Concentric

Industrial Battery Charger

For Utility, Industrial, and Communications Applications

Overview

The Mesa One is Concentrics highest reliability industrial battery charger designed for cabinet, wall-mounted or rack-mounted applications. It boaststrue redundancy, a state of the art controller with monitoring capabilities, and NERC PRC-005-6 compliance capabilities. The Mesa One series battery chargers can be configured for 24, 48 or 125VDC output with capacities ranging from 20A to 300A, using modular, high speed switching rectifiers. This provides scalability as well as significant higher power compared to traditional SCR based chargers. The system features an integrated, simple to operate, advanced monitoring and control system using field proven technology that offers market leading reliability and availability. Advanced maintenance and monitoring solutions provides minimal mean times between repairs.

Features

- N+1 and N+N redundancy available

- Front panel access to most control and monitoring parameters including alarms

- Automatic, wide input voltage range (no tops to exchange)

- Hot pluggable rectifier& control modules

- Rack mount or wall mount

- Secured remote access and monitoring

- Integrated shunt for measuring battery load and charge current

- Controller independent system operation

- Optional dual AC input

- Optional secondary output breaker for battery test or external loads

- Small, lightweight, efficient

Application Industries

- Power Utilities

- Process Control

- Transportation

- Oil and Gas

Applications

- Battery Charging/ Standby Power

- Pump Control/Supply

- Emergency Lighting

- Switchgear Control Power

Specifications

INPUT		MIN	TYP	MAX
Voltage Range				
1Φ High-Line		175Vac	220Vac	305Vac
1Φ Low-Line		85Vac	110Vac	140Vac
3Φ 380/480		320Vac	380/480Vac	530Vac
Frequency		45Hz	60Hz	66Hz
Power Factor		98%	99.5%	
Total Harmonic Distortion			5%	

RECTIFIER OUTPUT	IP100ACR125ATEZ - 1 ph	IP050ACR048ATEZ - 1 ph	IP020ACR125ATEZ - 3 ph	IP100H3R048ATEZ - 3 ph
Nominal Voltage	125Vdc	48Vdc	125Vdc	48Vdc
Output Current	20A	50A	20A	50A
Vo Setpoint (Factory)	135Vdc	54.5Vdc	135Vdc	54.5Vdc
Vo Range	90-160Vdc	42 – 58Vdc	90 – 160Vdc	42 – 58Vdc
Regulation (With Controller)	±0.5%	±0.5%	±0.5%	±0.5%
Efficiency	> 94.5% (Peak 95.1%)	> 96% (Peak 96.4%)	> 94.5% (Peak 95.1%)	> 96% (Peak 96.5%)
Output Voltage Ripple	<30-45mVrms	<30mVrms	<30-45mVrms	<30mVrms

1 Rectifier output is reduced to 1200W when powering the charger with 120VAC

MECANICAL

Module L x W x H (in. /mm)	9/229 x 1.7/43 x 24/610			
System L x W x H (in. /mm)	14 / 356 x 17.5 / 445 x 28.25 / 718 or 14 / 356 x 23 / 584 x 28.25 / 718			
Module Weight (lb / Kg)	12.1 / 5.5	12.1 / 5.5	12.1 / 5.5	15 / 6.8
System Weight (lb / Kg)	60 / 27.2 – 133 / 60	60 / 27.2 – 133 / 60	60 / 27.2 – 133 / 60	63 / 28.6 – 93 / 42.2

ENVIRONMENTAL

Operating Temperature	-40°C to +75°C (-40°F to 167°F) (de-rates above 55°C)
Storage Temperature	-40°C to +85°C (-40°F to 185°F)
Relative Humidity	95% max, non-condensing
Altitude	4000M (for altitudes above 2000M, peak operating temperature de-rates 0.656º C /100M; 4000M peak temperature rating is 62º C)

SAFETY AND STANDARDS COMPLIANCE

NEMA	NEMA PE5 for modules, NEMA 2 Enclosure
Safety	UL 1012, ANSI/UL60950-1-2014 and CAN/CSA C22.2 No. 60950-1-07, Second Edition + A2:2014 (MOD), dated October 14, 2014
RoHS	Compliant to RoHS EU Directive 2002/95/EC RoHS 6/6
EMC	European Directive 2014/30/EU; EN55032, Class B, EN55035; FCC, Class B;
ESD	EN61000-4-2, Level 4

Voltage	Input under voltage, Input over voltage, Output overvoltage, Output under-voltage
Current	Fuse in both the input lines, output over current protection, Output short circuit protection
Thermal	Over temperature protection and auto restart upon removal of over temperature condition
Surge	Input surge protection, Output surge protection
Reverse Polarity	Battery reverse polarity protection
Ground Fault	Ground fault detection and alarm (Only reporting)
Breakers	Industrial grade UL recognized bulk input and bulk output breaker

PROTECTION

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Pulsar Plus Control

The Pulsar Plus family of controllers provides system monitoring and control features for Infinity industrial battery charger systems. These controllers monitor and control system components including rectifiers, converters, and distribution modules via a multi-drop RS485 digital communications bus. System status, parameters, settings, and alarm thresholds can be viewed and configured from the controller's front panel display. Assignment and configuration of alarm inputs and output relays can be performed from a laptop computer connected to a local RS-232 or Ethernet port, or by remote access is through a network connection to the World Wide Web (internet) or your enterprise network (intranet). An optional secured modem is also available. This controller utilizes standard network management protocols allowing for advanced network supervision. The Mesa Galaxy Manager software is the centralized visibility and control component of a comprehensive power/battery management system designed to meet engineering, operations and maintenance needs. The Galaxy Manager client-server architecture enables remote access to system controllers across the power network, featuring advanced monitoring features, which provides detailed energy source analysis to help better customize your renewable energy resources. Monitored data can be downloaded to almost any device securely. The controller can be optionally designed and configured to push the data to the customer network on a periodic basis. Advanced trend analysis can also be incorporated into the controller.

Key Features

Remote Access and Features

• Integrated 10/100Base-T Ethernet Network

– TCP/IP, SSH, SSL – SNMP V2c, SNMPV3, IPV6

– SMTP for email

– Telnet for command line interface

– DHCP for plug-n-play

– FTP for rapid backup and upgrades

– HTTP & HTTPS for standard web pages and web browsers

– Compatible with Galaxy Manager and other management packages

– Shielded RJ-45 interface referenced to chassis ground

• Password protected security levels: User, Super-User, Administrator for all access

• Ground-referenced RS232 system port

• ANSI T1.317 command-line interface

• Modem access support

– Remote via external modem

– Callback security

• EasyView2, Windows-based GUI software for local terminal or Modem access

Standard System Features

• Monitor and control of more than 40 connected devices

• Standard and user defined alarms

– Alarm test – Assignable alarm severity: Critical,

– Major, Minor, Warning, and record-only

– 10 alarm relays (7 user assigned) Rectifier management

• Rectifier management features

– Automatic rectifier restart

– Active Rectifier Management

– ARM (energy efficiency)

– Remote rectifier (on/off)

– Reserve Operation

– Automatic rectifier sequence control

– N + X redundancy check

• Multiple Low Voltage Load and Low Voltage Battery Disconnect thresholds

• Configuration, statistics, and history

– All stored in non-volatile memory

– Remote/local backup and restore of configuration data

• Industry standard defaults

– Customer specific configurations, Available Remote/ local software upgrade

• Basic, busy hour, and trend statistics

• Detailed event history

• User defined events and Standard Battery Management Features

• Float/boost mode control

– Manual boost

– Manual timed boost locally, T1.317, and remotely initiated

– Auto boost terminated by time or current

• Battery discharge testing

– Manual (local/remote)

– Periodic – Plant Battery Test (PBT) input driven

– Configurable threshold or 20% algorithm

– Graphical discharge data

– Rectifiers on-line during test

• Slope thermal compensation

– High temperature

– Low temperature

– Step temperature

– STC Enable/Disable, low temperature Enable/Disable

– Configurable mV/°C slopes

• State of charge indication

• High temperature disconnect setting

• Reserve-time prediction

• Recharge current limit

• Emergency Power-Off input

Integrated Monitoring Inputs/Outputs

• System plant voltage (accuracy ±0.5%, resolution 0.1V)

• One system shunt (accuracy ± 0.5% full scale, resolution 1A)

– Battery or load

– Mounted in the return side of DC bus

• Up to 15 binary inputs

– Six inputs close/open to battery

– 9 input close/open to return

– User assignable

• Up to 7 Form-C output alarms (125VDC @ .5A)
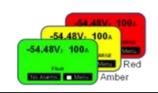
– User assignable

• 1-Wire* bus devices

 – Up to 16 temperature probes (QS873)

– Up to 6 mid-string monitors (ES771)

Galaxy Manager Compatible

• Centralized web server and database with multiple user access to live or managed data with drill down to problem details

• Monitor and control of more than 40 connected devices

• Management information from polling or alarms received from alarm traps from multiple sites are available on one screen via the inter/intranet

• Trend user selected data overtime

• Automatic or manual report generation

• Standard engineering tools like reserve time calculators and cable voltage drop analyze

GENERAL	
Operating Voltage	±24 Vdc, ±48 Vdc, 125Vdc (Range: ±18 to ±160 Vdc)
Input Power	Less than 7W
Operating Temperature Range	-40°C to +75°C (-40°F to 167°F)
Operating Relative Humidity	0 - 95% (non-condensing)
Storage Temperature Range	-40°C to +85°C (-40°F to 185°F)
Physical Specifications	Sizes vary by packaging option
Display	8-line by 40-character with alarm context sensitive backlit LCD

Green   Amber   Red

SAFETY AND STANDARDS COMPLIANCE	
Safety	ANSI/UL60950-1-2014 and CAN/CSA C22.2 No. 60950-1-07, Second Edition + A2:2014 (MOD), dated October 14, 2014
RoHS	Compliant to RoHS EU Directive 2002/95/EC RoHS 6/6
EMC	European Directive 2014/30/EU; EN55032, Class A, EN55035; FCC, Class A; GR1089-CORE, Issue 6 [Level 3]
ESD	EN 61000-4-2 level 4
Radiated Emissions	European Directive 2014/30/EU; EN55032, (CISPR22) Class B, EN55035 (CISPR24)

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Single Phase, 125 - Volt Output

Model	Input Voltage	Rectifier Slots	Output (Amps)	AC Breaker	DC Breaker	Comms	Cabinet
M1 1 AC 3 125 20 SS COM	AC	3	20	Single	Single	COM	3
M1 1 AC 3 125 40 SD COM	AC	3	40	Single	Dual	COM	3
M1 1 AC 6 125 60 DS COM	AC	6	60	Dual	Single	COM	6
M1 1 AC 6 125 120 DD DNP3	AC	6	120	Dual	Dual	DNP3	6

Three Phase, 125 - Volt Output

Model	Input Voltage	Rectifier Slots	Output (Amps)	AC Breaker	DC Breaker	Comms	Cabinet
M1 3 H3 3 125 20 SS COM	H3	3	20	Single	Single	COM	3
M1 3 HW 3 125 40 SS COM	HW	3	40	Single	Single	COM	3
M1 3 L3 3 125 60 SS COM	L3	3	60	Single	Single	COM	3
M1 3 LW 6 125 120 SS COM	LW	6	120	Single	Single	COM	6

Single Phase, 48 - Volt Output

Model	Input Voltage	Rectifier Slots	Output (Amps)	AC Breaker	DC Breaker	Comms	Cabinet
M1 1 AC 3 48 50 SD COM	AC	3	50	Single	Dual	COM	3
M1 1 AC 6 48 100 DD COM	AC	6	100	Dual	Dual	COM	6
M1 1 AC 3 48 150 SS DNP3	AC	3	150	Single	Single	DNP3	3

There Phase, 48 - Volt Output

Model	Inupt Voltage	Rectifier Slots	Output (Amps)	AC Breaker	DC Breaker	Comms	Cabinet
M1 3 H3 3 48 50 SS COM	H3	3	50	Single	Single	COM	3
M1 3 HW 3 48 100 SD COM	HW	3	100	Single	Dual	COM	3
M1 3 L3 6 48 150 DS DNP3	L3	6	150	Dual	Single	DNP3	6
M1 3 LW 6 48 150 DD DNP3	LW	6	150	Dual	Dual	DNP3	6

	A	B	C	D	E	F	G	H	I
Format	M1								
Example	M1	1	AC	3	48	20	S	S	COM

	DESCRIPTION	CODE	FEATURE
A		M1	MESA 1 Series
B	Phase	1	Single Phase
		3	Three Phase
C	AC Input Voltage	AC	AC=100-277V
		L3	L3=208 Delta
		LW	LW=200-300 WYE
		H3	H3=480 Delta
		HW	HW=480 WYE
D	Rectifier Slots	3	3 rectifier slots
		6	6 rectifier slots
E	DC Output Voltage	48	48V Output
		125	125V Output
F	Output (Amps)	20	20A
		40	40A
		60	60A
		80	80A
		100	100A
		120	120A
		50	50A
		100	100A
		150	150A
G	AC Input Type	S	Single
		D	Dual
H	Output Type	S	Single
		D	Dual
I	Communications	COM	SNMP/Modbus
		DNP3	SNMP/Modbus w/ DNP3

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