

# AC/DC POWER PRODUCTS

POWER CONVERTERS AND BATTERY CHARGERS

DUAL-STATE

LINE / LOAD CONTROL

SWITCH-MODE

- DLS SERIES
- DLS-X SERIES
- CHARGE CONTROLLERS





# THE AC/DC POWER SOLUTION OF CHOICE

IOTA's DLS and DLS-X Series Battery Chargers and Power Converters provide reliable AC/DC power conversion for a variety of application needs. IOTA Power Products are essentially two units combined: a versatile charger for 12-volt to 24-volt battery banks as well as a reliable AC/DC converter for low voltage loads. With a record of proven performance throughout several industries, the IOTA Power Products are the AC/DC power solution of choice for a number of professional and recreational users.

# DLS

# DUAL STATE BATTERY CHARGING

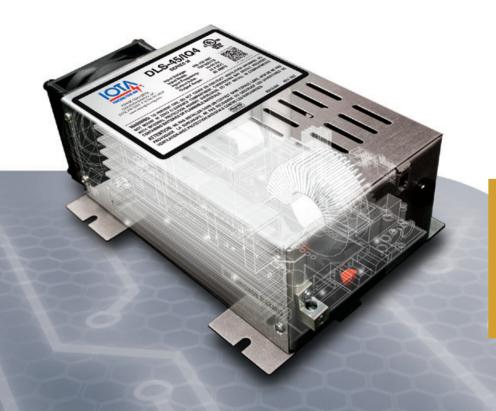
IOTA's Dual-State Charging design allows the unit to function as both a constant voltage or a constant current charger and automatically selects the optimal charging method for your battery's needs, resulting in safer, faster, and more efficient charging.

# LINE / LOAD CONTROLLED POWER CONVERSION

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 avoiding unexpected overloads.

# SWITCH-MODE TECHNOLOGY

IOTA charger/converters use stateof-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.



# SOLUTIONS FOR MOST 12-VOLT BATTERY TECHNOLOGIES

The DLS and DLS-X Series are compatible with Deep-Cycle, VRLA, Gel, AGM, Flooded Lead-Acid, and Select NiFe and Lithium Battery Types. Some battery technologies require proper battery management systems and may require a specific smart charging control profile for optimal performance. Contact our Technical Services Team for the right IOTA charging solution for your application.

# TWO OPTIONS FOR YOUR BATTERY CHARGING AND POWER CONVERSION APPLICATION...

Both the IOTA DLS and DLS-X offer the confident AC/DC performance your system requires, but with additional features added to the DLS-X model.

## **DLS Series**

#### **DUAL VOLTAGE JACK**

IOTA's DLS features the manual two-stage charging jack for selecting between absorption and float charge levels. Also allows for simple peripheral installation of IOTA's IQ4 smart-charge controller.

#### **4-GAUGE TERMINAL**

Terminal block connections accepts wire gauges up to 4AWG.

#### 2-YEAR WARRANTY

Covered under IOTA's standard 2-Year Warranty



#### **DLS-X Series**

#### **COMPACT HEIGHT**

The minimal profile design of the DLS-X allows for simpler installation in applications with limited compartment space.

#### INTERNALIZED COOLING FAN

The internal fan design allows for convenient access to mounting holes and utilizes proportional fan control for quiet operation.

#### **AC POWER INDICATOR**

The blue AC Power Indicator illuminates when AC power is present, letting you know your DLS-X is receiving power and ready to charge.



#### CHARGE CONTROL DOCK

The DLS-X Accessory Port allows for simple, snap-in installation of the IQ4-X smart-charge control module. The IQ4-X optimizes battery life and performance with automatic Bulk, Absorption, Float, and Equalization charging.

#### INCREASED TERMINAL SIZE

The DLS-X features larger terminal block connections UL-rated for size 2 to 16 wire gauges.

#### VENT-FREE TOP SURFACE

Superior venting maximizes air flow cooling while minimizing intrusion of dust and debris.

#### **EASIER HANDLING**

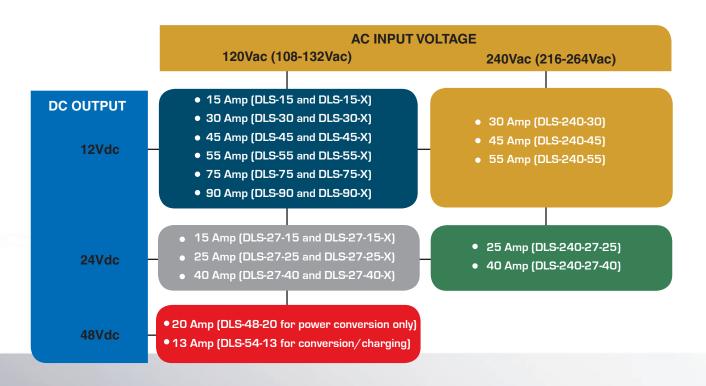
Recessed design for easier handling of the converter when re-locating for 'shop' applications.

#### **3-YEAR WARRANTY**

The DLS-X Series is covered undered IOTA's extended 3-Year Warranty

#### **MODEL CROSS-REFERENCE**

IOTA offers a wide range of charger/converter models to match your voltage and amperage specifications. Use the cross-reference below to easily select the IOTA DLS model that's right for your application. Features, ratings, and listings will vary between models. Refer to the product specifications for complete details.





# **DLS MODELS**

12-VOLT

DLS-15	15 Amp
DLS-30	30 Amp
DLS-45	45 Amp
DLS-55	55 Amp
DLS-75	75 Amp
DLS-90	90 Amp

Refer to Page 10 for complete dimension and weight specifications per model.

DLS Models are covered under IOTA's standard 2-Year Warranty.

# **IOTA DESIGN ADVANTAGES**



CLEAN, STEADY DC OUTPUT operates your loads the way they were intended, avoiding potential damage to systems from errant DC voltage.



INPUT PROTECTION DESIGN guards the unit against erratic line voltage that can occur from shore power or generator supplies.



REVERSE POLARITY PROTECTION shields the unit against damage from incorrect battery hook-up and uses standard automobile blade-type fuses for easy replacement



PROPORTIONAL FAN CONTROL operates the fan at speeds directly proportional to unit temperature, eliminating sudden start up noise and providing whisper-quiet operation.



EFFICIENT THERMAL DESIGN with lower overall operating temperature reduces stress on internal components and circuitry for longer life.



OPTIONAL SMART CHARGE CONTROL provides automatic four-stage charging for exceptional, faster charging and optimal battery life. See page 9 for details.



UL 458 LISTED for United States and Canada on most models.

# Widely popular for their reliable, robust performance, IOTA DLS chargers and converters feature a Dual Voltage Jack that allows manual switching between Normal and stepped-up Absorption voltages. DLS-X SERIES The DLS-X delivers the same exceptional AC/DC conversion as the DLS

Accepts up to 2 Gauge wire

AC Power Indicator

Mounting Adaptor Plate to match existing DLS footprint

Series, but with these and other additional enhanced

user features...



# **DLS-X MODELS**

12-VOLT

DLS-15-X	15 Amp
DLS-30-X	30 Amp
DLS-45-X	45 Amp
DLS-55-X	55 Amp
DLS-75-X	75 Amp
DLS-90-X	90 Amp

Refer to Page 10 for complete dimension and weight specifications per model.

DLS-X Models are covered under IOTA's extended 3-Year Warranty.

RATINGS AND SPECIFICATIONS	DLS-15 DLS-15-X	DLS-30 DLS-30-X	DLS-45 DLS-45-X	DLS-55 DLS-55-X	DLS-75 DLS-75-X	DLS-90 DLS-90-X
DC Output Voltage*	13.4 - 14.8	13.4 - 14.8	13.4 - 14.8	13.4 - 14.8	13.4 - 14.8	13.4 - 14.8
Output Voltage Tolerance (No Load)	+ or7%	+ or7%				
Output Amperage, Max Continuous	15 Amps	30 Amps	45 Amps	55 Amps	75 Amps	90 Amps
Maximum Power Output, Continuous	200 Watts	400 Watts	600 Watts	750 Watts	1000 Watts	1200 Watts
Ripple and Noise	<50 mV rms	<50 mV rms	<50 mV rms	<50 mV rms	<100 mV rms (DLS) <50 mV rms (DLS-X)	<150 mV rms (DLS) <50 mV rms (DLS-X)
Input Voltage Range	108 - 132 VAC	108 - 132 VAC				
Input Voltage Frequency	47-63	47-63	47-63	47-63	47-63	47-63
Input Wattage (Full Load)	250	500	750	950	1300	1500 (DLS) / 1560 (DLS-X)
Maximum AC Current (@108Vac)	3.7 Amps	7.3 Amps	11 Amps	13.4 Amps	18.2 Amps	21.8 Amps <sup>†</sup>
Typical Efficiency	>80%	>80%	>80%	>80%	>80%	>80%
Max Inrush Current, Single Cycle	30 Amps	30 Amps	30 Amps	30 Amps	40 Amps	40 Amps
Short Circuit Protection	Yes	Yes	Yes	Yes	Yes	Yes
Overload Protection	>100%	>100%	>100%	>100%	>100%	>100%
Line Regulation	100 mV rms	100 mV rms				
Load Regulation	<1%	<1%	<1.5%	<1.5%	<1.5%	<1.5%
Thermal Protection	YES	YES	YES	YES	YES	YES
Working Temperature Range	0° - 40° C	0° - 40° C				
Storage Temperature	-20° to 80° C	-20° to 80° C				
Withstand Voltage (Vdc)**	1700/1700/500	1700/1700/500	1700/1700/500	1700/1700/500	1700/1700/500	1700/1700/500
UL 458 Listing (DLS) UL 458 Listing (DLS-X)	U.S. and Canada U.S. and Canada	n/a U.S. and Canada				

<sup>\*</sup>Voltage range capability when charger is equipped with optional smart charge controller. Nominal standard voltage is 13.4 to 13.6 Vdc.

<sup>\*\*</sup>Primary to Chassis/Primary to Secondary/Secondary to Chassis



## **DLS MODELS**

24-VOLT

DLS-27-15	15 Amp
DLS-27-25	25 Amp
DLS-27-40	40 Amp

Refer to Page 10 for complete dimension and weight specifications per model.

DLS Models are covered under IOTA's standard 2-Year Warranty.

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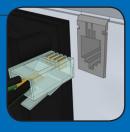
OPTIONAL SMART CHARGE CONTROL provides automatic four-stage charging for exceptional, faster charging and optimal battery life. See page 9 for details.



UL 458 LISTED for United States and Canada on most models.

# **DLS** SERIES





Widely popular for their reliable, robust performance, IOTA DLS chargers and converters feature a Dual Voltage Jack that allows manual switching between Normal and stepped-up Absorption voltages.

# DLS-X SERIES

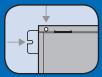
The DLS-X delivers the same exceptional AC/DC conversion as the DLS Series, but with these and other additional enhanced user features...



Accepts up to 2 Gauge wire



AC Power Indicator



Mounting Adaptor Plate to match existing DLS footprint



# **DLS-X MODELS**

24-VOLT

DLS-27-15-X	15 Amp
DLS-27-25-X	25 Amp
DLS-27-40-X	40 Amp

Refer to Page 10 for complete dimension and weight specifications per model.



DLS-X Models are covered under IOTA's extended 3-Year Warranty.

RATINGS AND SPECIFICATIONS	DLS-27-15	DLS-27-25	DLS-27-40	DLS-27-15-X	DLS-27-25-X	DLS-27-40-X
DC Output Voltage*	26.8 - 29.6	26.8 - 29.6	26.8 - 29.6	26.8 - 29.6	26.8 - 29.6	26.8 - 29.6
Output Voltage Tolerance (No Load)	+ or5%					
Output Amperage, Max Continuous	15 Amps	25 Amps	40 Amps	15 Amps	25 Amps	40 Amps
Maximum Power Output, Continuous	400 Watts	675 Watts	1100 Watts	450 Watts	750 Watts	1200 Watts
Ripple and Noise	<100 mV rms	<100 mV rms	<100 mV rms	<50 mV rms	<100 mV rms	<100 mV rms
Input Voltage Range	108 - 132 VAC					
Input Voltage Frequency	47-63	47-63	47-63	47-63	47-63	47-63
Input Wattage (Full Load)	500	950	1360	500	825	1360
Maximum AC Current (@108Vac)	7.3 Amps	12.2 Amps	19.5 Amps	7.3 Amps	12.2 Amps	19.5 Amps
Typical Efficiency	>80%	>80%	>80%	>80%	>80%	>80%
Max Inrush Current, Single Cycle	30 Amps	30 Amps	40 Amps	30 Amps	30 Amps	40 Amps
Short Circuit Protection	Yes	Yes	Yes	Yes	Yes	Yes
Overload Protection	>100%	>100%	>100%	>100%	>100%	>100%
Line Regulation	100 mV rms					
Load Regulation	<1%	<1%	<1%	<1%	<1%	<1%
Thermal Protection	YES	YES	YES	YES	YES	YES
Working Temperature Range	0° - 40° C					
Storage Temperature	-20° to 80° C					
Withstand Voltage (Vdc)**	1700/1700/500	1700/1700/500	1700/1700/500	1700/1700/500	1700/1700/500	1700/1700/500
UL 458 Listing (DLS)	U.S. and Canada					

<sup>\*</sup>Voltage range capability when charger is equipped with optional smart charge controller. Nominal standard voltage is 27.2 Vdc.

<sup>\*\*</sup>Primary to Chassis/Primary to Secondary/Secondary to Chassis

# 120VAC 48VDC



## **DLS-48-20 Power Supply**

The DLS-48-20 is designed to serve as a 48Vdc power converter only, providing clean, steady 20A service to your 48Vdc equipment.



## **DLS-54-13 Battery Charger**

The DLS-54-13 provides the increased 54Vdc output needed to charge a 48-volt battery bank at 13-amps.

# **DLS MODELS**

48-VOLT

DLS-48-20	20 Amp
DLS-54-13	13 Amp

Refer to Page 10 for complete dimension and weight specifications per model.



DLS Models are covered under IOTA's standard 2-Year Warranty.

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EFFICIENT THERMAL DESIGN with lower overall operating temperature reduces stress on internal components and circuitry for longer life.



OPTIONAL SMART CHARGE CONTROL provides automatic four-stage charging for exceptional, faster charging and optimal battery life. See page 9 for details.

RATINGS AND SPECIFICATIONS	DLS-48-20	DLS-54-13
DC Output Voltage	48V	54.4 - 59.2*
Output Voltage Tolerance (No Load)	+ or5%	+ or5%
Output Amperage, Max Cont.	20 Amps	13 Amps
Maximum Power Output, Cont.	950 Watts	700 Watts
Ripple and Noise	<100 mV rms	<100 mV rms
Input Voltage Range	108 - 132 VAC	108 - 132 VAC
Input Voltage Frequency	47-63	47-63
Input Wattage (Full Load)	1200	900
Maximum AC Current (@108Vac)	17.1 Amps	12.6 Amps
Typical Efficiency	>80%	>80%
Max Inrush Current, Single Cycle	40 Amps	30 Amps
Short Circuit Protection	Yes	Yes
Overload Protection	>100%	>100%
Line Regulation	100 mV rms	100 mV rms
Load Regulation	<1%	<1%
Thermal Protection	YES	YES
Working Temperature Range	0° - 40° C	0° - 40° C
Storage Temperature	-20° to 80° C	-20° to 80° C
Withstand Voltage (Vdc)**	1700/1700/500	1700/1700/500
UL 458 Listing	n/a	n/a
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UL 458 applies to equipment up to 24Vdc. IOTA 48V models are engineered to the same standards as other DLS units but fall outside the scope of UL 458.





# **DLS MODELS**

240 VAC

DLS-240-30	30 Amp
DLS-240-45	45 Amp
DLS-240-55	55 Amp
DLS-240-27-25	25 Amp
DLS-240-27-40	40 Amp

Refer to Page 10 for complete dimension and weight specifications per model.



DLS Models are covered under IOTA's standard 2-Year Warranty.

RATINGS AND SPECIFICATIONS	DLS-240-30	DLS-240-45	DLS-240-55	DLS-240-27-25	DLS-240-27-40
DC Output Voltage*	13.4V - 14.8	13.4V - 14.8	13.4V - 14.8	26.8 - 29.6	26.8 - 29.6
Output Voltage Tolerance (No Load)	+ or7%	+ or7%	+ or7%	+ or7%	+ or7%
Output Amperage, Max Continuous	30 Amps	45 Amps	55 Amps	25 Amps	40 Amps
Maximum Power Output, Continuous	400 Watts	600 Watts	750 Watts	675 Watts	1100 Watts
Ripple and Noise	<50 mV rms	<50 mV rms	<50 mV rms	<100 mV rms	<100 mV rms
Input Voltage Range	216 - 264 VAC	216 - 264 VAC	216 - 264 VAC	216 - 264 VAC	216 - 264 VAC
Input Voltage Frequency	47-63	47-63	47-63	47-63	47-63
Input Wattage (Full Load)	500	750	950	950	1500
Maximum AC Current (@108Vac)	3.7 Amps	5.5 Amps	6.7 Amps	6.0 Amps	10.0 Amps
Typical Efficiency	>80%	>80%	>80%	>80%	>80%
Max Inrush Current, Single Cycle	30 Amps	30 Amps	30 Amps	30 Amps	40 Amps
Short Circuit Protection	Yes	Yes	Yes	Yes	Yes
Overload Protection	>100%	>100%	>100%	>100%	>100%
Line Regulation	100 mV rms	100 mV rms	100 mV rms	100 mV rms	100 mV rms
Load Regulation	<1%	<1%	<1%	<1%	<1%
Thermal Protection	YES	YES	YES	YES	YES
Working Temperature Range	0° - 40° C	0° - 40° C	0° - 40° C	0° - 40° C	0° - 40° C
Storage Temperature	-20° to 80° C	-20° to 80° C	-20° to 80° C	-20° to 80° C	-20° to 80° C
Withstand Voltage (Vdc)**	1700/1700/500	1700/1700/500	1700/1700/500	1700/1700/500	1700/1700/500
UL 458 Listing	U.S. and Canada	U.S. and Canada	U.S. and Canada	n/a	n/a
*Voltage range capability when charger is equipped wit	h **Pri	imary to Chassis/Primary to S	econdary/Secondary to Chas	ssis	

<sup>\*</sup>Voltage range capability when charger is equipped with optional smart charge controller.

<sup>\*\*</sup>Primary to Chassis/Primary to Secondary/Secondary to Chassis



# Optimize Your Battery Life with Automatic Four-Stage Charge Control for DLS and DLS-X Series Battery Chargers...

IOTA IQ4 and IQ4-X Charge Control Modules are the easiest, safest way to keep your batteries fully charged and in peak operating condition while maximizing useful life. By utilizing the IQ programming, IOTA chargers automatically deliver a four-stage charge cycle to your battery system. Whether you need frequently-cycled batteries charged quickly and efficiently, or are maintaining stored batteries in top condition, IQ charge control provides the assurance that your batteries will perform when you need them to.

# **BULK**

Batteries are charged up to the full-rated output of the battery charger, reducing the time needed to charge the battery.



#### **ABSORPTION**

The voltage drops and the batteries are then held for a controlled period at the absorption phase to insure a full and complete charge.



## **FLOAT**

The battery charger delivers a 'trickle' charge, maintaining the battery's full charge and avoiding "gassing" caused by over-charging.

the smart charge controller.



IQ4 and IQ4-X Charge Controllers feature a green LED to help indicate charge voltage and charging phase of

# **EQUALIZATION**

If the battery remains in the 'Float' state for seven days, the IQ4 delivers a Smart Charge cycle to dissolve sulfate layers and to avoid stratification.

	BULK	ABSORPTION	
			FLOAT
12V	14.8V	14.2V	13.6V
24V	29.6V	28.4V	27.2V
48V	59.2V	56.8V	54.4V
	Ap 2-0-		1 52-575 H55-5
			355555
	7007	HAHA	K K K K K

EQUALIZATION

The IQ charge sequence is re-initiated after a designated period to keep the battery properly exercised.

LED CODE TAE	BLE			
CELL INDICATION	ON			
6 Flashes		12-Volt Batte	ry (6 cells)	
12 Flashes		24-Volt Batte	ry (12 cells)	
24 Flashes		48-Volt Batte	ry (24 cells)	
CHARGE PHASE	LED STAT	US	VOLTAGE RATE	
FLOAT	ON		2.266 per Cell	
ABSORPTION	SLOW	/ FLASHING	2.366 per Cell	
BULK	RAPIE	FLASHING	2.466 per Cell	

# THE C4 For use with IOTA DLS Series Chargers



IOTA IQ4 Charge Controllers provide automatic 4-stage charging for DLS Series Chargers. The IQ4 easily installs as a peripheral device by plugging the 10-inch IQ4 connection cord into the Dual Voltage Jack of the DLS. DLS chargers can also be ordered with the IQ4 charge control circuitry installed within the unit (add "/IQ4" to the model name when ordering.)Three models available: IQ4 (for 12V and 24V), IQ4-54V for DLS-54-13, and IQ4 Parallel for 12Vdc and 24Vdc parallel charging.



Connects easily to the Dual Voltage Jack of the DLS Charger.

## THE 194-X For use with IOTA DLS-X Series Chargers

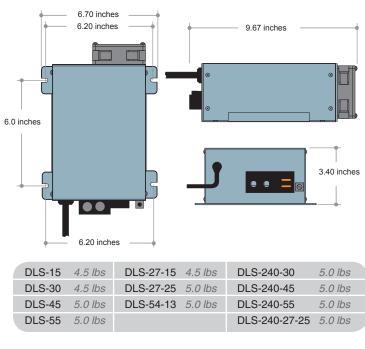


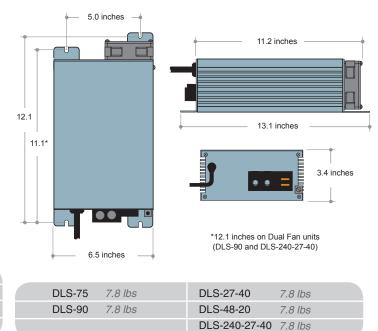
IOTA IQ4-X Charge Controllers are designed specifically for converting DLS-X Series Chargers into fourstage smart-chargers. No periphal cord is needed - the IQ4-X inserts directly into the Accessory Port of the DLS-X charger. Once the IQ4-X snaps into the docking port, the smart-charge controller initiates BULK mode charging of your battery load.



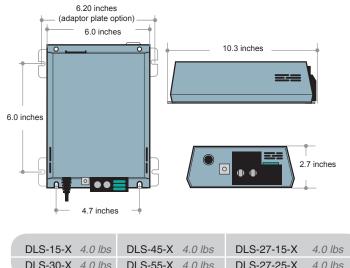
Docks directly onto the DLS-X Series Charger.

#### **Dimensions and Weights (DLS)**

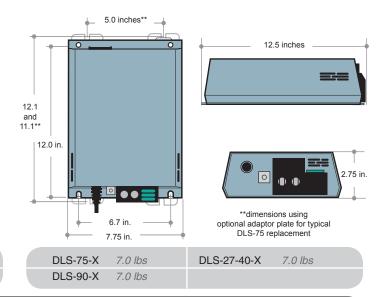


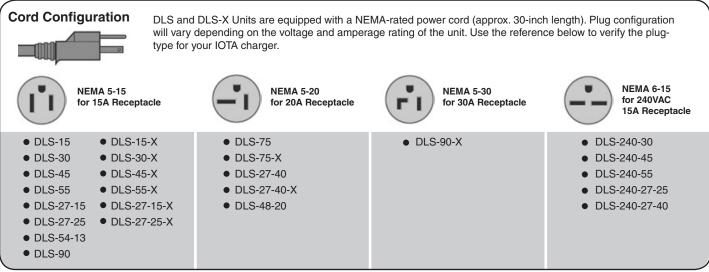


## **Dimensions and Weights (DLS-X)**









# IOTA is dedicated to providing the products and service our customers demand and deserve!



Visit www.iotaengineering.com for more information about our wide range of AC/DC power products. Get the latest details on new products, consult our on-line technical library for installation guidelines and product specifications, or browse our FAQ section for helpful hints concerning power product applications. Need technical support? Our Customer Service team is only a click away.

You can find IOTA on social media...access our You-Tube library full of useful video guides and tutorials. get handy #IOTATechTips on Twitter, or find out about industry events and upcoming shows on Facebook! Follow us, become part of the IOTA community, and share your project and application insight!

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P.O. Box 11846 Tucson, AZ 85734 1361 E. Wieding Road Tucson, AZ 85706 T.1-800-866-4682 • F. (520) 741-2837 www.iotaengineering.com

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