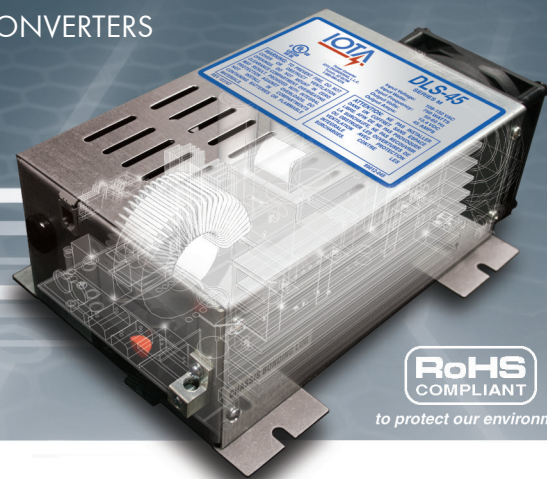


# DLS SERIES BATTERY CHARGERS & POWER CONVERTERS

DUAL-STATE  
LINE / LOAD CONTROL  
SWITCH-MODE

CONVERTS **120VAC** TO **12VDC** **30AMP**



RoHS  
COMPLIANT

to protect our environment

## DLS-30 Battery Charger / Power Converter



IOTA's 120VAC to 12VDC DLS-30 Series Converter/Charger design provides clean, steady output for efficient battery charging and confident operation of your DC equipment. The compact, durable engineering of the DLS Series combines reliable AC/DC performance with whisper-quiet operation and lower operating temperature.

### Dual-State Charging

IOTA's Dual-State Charging design allows the unit to function as both a constant voltage or a constant current charger and automatically selects the optimal charging method for your battery's needs, resulting in safer, faster, and more efficient charging.

### Line / Load Control

The tight line/load control of the DLS allows for clean conversion of AC voltage into steady and reliable DC power for your battery or load. By preventing erratic DC output, the DLS Series allows confident operation of onboard and sensitive equipment for optimal life and prevents damage or equipment shutdown from unexpected overloads.

### Switch-Mode Technology

The IOTA DLS Series uses state-of-the-art switch mode technology, which minimizes wasted power by significantly reducing high dissipation states. The switch-mode design allows for reliable, efficient performance in a compact chassis with lower operating temperature.

Compatible with Deep-Cycle, VRLA, Gel, AGM, Flooded Lead-Acid, and Select NiFe and Lithium Battery Types\*

## ADDITIONAL FEATURES



Built-in protection features against low transient AC line voltage, and current limit and thermal overload protection.



Lower operating temperature for longer component life and safer operation in limited compartment spaces.



Proportional Fan Control provides 'whisper-quiet' operation, utilizing the fan only when needed and at minimal speeds, eliminating sudden and obtrusive start-up noise.



External Reverse Polarity automotive blade-type protect the unit in the event of incorrect battery hook-up.



Dual Voltage jack allows for manual selection between Normal and Absorption Phase charging as well as easy installation of the IQ4 Smart Charge Controller.



Can be used with the optional IQ Smart Charge Controller for automatic multi-stage charging to prevent battery sulfation and stratification.



Backed by IOTA's Two-Year Warranty.



UL Listed for use in United States and Canada.

See reverse side for complete model specifications

Also available with the IQ4 charge controller built into the unit. Models with internal IQ4 are designated by '/IQ4' at the end of the model name.



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\*Some battery technologies require proper battery management systems and may require a specific IQ smart charging control profile for optimal performance. Contact our Technical Services Team for the right IOTA charging solution for your application.

Rev. 060817

## RATINGS AND SPECIFICATIONS

## 30A DLS

DC Output Voltage (No Load) approx.	13.6V (DC)
Output Voltage Tolerance (No Load)	+ or - .7%
Output Amperage, Max Continuous	30 Amps
Output Voltage (Full Load) approx.	>13.4V (DC)
Max. Power Output, Continuous	400W
Ripple and Noise	<50 mV rms
Input Voltage Range	108 - 132 VAC
Input Voltage Frequency	47-63
Maximum AC Current (@ 108Vac)	7.3 Amps
Typical Efficiency	>80%
Max Inrush Current, Single Cycle	30 Amps
Short Circuit Protection	Yes
Overload Protection	>100%
Line Regulation	100 mV rms
Load Regulation	<1%
Fan Control	PROPORTIONAL
Thermal Protection	YES
Working Temperature Range	0° - 40° C
Storage Temperature	-20° to 80° C
Withstand Voltage (VDC) <sup>†</sup>	1700/1700/500
Weight	4.5 lbs

<sup>†</sup>Primary to Chassis/Primary to Secondary/Secondary to Chassis

## ADDITIONAL FEATURES



Built-in protection features against low transient AC line voltage, and current limit and thermal overload protection.



Proportional Fan Control provides 'whisper-quiet' operation, utilizing the fan only when needed and at minimal speeds, eliminating sudden and obtrusive start-up noise.



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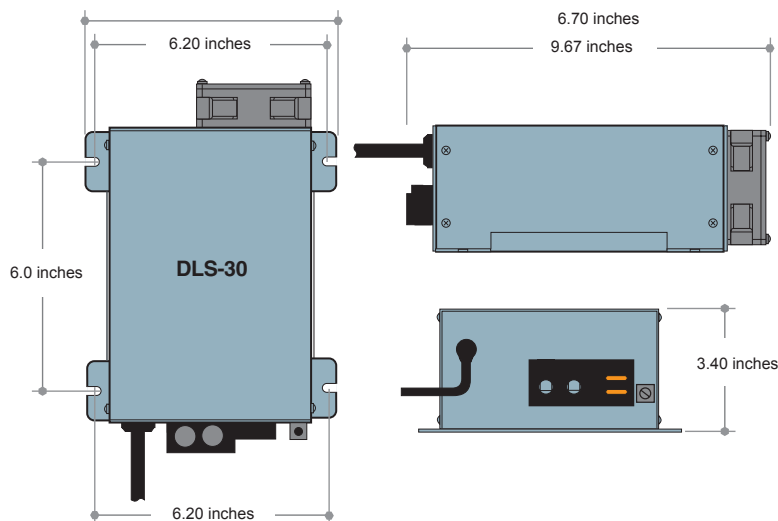


UL Listing for United States and Canada.



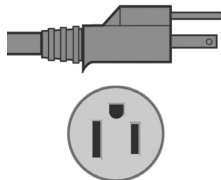
The DLS Series Battery Charger/Power Converter is warranted from defects in materials or workmanship for two years from date of retail purchase, and limits the remedies to repair or replacement. This warranty is valid only in the continental United States and Canada. For complete warranty details, contact Customer Service or visit [www.iotaengineering.com](http://www.iotaengineering.com).

## DIMENSIONS



### A.C POWER CORD

The DLS-30 utilizes a standard NEMA 5-15 cord (approx. 36-inch length) for connection to a 15A receptacle.



### 4-STAGE SMART CHARGING OPTIONS

Optional 4-stage smart-charging is available for both the DLS Charger/Converter. The IQ4 four-stage smart-charging ensures fast, efficient charging and protects your battery from the potential of boiling, sulfation and stratification with Bulk, Absorption, Float, and Equalization stage charging. External and internal IQ4 options available. Contact Customer Service or visit [www.iotaengineering.com/iq.htm](http://www.iotaengineering.com/iq.htm) for further information.

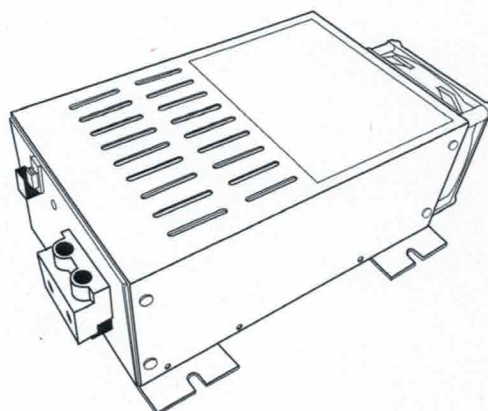
# IOTA

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## IOTA POWER CONVERTER/CHARGER

### OWNER'S MANUAL



The IOTA Power Converter/Battery Charger converts 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.

### PROTECTION FEATURES

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.

### WARRANTY

The IOTA Power Converters/Battery Chargers are warranted from defects in materials or workmanship for two 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](http://www.iotaengineering.com).

MODEL	DLS 15 SERIES M	DLS 30 SERIES M	DLS 45 SERIES M	DLS 55 SERIES M	DLS 75	DLS 90
INPUT VOLTS (Vac)	108-132	108-132	108-132	108-132	108-132	108-132
FREQUENCY (Hz)	47-63	47-63	47-63	47-63	47-63	47-63
MAX AMP DRAW (AC)	3.5	7	11	13	17	21
MAX WATT DRAW (VA)	250 (390)	500 (770)	750 (1160)	950 (1460)	1300 (2000)	1500 (2300)
OUTPUT AMPS (DC)	15	30	45	55	75	90
OUTPUT VOLTS (DC)	13.6 NOMINAL 13.4 @ FULL LOAD					
DIMENSIONS*						
WIDTH	9.7"	9.7"	9.7"	9.7"	6.5"	6.5"
LENGTH	6.7"	6.7"	6.7"	6.7"	10"	10"
HEIGHT	3.4"	3.4"	3.4"	3.4"	3.5"	3.5"

\*DETAILED MOUNTING SPECIFICATIONS ARE AVAILABLE  
ONLINE AT [WWW.IOTAENGINEERING.COM](http://WWW.IOTAENGINEERING.COM)

Distributed By:



## INSTALLATION GUIDELINES

There are no components within the IOTA Power Converters/Battery Chargers that, in their normal operation, produce arcs or sparks. However, all electronic devices have some potential for generating sparks in the event of failure. Therefore, never install this device in the same compartment with flammable items such as gasoline or batteries.

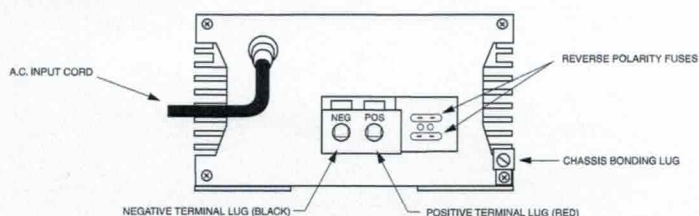
### MOUNTING LOCATION

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.

### INSTALLATION

Disconnect the positive side of the battery before installation. Connect the positive (red) and negative (black) terminal lugs to battery or load. Always use the proper size wire based on the amperage of the converter and the battery. When connecting to a battery, a breaker should 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.

#### DLS MODEL\*



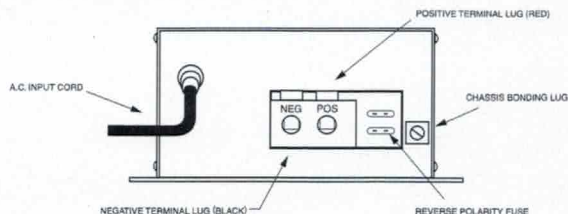
### 120 VOLT A.C. INPUT

Plug the unit A.C. input cord into a 120 volt 3 wire grounded source. See chart for maximum current draw and required input voltages.

### 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. To change the fuses, use a screwdriver to loosen the screws and remove the fuses. Always replace the fuses with the same type and rating. After inserting the new fuses, tighten the screws firmly. Apply 5 inch-pound maximum torque. DO NOT OVERTIGHTEN.

#### DLS SERIES M MODEL\*



\*Actual component locations may vary depending on model.

## CHARGE CONTROL

### TWO-STEP VOLTAGE JACK

The two-step voltage jack allows switching from a long-term float voltage of 13.6vdc up to 14.2vdc. When the included dual voltage plug is inserted in the jack\*, the voltage rises to 14.2vdc for occasional fast charging. When the plug is removed, the voltage drops to 13.6vdc to reduce battery water loss. **WARNING: To avoid battery damage, remove the Dual Voltage Plug when quick-charging is complete.** NOTE: If the unit is equipped with an internal IQ4 smart charger, two-step charging is not needed and the Dual Voltage Jack is disabled.

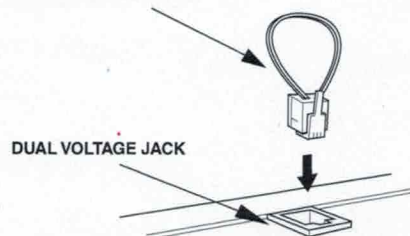
\*Location of the Dual Voltage Jack may vary depending on model.

### THE IQ4 LED INDICATOR

(ONLY ON IOTA MODELS WITH INTERNAL IQ4)

IOTA Models with an internal IQ4 smart-charger give 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 fan end of the unit will indicate which charging phase the IOTA unit 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 proceed directly to the Bulk charging or Float charging phase depending on the charge status of the battery. Use the LED CODE TABLE for reference when checking the LED. Units that do not have an internal IQ4 smart-charger can easily install an external IQ4 that plugs into the available Dual Voltage Jack. Contact Customer Service for more information.

#### DUAL VOLTAGE PLUG



#### LED CODE TABLE

CELL INDICATION		
6 FLASHES	12V Battery (6 cells)	
12 FLASHES	24V Battery (12 cells)	
18 FLASHES	36V Battery (18 cells)	
24 FLASHES	48V Battery (24 cells)	
CHARGE PHASE	LED STATUS	VOLTAGE RATE
FLOAT	ON	2.26 PER CELL
ABSORPTION	SLOW FLASHING	2.36 PER CELL
BULK	RAPID FLASHING	2.46 PER CELL