Power Anytime, Anywhere

Tesla™ Astrapi i Rack Mount

2017 Product Catalog

Power Anytime, Anywhere

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Origin of Tesla™ Astrapi i Series

> “I do not think there is any thrill that can go through the human heart like that felt by the inventor as he sees some creation of the brain unfolding to a success...”

Nikola Tesla
Electrical Engineer and Inventor

Power Anytime, Anywhere.

The Origins of Tesla’s™ Astrapi i Series

The word Astrapi i was taken from the ancient Greek word astrapes (αστραπές) meaning “lightning.” At Tesla ™, we thought the reference to lightning was a fitting tribute to our inspiration, inventor Nikola Tesla.

Legend has it that Tesla was born the first seconds of July 10th, 1856 in the midst of a summer lightning storm. A midwife was heard to have said “He’ll be a child of the storm.” His mother’s reply? “No, of light.” And she was exactly right, because he grew up to be known to many as “The man who lit up the world.”

And so, we dedicate our Astrapi i Rack Mount Series to the memory of Nikola Tesla. And with it, we continue the Tesla™ tradition of providing our customers with “Power Anytime, Anywhere.”

Astrapi i Rack Mount Index

Astrapi i Rack Mount Power Supply Module

Power Anytime, Anywhere

The Tesla™ Astrapi i Rack Mount Power Supply Module is expertly engineered as a single source of clean power for data centers and industrial control and communication equipment. The Power Supply Module is capable of delivering 6.3 kVA of reliable, filtered, regulated DC power while operating from single-phase AC power. As always, the unit is backed by a Tesla™ 2-year warranty, a trained support team, and an experienced staff of customer service professionals.

Models:

- **AST100-12** 14.25 V (12 V) @ 400 amps continuous power
- **AST100-24** 28.5 V (24 V) @ 200 amps continuous power
- **AST100-48** 57 VDC (48 V) @ 112 amps continuous power

Features:

- Paralleled ability
- Maintenance-free design
- Conforms to EIA-310 standard
- Fits in a 3U rack space
- Built-in Voltage and Amp Meter with backlighting
- Exceeds MIL-STD-810F/MIL-STD-461
- Single Phase 200-260 VAC 40 Hz - 1 kHz operation
- 99% efficient active power factor correction
- 1% THD (Total Harmonic Distortion)
- Host Gateway running LINUX Operating System
- The ability to measure and regulate current and voltage according to internal temperature
- Communications Interface Connector to connect with Tesla™ Battery Module

Features and Benefits

Digital Volt and Amp Meter

The DVAM provides measurements for the DC Output Voltage and Amperage between zero and 200 amps. This built-in meter allows the end user to monitor system output power consumption.

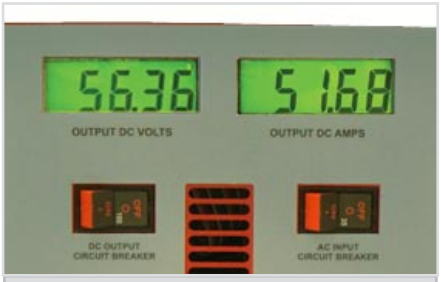


Figure 1: Digital Volt / Amp Meter, 120 DC Output (left) and AC Input Circuit Breaker (right)

AC Input and DC Output Circuit Breakers

The AC Input Circuit Breaker serves as a power “On/Off” switch for the AC Input. The breaker also protects the system by tripping when the AC Input exceeds 35 amps continuous. The DC Output Circuit Breaker serves as a power “On/Off” switch for the DC Output. The breaker also protects the system by tripping when the DC Output exceeds 120 amps continuous.

AC Input

The AC Input accepts 200-260 VAC Single Phase, 40 Hz - 1 kHz.

Figure 2: AC Input and Cooling Fan

Cooling Fans

Smart Cooling Technology utilizes active temperature monitoring for quiet and efficient heat dissipation.

DC Output

The DC Output safely provides 57 VDC @ 112 amps of clean, regulated power for the operation of delicate equipment. An optional second DC Output can be added to interface with the Tesla™ Power Distribution Unit (PDU) if the Single Power Distribution System (Extended Capacity) meets your needs. See the Multiple System Configuration Flowchart for an illustration.

Figure 3: DC Outputs (shown with optional second output)

Interface Connector

Allows for communications between the Tesla™ Battery Module and the Tesla™ Power Supply Module.

Figure 4: Interface Connector

LINUX Host Gateway/Ethernet Connections

LINUX Host Gateway

The Astrapi i Power Supply Module is a Host Gateway running a LINUX operating system. The Astrapi i System communicates through a SSH (Secure Shell) running 128-bit encryption to allow for secure communication between the host and the server. The encryption provides confidentiality and integrity of data over an unsecured network.

The system can be accessed via a host computer, a remote laptop, or secure web page. Access to the system can be controlled with passwords and certificates. The LINUX Host Gateway also runs a POP SMPT to send out status emails.

Ethernet Connections

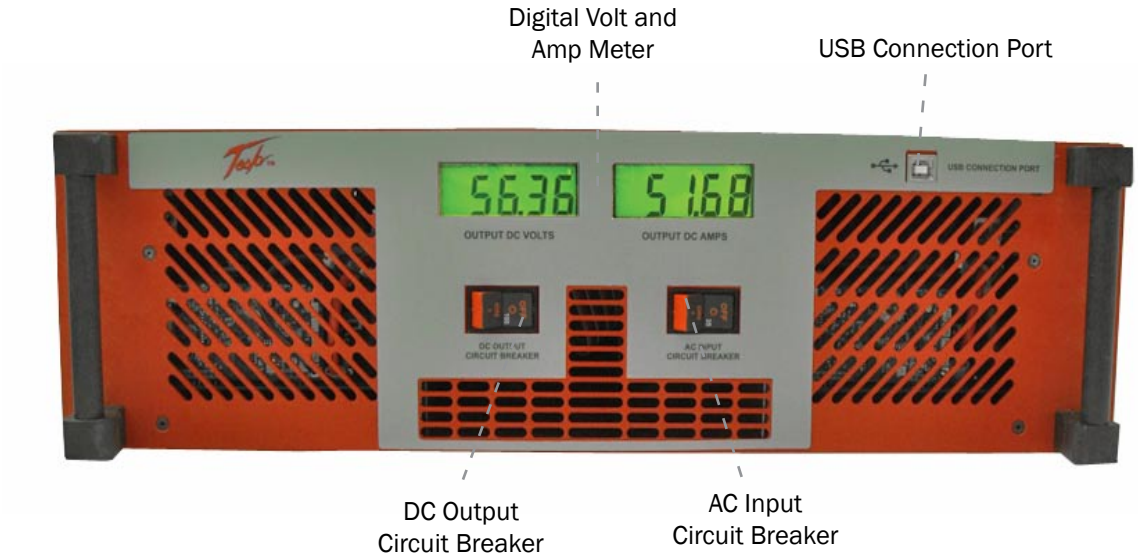
LAN Connection

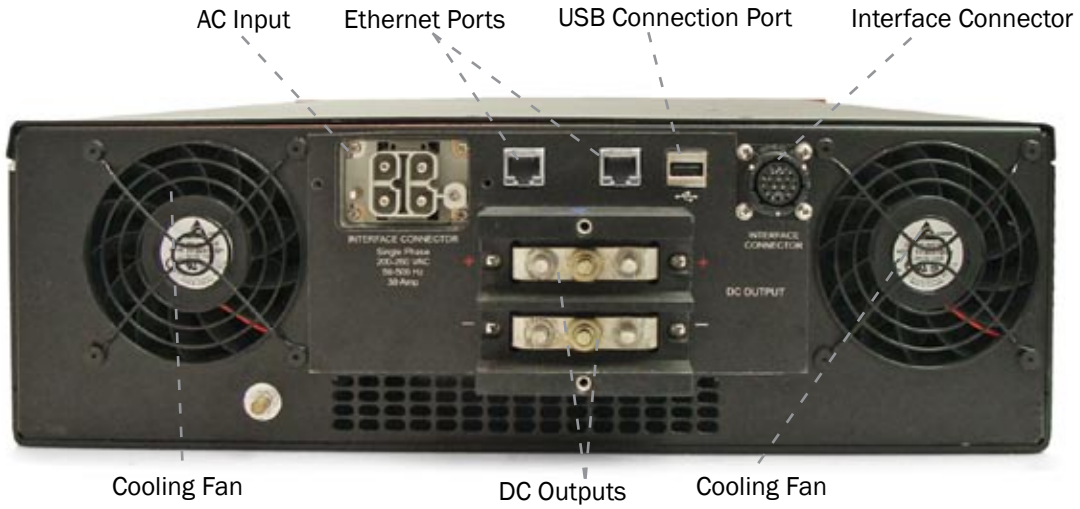
The Astrapi i Power Supply Module's LAN connection uses a DHCP server to connect multiple servers so that the rack functions as its own LAN. A DHCP server assigns IP addresses dynamically, while a DNS server allows you to assign individual names to the nodes in the rack.

WAN Connection

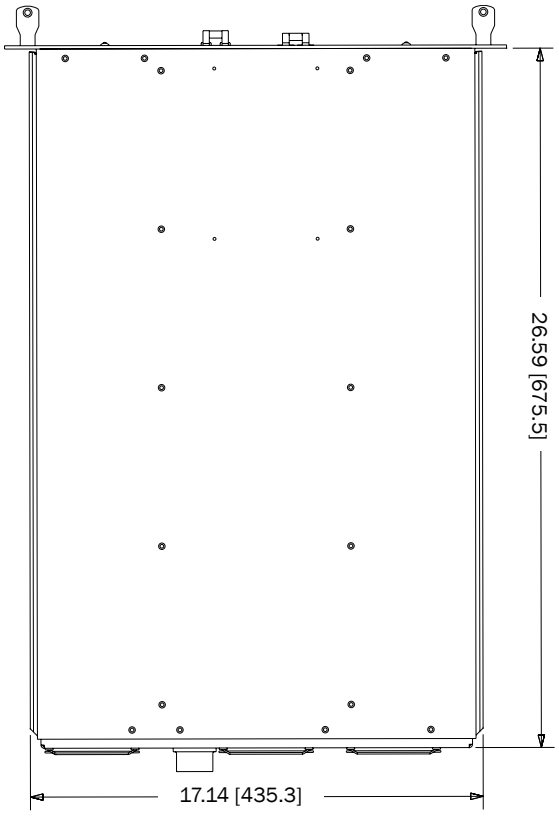
The Module's embedded host WAN connection provides a gateway to the internet and access to each LAN. The WAN connection also allows the user to access the ILO KVM through a SSH socket to control the system remotely.

Component Views

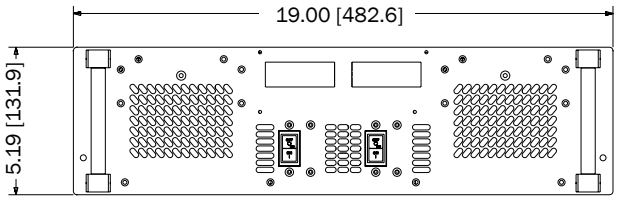




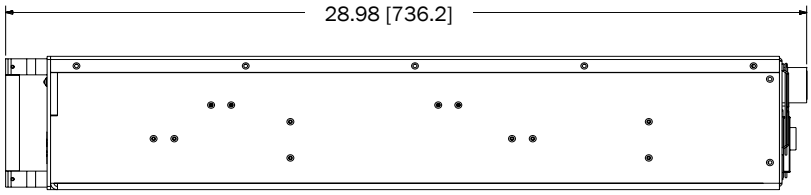
Dimensions and Technical Specifications



Top View



Front View



Side View

Technical Specifications:

Storage Temperature	-65°C - +60°C (-85°F - 140°F)
Operating Temperature	-40°C - +60°C (-40°F - 140°F)
DC Output - Continuous	14.25 VDC @ 400 amps 28.5 VDC @ 200 amps 57 VDC @ 112 amps
AC Input Power	200-260 VAC, 40Hz-1kHz, 35 amps max.
Active Power Factor Correction	99% Efficiency 1% THD (Total Harmonic Distortion)
Vibration	Exceeds MIL-STD-810F
Weight	56 lbs (25.40 kg)

Astrapi i Rack Mount Battery Module

Power Anytime, Anywhere

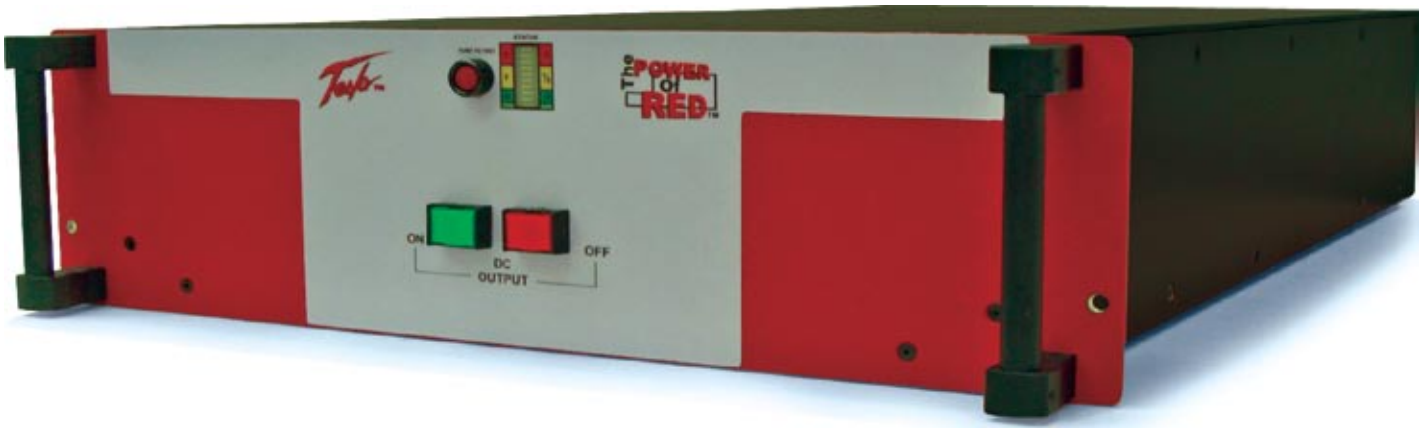
The Tesla™ Astrapi i Rack Mount Battery Module provides an efficient source of clean backup power for industrial control and communication equipment. Depending upon the model, the Battery Module uses two, four, or eight lead acid dry cell batteries to provide reliable DC power that will run, protect, and ultimately extend the life of equipment when power is lost. As always, the unit is backed by a Tesla™ 2-year warranty, a trained support team, and an experienced staff of customer service professionals.

Features:

- Maintenance-free design
- Dry Cell Batteries are not prone to Memory Effect
- Exceeds MIL-STD-810F/MIL-STD-461
- Fits in 3U rack space
- Conforms to EIA-310 standard
- Load shedding ability
- DC output capable of delivering up to 48 Volts at 46 amp hours (depending on model)
- Communications Interface to connect with other Tesla™ Astrapi i Modules

Models: (see specific configurations in technical specifications section)

Batteries	12 Volt	24 Volt	48 Volt
4 Batteries	AST400-12	AST400-24	AST400-48
8 Batteries	AST800-12	AST800-24	AST800-48



Features and Benefits

Push To Test Button

The Push to Test Button can be pushed to determine the load capacity of the power cells. This allows the user to determine if there is enough power to operate equipment in a backup capacity.

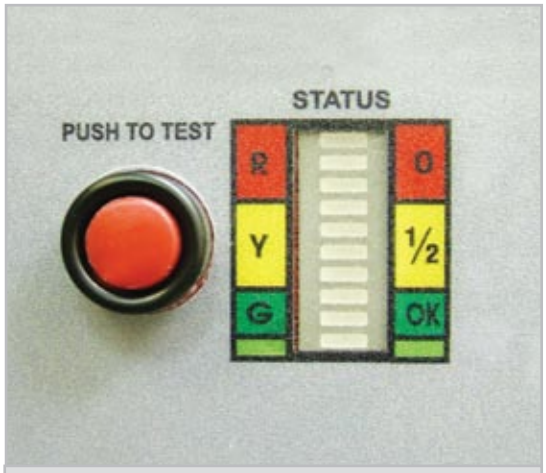


Figure 1: Push to Test/Status Meter

Status Meter

The Charge Status Meter gives a visual indication of the power cells' charge state. Easy to understand color coding makes it simple to see whether the power cells are fully charged, at half power, or low.

DC Output Circuit Breaker or DC Output ON/Off Buttons

Depending on the Model, the DC Output Circuit Breaker or the DC Output On/Off Buttons serve as a power "On/Off" switch for the Battery Module. The breaker also protects the system by tripping when the DC Output exceeds the recommended amperage -- which varies depending on the model. See Battery Module Configurations for details.

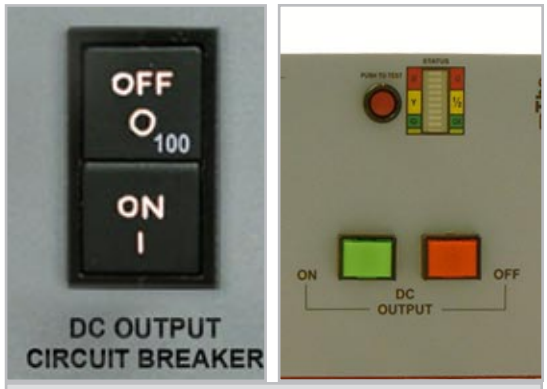


Figure 3: DC Output Circuit Breaker or DC Output On/Off Buttons

DC Output and Interface Connector

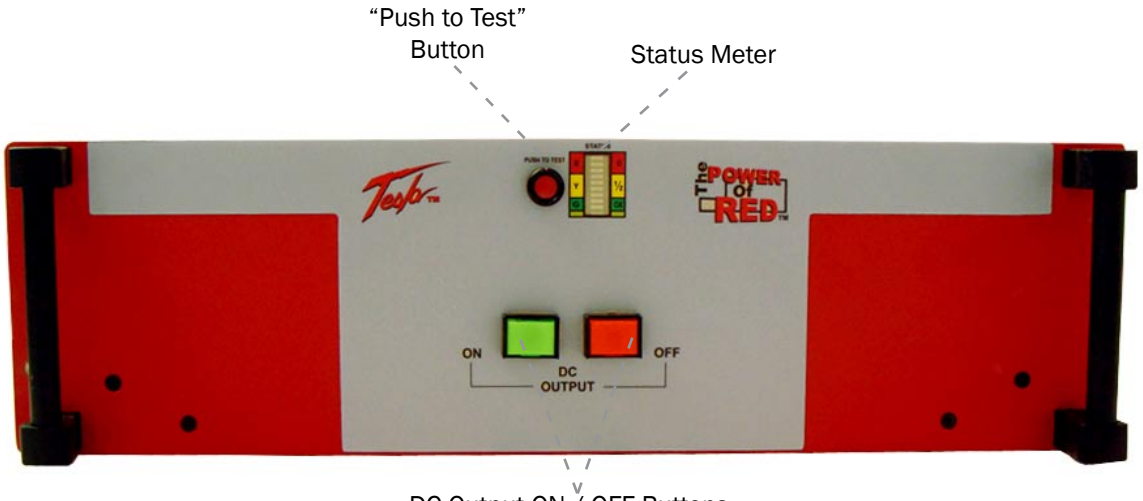
Depending upon the model, the DC Output safely provides up to 46 amp hrs. @ 48 VDC. An optional second DC Output can also be added to meet specific power needs.

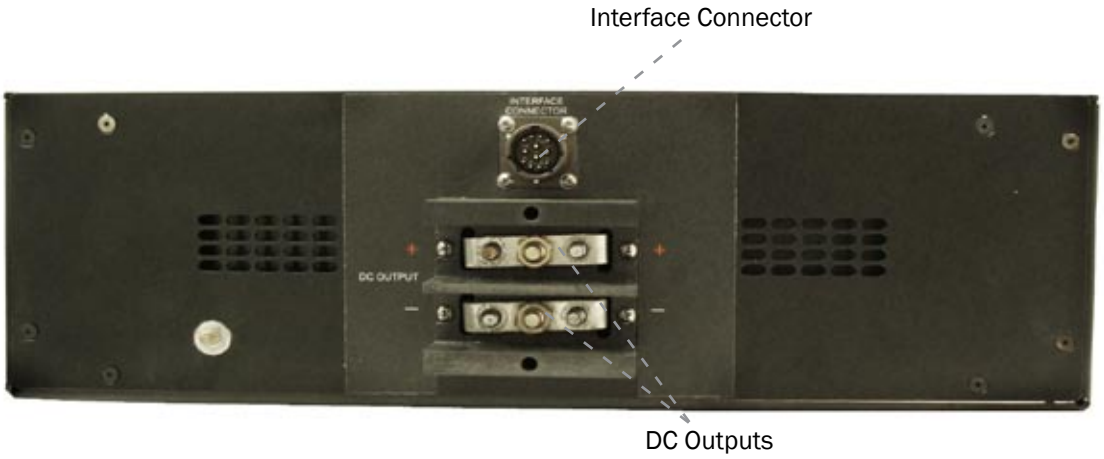
The Interface Connector works in conjunction with the Power Supply Module to monitor the PSM's state of charge.

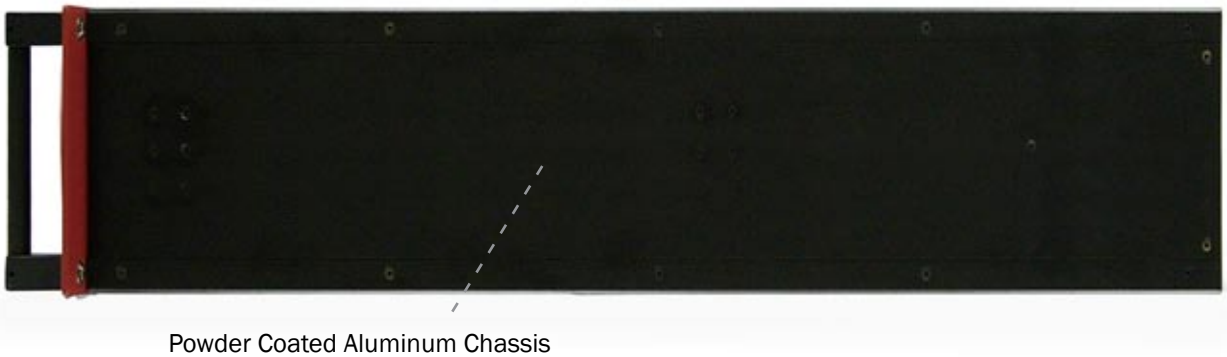
The Interface Connector also protects the batteries by shutting off the Battery Module when the batteries are at 20% charge. The batteries are then recharged and the module reengages when the batteries are at 80% charge.

Figure 4: Interface Connector (center) and optional Dual DC Outputs

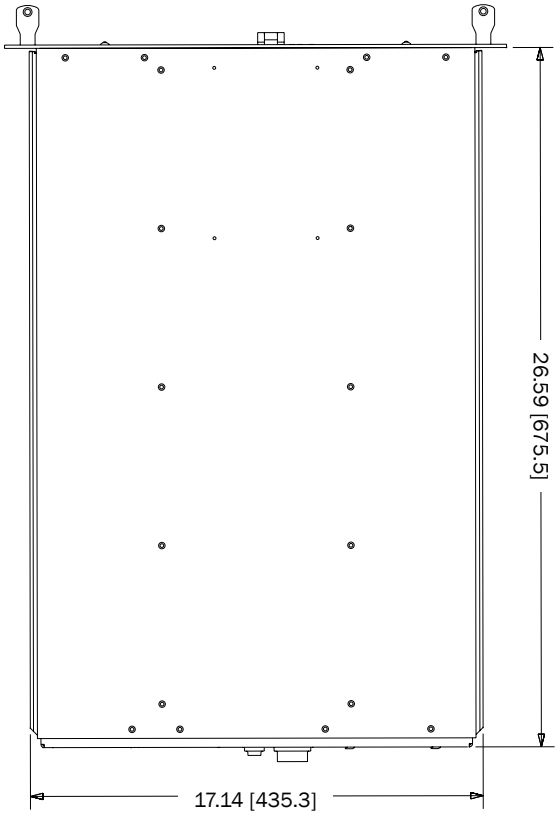
Component Views



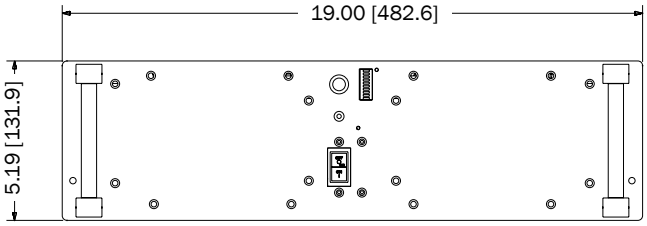




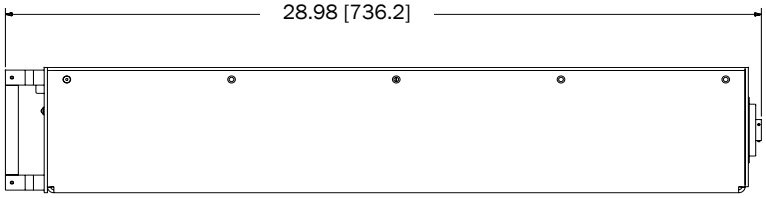
Dimensions and Technical Specifications



Top View



Front View



Side View

Technical Specifications:

Storage Temperature	-65°C - +60°C (-85°F - 140°F)
Operating Temperature	-40°C - +60°C (-40°F - 140°F)
Vibration	Exceeds MIL-STD-810F
Weight	99.5 lbs. (45.13 kg) - with 4 batteries 186 lbs. (84.59 kg) - with 8 batteries

Battery Module Configurations:

4 Batteries		
Volts	Amp Hours	Watt Hours
12	92	1104
24	46	1104
48	23	1104

8 Batteries		
Volts	Amp Hours	Watt Hours
12	184	2208
24	92	2208
48	46	2208

Astrapi i Rack Mount Power Distribution Unit

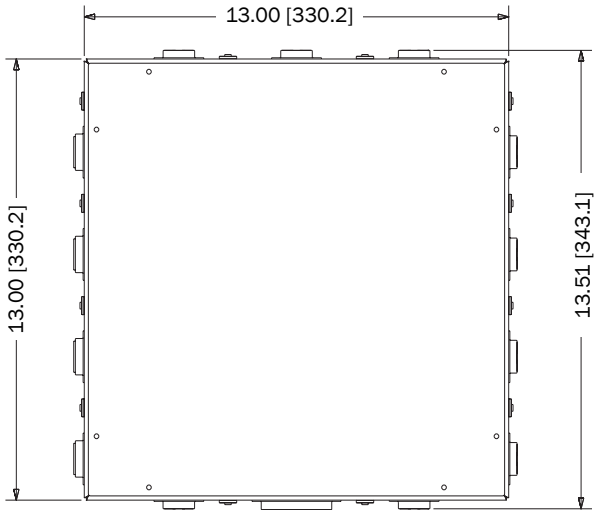
Power Anytime, Anywhere

The AST300-001 Tesla™ Rack Mount Power Distribution System is designed as a flexible solution that combines power distribution and system monitoring in one complete system. When used in conjunction with the Tesla™ Rack Mount Power Supply Module, the optional components and accessories make it simple to configure this system to meet your specific power needs. Plus, our modular design easily accommodates load expansion or relocation.

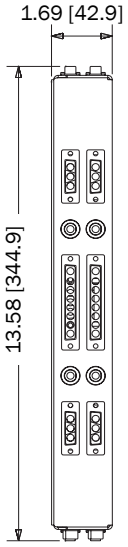
Features:

- Maintenance-free design
- Exceeds MIL-STD-810F/MIL-STD-461
- Supplies power for up to 25 output connections
- Conforms to EIA-310 standard

Dimensions and Technical Specifications



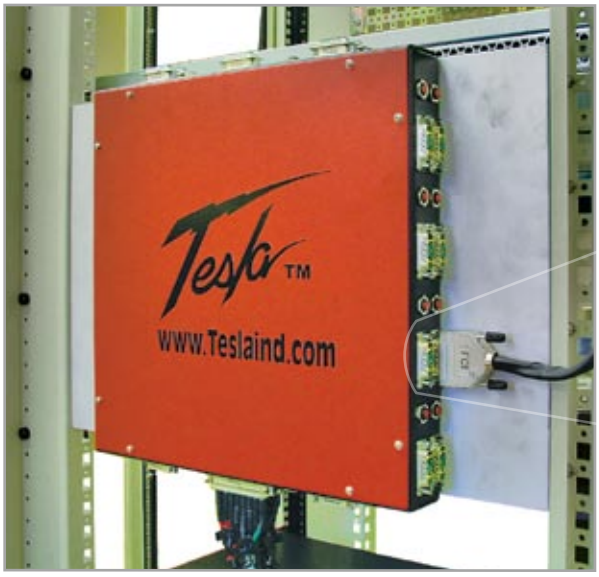
Front View

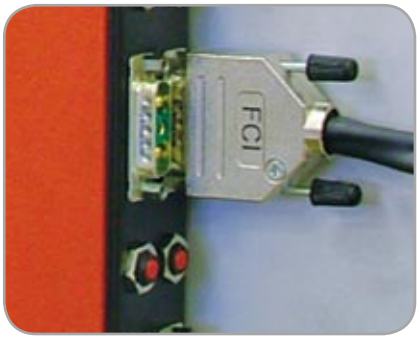


Side View

Technical Specifications:

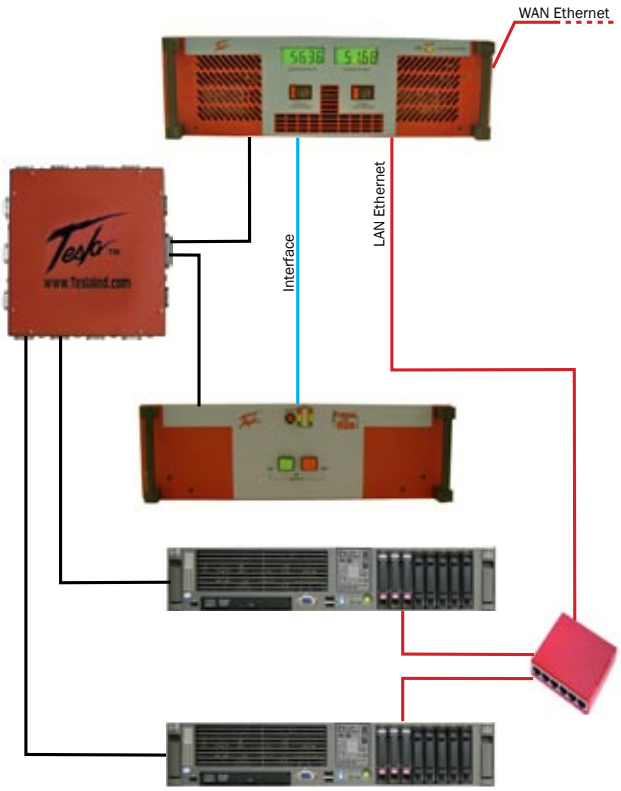
Storage Temperature	-65°C - +60°C (-85°F - 140°F)
Operating Temperature	-40°C - +60°C (-40°F - 140°F)
Vibration	Exceeds MIL-STD-810F
Weight	18 lbs. (8.16 kg)



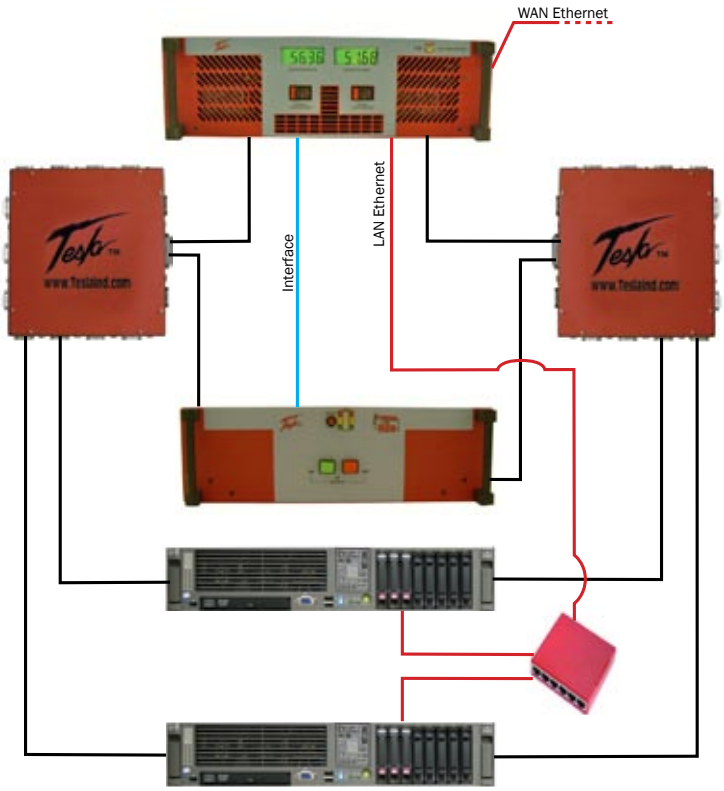


Tesla's™ Rack Mount Power Distribution Unit supplies power for up to 25 output connections.

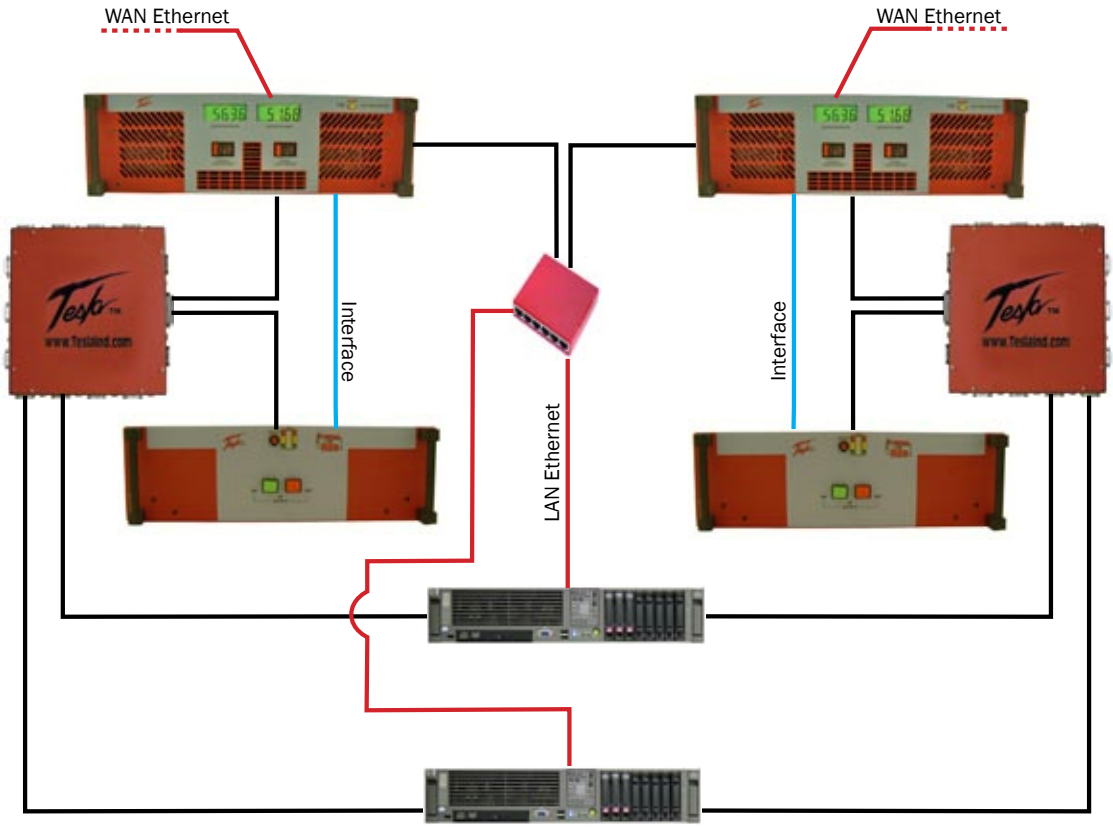
Flow Chart -- Multiple System Configurations



Single Power Distribution System



Single Power Distribution System
Extended Capacity



Dual Power Distribution System

Astrapi i Rack Mount
19” Rack Mount Cabinet Assembly

Power Anytime, Anywhere

The Tesla™ 19” Rack Mount Cabinet Assembly 18U (AST500-18U) is designed as an organized solution for containing and securing Astrapi i Power Supplies and Battery Modules.

Models:

- **AST500-18U**

Features:

- Swivel Casters.
- Overhead eye hooks.
- Cabinet doors are ventilated for better air flow.
- Designed to hold six Astrapi i Rack Mount Modules.
- Stainless Steel and Aluminum Construction.

Dimensions	38.29” L x 23.43” W x 46.54” H 972.57 mm x 595.12 mm x 1182.12 mm
Weight	249 lbs (112.94 kg)
Warranty	2 Years (3 Year Optional)

Component Views

Rack Mount Cabinet Assembly Shown with Modules

Tesla™ Products

Tesla™ **Ground Power Unit (GPU)** is a reliable, quick, and safe system built with the latest non-hazardous, dry-cell technology. Tesla™ GPUs make it easy to operate, maintain, or start a vehicle or aircraft anytime, anywhere. They deliver clean and filtered 12 or 24 VDC power to keep your most critical systems ready for any circumstance. GPUs are maintenance-free, repairable, and backed by a 2-year warranty with an intelligent charger built into the system. It is easy to find the Tesla™ product that is right for you in our diverse product line.

Tesla™ **Micro Power Unit (MPU) Aviation Battery System** is a complete battery system, not just a battery. The battery function is incorporated with an intelligent charging system and AC-DC converter. Tesla™ MPU's provide unmatched power and flexibility while eliminating the hassles normally associated with aviation batteries and battery maintenance.

TI450 Series Battery Charger/Conditioner is a system that will rapidly recharge any 12 or 24 volt battery.

A Tesla™ **Power Inverter System** is an advanced piece of equipment and an ideal method of converting 20-30 VDC to pure usable 120/240 VAC voltage.

The Tesla™ **Digital Volt/Amp Meter (DVAM)** is a high DC power measuring solution providing measurements for large voltage ranges and amperage draws between zero and 2,000.

Visit us online at **www.teslaind.com** for our complete line of products and accessories, including Cable Assemblies, Transformers, DC Power Supplies, Clean Power Solutions for Data Centers, and more.

The POWER of RED™

MADE IN USA

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