<td>Max Inrush Current, Single Cycle</td>
<td>30 Amps</td>
<td>30 Amps</td>
<td>30 Amps</td>
<td>30 Amps</td>
<td>40 Amps</td>
</tr>
<tr>
<td>Short Circuit Protection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Overload Protection</td>
<td>&gt;100%</td>
<td>&gt;100%</td>
<td>&gt;100%</td>
<td>&gt;100%</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>Line Regulation</td>
<td>100 mV rms</td>
<td>100 mV rms</td>
<td>100 mV rms</td>
<td>100 mV rms</td>
<td>100 mV rms</td>
</tr>
<tr>
<td>Load Regulation</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1.5%</td>
<td>&lt;1.5%</td>
<td>&lt;1.5%</td>
</tr>
<tr>
<td>Fan Control</td>
<td>PROPORTIONAL</td>
<td>PROPORTIONAL</td>
<td>PROPORTIONAL</td>
<td>PROPORTIONAL</td>
<td>PROPORTIONAL</td>
</tr>
<tr>
<td>Thermal Protection</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Working Temperature Range</td>
<td>0° - 40° C</td>
<td>0° - 40° C</td>
<td>0° - 40° C</td>
<td>0° - 40° C</td>
<td>0° - 40° C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20° to 80° C</td>
<td>-20° to 80° C</td>
<td>-20° to 80° C</td>
<td>-20° to 80° C</td>
<td>-20° to 80° C</td>
</tr>
<tr>
<td>Withstand Voltage (VDC)†</td>
<td>1700/1700/500</td>
<td>1700/1700/500</td>
<td>1700/1700/500</td>
<td>1700/1700/500</td>
<td>1700/1700/500</td>
</tr>
<tr>
<td>Approximate Dimensions</td>
<td>10.3&quot; x 6.0&quot; x 2.7&quot;</td>
<td>10.3&quot; x 6.0&quot; x 2.7&quot;</td>
<td>10.3&quot; x 6.0&quot; x 2.7&quot;</td>
<td>10.3&quot; x 6.0&quot; x 2.7&quot;</td>
<td>12.1&quot; x 7.75&quot; x 2.9&quot;</td>
</tr>
<tr>
<td>Weight</td>
<td>4.5 lbs</td>
<td>4.5 lbs</td>
<td>5.0 lbs</td>
<td>5.0 lbs</td>
<td>8.0 lbs</td>
</tr>
</tbody>
</table>

†Primary to Chassis/Primary to Secondary/Secondary to Chassis

Distributed By: IOTA ENGINEERING PO BOX 11846 TUCSON, AZ 85734 TELI 1-800-866-IOTA (4682) FAXI (520) 741-2837 WEBI www.iotaengineering.com

68359-012 REV 1700
Merci pour votre achat du Convertisseur/Chargeur de batterie de la série d'IOTA Engineering. Lorsqu’il est utilisé correctement, ce Convertisseur/Chargeur de Batterie DLS-X pourra fonctionner pendant plusieurs années. Ce Manuel du propriétaire contient d’importantes instructions de sécurité et de fonctionnement. VEUILLEZ LIRE TOUTES LES INSTRUCTIONS ET LES PRÉCAUTIONS DE SÉCURITÉ ATTENTIVEMENT AVANT D’INSTALLER ET D’UTILISER L’UNITÉ.

⚠️ AVERTISSEMENT

Risque de GRAVES BLESSURES OU DE MORT
Cette unité est un appareil électrique. Lors de son utilisation ou avec un quelconque autre appareil électrique, il existe des risques potentiels de CHOC ÉLECTRIQUE, D’EXPLOSION OU D’INCENDIE.
Avant d’utiliser cet équipement, veuillez LIRE ET COMPRENDRE les consignes, avertissements et précautions de sûreté se trouvant dans le Manuel du Propriétaire.
La mauvaise lecture ou une mauvaise compréhension de ces consignes pourrait entraîner de GRAVES BLESSURES voire LA MORT.
SAUVEGARDER CES INSTRUCTIONS

⚠️ DANGER

RISQUE DE CHOC ÉLECTRIQUE
CE CHARGEUR EST UN APPAREIL ÉLECTRIQUE QUI PEUT CAUSER UN CHOC ET DES BLESSURES GRAVES.
NE PAS COUPER LES FILS ÉLECTRIQUES.
NE PAS SUBMERGER D’EAU OU MOUILLER LE CHARGEUR

RISQUE D’EXPLOSION
DES BATTERIES NON-SUPERVISEES, INCOMPATIBLES OU ENDOMMAGÉES PEUVENT EXPLOSER SI ELLES SONT UTILISEES AVEC UN CHARGEUR.
NE PAS ESSAYER DE CHARGER DES BATTERIES ENDOMMAGÉES OU GELÉES.
UTILISER SEULTEMMENT LE CHARGEUR AVEC DES BATTERIES AU VOLTAGE RECOMMANDÉ.
UTILISER LE CHARGEUR SEULTEMNMENT DANS DES ZONES BIEN VENTILÉES.

ATTENTION

Lorsque vous travaillez avec l’unité DLS-X, veuillez respecter les directives ci-dessous :
• Le DLS-X est conçu pour une utilisation intérieure. Ne pas utiliser à l’extérieur.
• NE PAS exposer l’unité DLS-X à la pluie, neige ou autre intempérie.
• Ne pas monter le DLS-X dans un compartiment à tolérance zéro ou dans des compartiments avec des objets inflammables tels que de l’essence ou des batteries.
• Ne pas monter le DLS-X dans une zone où de la poussière, des débris ou autres matériaux parasites pourraient entrer dans les conduits du DLS-X.
• L’utilisation d’une attache ou d’un appareil avec le DLS-X n’est pas recommandée par IOTA Engineering qui annulera la garantie. Il y a également des risques d’incendie, de choc électrique ou de blessures sur personne.
• Afin de réduire le risque de dommage sur la prise et le fil électrique, veuillez tirer sur la prise, et non le fil lorsque vous débranchez l’unité.
• NE PAS utiliser le DLS-X avec un fil ou une prise endommagée.
• NE PAS utiliser le DLS-X s’il est tombé, a reçu un coup ou a été endommagé d’une manière ou d’une autre. Amenez l’unité DLS-X auprès d’un endroit de service agréé.
• NE PAS démonter l’unité DSL. Amenez l’unité DLS-X auprès d’un endroit de service agréé lorsqu’un service ou une réparation est requise.
• Afin de réduire le risque de choc électrique, DÉBRANCHEZ le chargeur DLS-X de TOUTES les sources de courant avant d’effectuer tout nettoyage ou maintenance. Couper tout courant ou charge électrique vers l’unité n’est pas suffisant et ne réduira pas le risque.
• NE PAS utiliser de rallonge. L’utilisation d’une mauvaise rallonge pourrait résulter en un risque d’incendie ou un choc électrique et pourrait réduire endommager les biens, causer des blessures personnelles voire la mort.

⚠️ AVERTISSEMENT

RISQUE D’INCENDIE
UN CHARGEUR EST UN APPAREIL ÉLECTRIQUE QUI ÉMET DE LA CHALEUR ET PEUT BRULER.
NE PAS COUVRIR LE CHARGEUR.
CONSERVER LE CHARGEUR HORS DE PORTÉE DE MATERIAUX COMBUSTIBLES.
NE PAS FUMER OU N’UTILISER AUCUNE AUTRE SOURCE D’ÉTINCELLE ÉLECTRIQUE OU DE FEU LORSQUE VOUS UTILISEZ LE CHARGEUR.

RISQUE DE GAZ EXPLOSIFS
TRAVAILLER AVEC DES BATTERIES PRINCIPEMENT EN ACIDE EST DANGEREUX. LES BATTERIES GÉNÈRENT DES GAZ EXPLOSIFS DURANT LE FONCTIONNEMENT NORMAL DE LA BATTERIE. DE CE FAIT, IL EST EXTREMEMENT IMPORTANT QUE VOUS SUIVIEZ LES INSTRUCTIONS LORQUE VOUS UTILISEZ LE CHARGEUR DE BATTERIE.

Afin de réduire le risque d’explosion de la batterie, veuillez suivre ces instructions ainsi que celles publiées par le fabricant de batterie et veuillez revoir tous les Avertissements et Dangers associés à ces produits.