ESAA1500-HAA Series

Indoor Power System

Persuading for cost effective and energy saving goals, Delta Indoor Power System is the solution for the challenge, and the almighty ESAA1500-HAA Series is the typical representative with providing 1500A of the power for 48V system.

Due to the battery health management and the trustworthy monitoring mechanism, the battery condition is under your control and you can manage the whole system in a laid back way no matter where you are.

Key Features

- Leading Efficiency 96.4%
- 24 / 7 Monitroing and Control

Applications

- 3G / 4G / 5G Telecom Applications
- Fixed Line
- Datacom

ESAA1500-HAA Series

EGAKCS-00-KH

INPUT

Voltage (nominal)	Three phase; V_{L-L}: 380V_{AC}; V_{L-N}: 220V_{AC}; 5W (L1, L2, L3, N, PE)
Voltage (range)	90 - 300V_{AC}; De-rating ≤ 176V_{AC} (Line - Neutral)
Frequency	50 / 60Hz
Connections	AC Breaker 200A - 3P with Type II SPD
SPD (L1,L2,L3-N, N-PE)	Class II, In ≥ 10kA (08/20μs), Imax ≥ 20kA (08/20μs), Uc ≥ 280V AC, Up ≤ 1.4kV, respond time ≤ 25ns, Operating temperature 0 - 65oC
Power Factor	≥ 0.99 @ 50%-100% load

OUTPUT

Voltage (nominal)	-48V_{DC}, Positive to GND
Voltage (adjustable range)	-42 to -58V_{DC}, ±0.5%
Efficiency	Typical 95.5%
Maximum Power @ nominal Input	84kW with 28 slots for rectifier 3000W
Power Distributions	Cooper BUSBAR coated with anti-oxidation materials Load: 1000A x2 + Spare x1; Battery: 1000A x2 + Spare x1, with LVBD 1500A x1
Protection	Short circuit, overload, overvoltage, high temperature

CONTROL AND MONITORING

Operating Voltage	18 - 60V_{DC}
Input Power	Typical 5W, Maximum 15W
Security Access	Password Protected Levels
User Interface	LCD and Web UI
Remote Access	TCP/IP (RJ-45), RS-485 MODBUS
Local Access	TCP/IP (RJ-45),RS-232 (D-Sub), USB
Alarm Output	Dry Contact x 8 (programmable)
Alarm Input (Digital Input)	x 8
Event Logs	> 10,000
Basic Alarms	Mains Failure ; Rectifier Module Failure; AC/DC SPD Failure; Voltage Abnormal ; Breaker Trip; Temperature Abnormal; LVD Trip
Alarm Level	Urgent / Non Urgent
Rectifier Management	Soft Start - Optional: Redundancy Check, Active Efficiency Management; Sequence Control; Remote On/Off
Battery Management	Temperature Compensation ; Charge Current Limit ; Capacity Setting ; Monitoring: Voltage/Current/Temperature; Boost Charge; Float/Equalized Charge - Optional: Battery Test (auto/manual); Lifetime Prediction; Battery Stolen Alarm
Temperature Sensor	Ambient x1 (2m), Battery x2 (15m)

MECHANICAL

Dimensions (W x H x D)	600 x 2000 x 600mm
Materials	Galvanized steel, electrostatics paint, zinc coated
IP Protection	IP20
Cable Entry	Top/ Bottom accessible (Default is Top access and optional for Bottom)
Rectifier Slots	28

ENVIRONMENTAL

Operating Temperature	-10 to +65 °C
Storage Temperature	-40 to +85 °C
Altitude	0 to +4000m
Related Humidity	0 – 95 % RH non-condensing
Acoustic Noise	≤ 65dBA

STANDARDS

Safety	EN 62368-1 (Rectifier), Design comply UL1950, CSA 60950
EMC	EN 300 386, FCC class B
Environment	RoHS
Others	ETSI EN 300 019-2-1, ETSI EN 300 019-2-2, ETSI EN 300 019-2-3, IEC 60068-2-78

ORDERING INFORMATION

ESAA1500-HAA Series	1,500A Indoor Power System
ESR-48/60F S	3,000W Single Phase Rectifier Module

* All specifications are subject to change without prior notice.

** Consult technician for the feasibility of other battery housing

*** Battery life varies according to operating temperature and charge/discharge cycle use; user shall consult battery vendors/specifications and choose the right battery according to the applications requirements

ORION

Controller

Descriptions

ORION controller is the solution for any system, from small to very large, thanks to easy expandability with CAN bus communication and a range of front-end modules. Enhanced functions, such as efficiency mode and genset fuel saving, enable operating cost reductions. Battery management with capacity test and life time prediction and enhanced rectifier functions including redundancy supervision make it easy to monitor system availability and plan site visits in cost effective manner. Remote monitoring and alarming, and consequent cost savings, are ensured with potential-free relay contacts and modem or LAN/Ethernet, SMS, SNMP or Modbus. An integrated web server offers a user-friendly interface with a standard browser both for local and remote communication.

Main features

- Remote monitoring by SNMP/Modbus
- LCD display voltage, current, alarm, battery status, rectifier module and operating status
- Integrated, user-friendly WEB server, display and keypad, compatible with Windows.
- Easy to configure system parameters by one setting file without system interruption
- Multi-level user password to control access system
- Integrated PLC functions to monitor and control whole power system, peripheral devices and site infrastructure
- Advanced battery management and testing methods
- Self-test system, LVD and alarm relays
- Monitoring 3rd party Lithium batteries by Modbus/CANbus
- Ability to record up to 10,000 events at different time
- Easy maintenance by hot pluggable architecture

Applications

- LTE/4G/5G
- Fixed line
- Datacom

ORION

Controller

Technical specifications

Model	ORION ID:E1

1. Input	
Mains voltage	18 - 60 V_{RMS}
Current	0.8ADC (Max.)
Protection	Internal fuse

2. General	
Dimensions (W x H x D)	83.4 x 42.0 x 203.1mm
Weight	0.6 kg (1.32 lb)
Cooling	Natural air flow
Operating temperature	-40 to +70 °C
Storage temperature	-40 to +85 °C
Relative humidity	5% - 95%, non-condensing (Max.)

3. Standards	
Safety	EN / IEC 60950, class I; UL 60950; CAN / CSA - C22.2
EMC (radiated)	EN 55022, class B; ETSI EN 300386 compliant
Environment	RoHS compliant
MTBF	300k hours at 25 °C

4. Monitoring and control function	
System	
	System model, Controller model
	AC input voltage, AC input current
	DC output voltage. Error ± 0.25V.
	Energy consumption kWh
	Load current, battery current. Error ±1A
	Temperature
Battery	
	Number of battery strings
	Battery current, voltage
	Battery temperature
	Test and maintenance
	Remain capacity of battery (SOC)
	Measure and alarm when one battery in string fail when connect to Lithium battery or to VRLA battery BMS (if any)
	Battery failure alarm (low capacity, disconnect)
Rectifier	
	Individual rectifier information monitor and control: input and output voltage, input and output current, serial number, working status.
	Sequential start-up / system soft start
	Efficiency mode with advanced rectifier cycling
Genset	
Genset control	Start/stop through dry contact Mode: Auto and manual
Start method	Generator is started and run no load in 03 minutes (can adjustable). Then start rectifier to supply power to loads
Stop method	Stop rectifiers first to let generator run no load in 03 minutes (can adjustable). Then stop genset
Manual mode	On/off generator by controller keypad
Auto mode	Disable mode, Start mode, Stop mode - Able to enable/disable each mode
Disable mode	- Do not run genset on night time (default 22:00pm to 6:00am, adjustable)
Start mode	Start genset based on: - DC voltage: setup from 43.2-50V DC - Real time: can set 03 running durations per day Can combine DC voltage and real time condition
Stop mode	Stop genset based on: - Genset running time: setup from 0-24h - Real time: can set 03 running durations per day - DC voltage
Limit generator capacity	Can set maximum power supplied by genset (by control the battery charge current)
Fuel monitoring	Fuel level read from Generator controller

5. Alarm (setting, enable, disable)	
System	Operating status
	AC fail, AC low alarm
	DC high/low alarms (2 levels), LVD
	Output CB off alarm
	High temperature alarm: environment and battery
Battery	Battery failure alarm
	Charge voltage high/low
Rectifier	Rectifier failure alarm
	Low load
Genset	Generator running alarm
	Generator start failure alarm
	Fuel lost, fuel low level alarm (RS485 from GENSET should be available)
Others	External peripheral alarms: smoke alarm, door open alarm…by DI

DELTA

6. Parameter setting (by keypad, computer, remotely SNMP)	
AC input	Input AC high/low threshold
DC output	LVD, DC high/low (02 level) thresholds (from 42 to 57VDC) LVD response time
	Over output voltage protection threshold
	Shunt resistor coefficient
Battery	Battery charging mode: Auto/ Manual
	Temperature compensation coefficient and reference temperature
	Battery charging voltages Float charge voltage: Default 53.6VDC Boost charge voltage: Default 56.5VDC
	Limit charging current, default: 0.1C10
	High temperature threshold
	Battery maintenance mode: auto/ manual
	Battery maintenance auto mode: starting time, end of test voltage or end of test capacity or end of test temperature.
Rectifier	Walk in time
Genset	Generator capacity
	Lose fuel, low fuel level through
	Operation mode Auto & manual Start/Stop
Others	Destination IP address for communication
	Environment temperature

7. Communication	
Rectifier interface	Digital, CAN-based
Digital input	8 DI for external alarm (smoke alarm, door open …)
Relay output	8 DO
Log	10.000 events , 10.000 data
Communication port	RS232, RS485, USB, RJ45 (compatible IPv4/v6, HTTPs, SNMP V2/V3)
Extend board	Extend up to 64 DI/DO
Languages	English + 2 downloadable

8. User Interface	
Local user interface	Touch LCD display (176 x 220 dots)
UIM	5 configurable LEDs; LCD display; Keypad; Buzzer
WEB	Four different access levels; More than 200 dynamic WEB pages; SW and setup updates locally and remotely
SNMP	Remote alarms using traps; Dial-out feature together with modems

9. Ordering Information	
Model: ORION ID:E1	TPS1020028A

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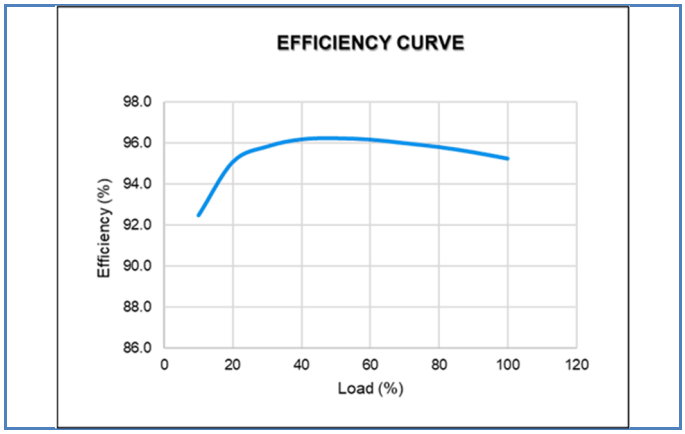
DPR 3000B EnergE

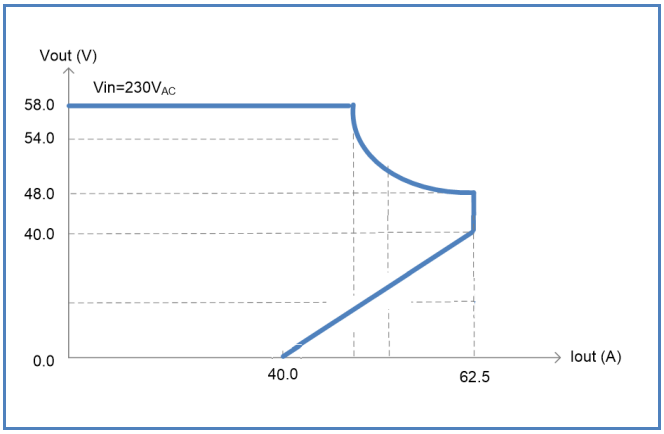
Delta's technology leading telecom rectifier DPR 3000B EnergE provides the industrial leading efficiency of 96.2%. The single phase, hot pluggable fan cooled rectifier provides the 37.8W/in³ outstanding power density. Integrated with the high efficiency rectifier DPR 3000B EnergE, Delta power solution provides an energy saving solution for network base stations, wireless applications, fixed line applications and data communications.

DPR 3000B EnergE

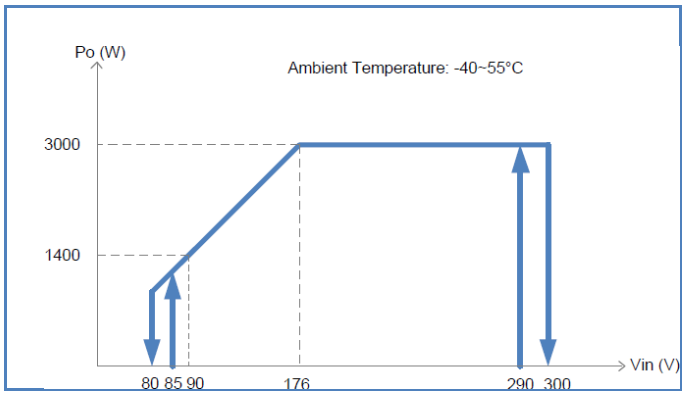
Efficiency Curve



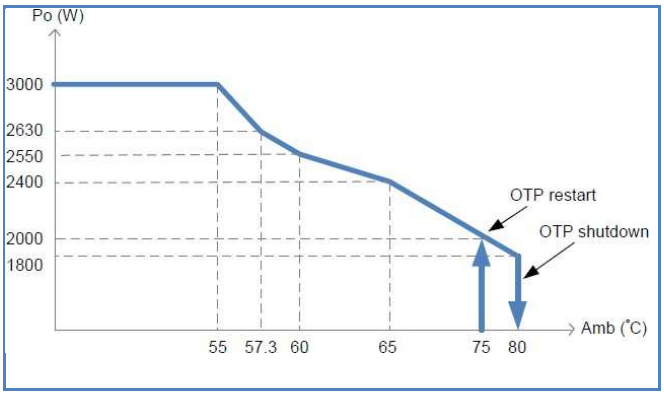
Output Characteristic



Input Characteristic



Temperature Characteristic



DPR 3000B EnergE

INPUT

EGAKCS-00-KH

Voltage (nominal)	$230V_{AC}$
Voltage (range)	85 - 300VAC; De-rating ≤ 176VAC
Frequency	50 / 60Hz
Power Factor	> 0.99
Total Harmonic Distortion	< 5% @ 50% ÷ 100% load
Lightening Protection	EN 61000-4-5
Non-destroy voltage of rectifier	$415V_{AC}$ max

OUTPUT

Voltage (default)	$-54.0V_{DC}$
Voltage (adjustable range)	-42 to $-58V_{DC}$
Maximum Output Current	62.5A
Maximum Power @ nominal Input	3000W
Efficiency @ nominal input	Typical ≥ 95.5% @ 30% - 90% load, Peak 96.2%
Load Regulation	≤ ± 250mV
Dynamic Voltage Regulation	≤ ± 5% from 10% to 90% within 50ms
Ripple Voltage	< 20mV (<100Hz)
Peak to peak Noise	< 250mV p-p (0 - 20MHz)
Current Sharing	≤ ± 5% @ 50% - 90% load
Hold up time	≥ 10ms @ 80% load

USER INTERFACE

Alarm and Signaling	CANbus to System Controller		
Indications	OK	Green	Normal Operation
	NL	Yellow	Output current < 5%
	COM	Green	Communication Status

MECHANICAL

Dimensions (W x H x D)	125.5 x 41.0 x 272.9mm (4.94 x 1.61 x 10.74in)
Weight	1.8kg (3.96lb)

ENVIRONMENTAL

Operating Temperature	-40 to +75 ℃ (40 to +167 ℉); De-rating above 45℃ (+113 ℉)
Storage Temperature	-40 to +80 ℃ (40 to +176 ℉)
Altitude	0 to +4000m
Related Humidity	0 – 95 % RH non-condensing
Acoustic Noise	≤ 55dBA

STANDARDS

Safety	Passes TUV, CE, UL cUL, S-mark certifications; Catch the CB certificate; Complies with IEC/EN/UL60950-1
EMC	EN 55022 AC Class B and DC output Class A EN 300 386
Environment	RoHS
MTBF	300k hours @ 25 ℃ (+77 ℉)

ORDERING INFORMATION

Model: ESR-48/60F S	Series: DPR3000B-48.

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