

➤ Alpha Power Solutions

TOTAL POWER SOLUTIONS BY ALPHA TECHNOLOGIES LTD.





alpha
TECHNOLOGIES

7700 Riverfront Gate



Alpha Technologies Ltd.

➤ Company Overview

For over 35 years, Alpha Technologies has been the industry pioneer and global leader in AC and DC power. Our distinctive excellence is the ability to innovate and deliver optimized solutions for our customers' unique powering challenges. Our wide portfolio of high-quality, feature-rich products can be customized to suit almost any application and installation environment, offering the best performance and lowest total cost of ownership in the industry.

➤ The Alpha Group

The Alpha Group represents an alliance of independent companies who share a common philosophy – to create world class powering solutions.

Collectively, Alpha Group members develop and manufacture AC, DC and renewable power conversion protection and standby products. Applications for these products include Broadband, Telecom, Commercial, Industrial and Distributed Generation for a worldwide customer base. In addition to these core specialties, our companies provide a complete range of installation and maintenance services.

Members of The Alpha Group include Alpha Technologies Ltd., Alpha Technologies Inc., Alpha Energy, Alpha Industrial Power, Altair Advanced Industries, Inc., Mitra Innovations S.A. and OutBack Power Technologies, Inc.



Alpha
TECHNOLOG

The image shows a 3D illuminated logo for Alpha Technologies. The word "Alpha" is rendered in a stylized, blocky font with a blue glow. Below it, the word "TECHNOLOG" is visible in a similar blocky font, also with a blue glow. The logo is mounted on a dark surface, and the background is dark blue.

The logo for Alpha Technologies is located on the left side of the page. It features the word "ALPHA" in a large, bold, blue sans-serif font, with the word "TECHNOLOGIES" in a smaller, blue sans-serif font directly beneath it. The background of the logo area is dark blue with some light blue horizontal lines.

Market Overview

Alpha Technologies Ltd's core target markets include the Telecom, Traffic, Security, Renewable Energy and Smart Grid sectors. In addition, across the Alpha Group, the broadband cable sector remains a significant focal point.

In the Telecom sector, Alpha's* DC solutions have long been the standard for reliability and efficiency, built on superior communications and control functionality inherent in its Cordex™ family of controllers. Today, much of Alpha's ongoing research and development investments are directed at developing the next generation of DC power solutions. These products will not only continue to provide Alpha's class-leading reliability, but also help drive OPEX savings by way of greater efficiency and the innovative use of renewable energy technology.

In the emerging Traffic market, where fewer than 10% of North American intersections are backed up, Alpha is amongst the market leaders providing back up power and power conditioning for traffic lights, controllers and highway signage. To date, over half of the states in America have standardized on Alpha UPS's for these applications, resulting in Alpha systems already backing up over 15,000 intersections.

In the Security sector, there is a growing recognition that without effective back-up power most security systems are fundamentally flawed. In other words, No Power = No Security. Alpha has been at the forefront of increasing this awareness, with innovative solutions for almost every type of critical indoor and outdoor security application.

Renewable Energy solutions are rapidly gaining favor due to their versatility; improving economics and positive impact on the environment. Alpha not only offers a variety of renewable solutions, but also brings its considerable experience in backing up critical systems to the emerging Renewable Energy industry as they too need 7x24x365 power assurance.

The Smart Grid sector is beginning to take shape and Alpha is well positioned to address the emerging powering requirements for the Smart Grid networks and devices.

In all these markets, Alpha's success lies in our ability to deliver total power solutions that solve our customers' unique powering challenges and to provide exceptional customer service and support.

*formerly Argus Technologies, 1986 to 2010

ALL

CordexTM
HIGH PERFORMANCE
CXRF 48-1.2kW



CordexTM
HIGH PERFORMANCE
CXRF 48-1.2kW



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NEW = Product released in 2011

HP = High Performance products offering exceptional efficiency, functionality and reliability

alpha[®]

MODULAR POWER SYSTEM 80 ^{HP}

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
POWER SUPPLY
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT REMOVE THE COVER. THE COVER IS LOCKED BY A SAFETY LATCH. TO OPEN THE COVER, PULL THE LATCH DOWN AND TO THE LEFT. THE COVER WILL OPEN AND THE UNIT WILL SHUT DOWN. DO NOT TOUCH THE INTERNAL COMPONENTS. TO CLOSE THE COVER, PUSH THE LATCH UP AND TO THE RIGHT. THE COVER WILL CLOSE AND THE UNIT WILL RESTART. ALL REPAIRS MUST BE DONE BY A QUALIFIED SERVICE PERSONNEL.

RECTIFIER
INPUT

AC OUTPUT DISTRIBUTION

BY INVERTE

INVE

alpha

CS

Model: 80-000001
Serial: 00000001
Date: 01/01/00
Firmware: 1.00
Version: 1.00
Alpha Electronics Inc.
10000 Alpha Drive
San Jose, CA 95131
USA
Tel: 408.557.2000
Fax: 408.557.2001
E-Mail: alpha@alpha.com

STATUS

OK RUN MPU RESET

cordex
CXC PIN 018-557-20

DC1

INVERTER DC INPUT

DC3

DC2

INVERTER DC INPUT

DC4



Standard Solutions

Alpha has over 35 years of experience providing ruggedized, fully integrated indoor and outdoor AC and DC power solutions. With multiple options for standardized and custom system integration, Alpha has the ability to provide the ideal system for virtually any power and site installation scenario.

By coupling advanced power technology with an enormous selection of system components, Alpha can easily configure optimized and reliable system solutions up to an impressive 10,000 Amps.

cordex **HP**[™] HIGH PERFORMANCE

Cordex HP represents Alpha's next generation of High Performance Solutions that are "Best in Class" in:

- Power density, flexibility and functionality
- Efficiency
- High temperature operation
- Reducing total cost of ownership (CAPEX and OPEX)

With a variety of products now available or in the development pipeline, the HP branded products illustrates The Alpha Group's engineering commitment to designing smarter, greener power electronics for the future.



DC Power Solutions

Alpha builds on its extensive experience in serving the Telecom, Data Center, Cable TV, Security and Traffic markets to deliver the broadest assortment of DC power solutions. From multi-bay systems for large switching offices to small shelf systems that can mount on a wall or occupy a single rack space, Alpha's DC power solutions integrate leading-edge power conversion technology and Cordex controllers with distribution options to serve a broad variety of applications.

Alpha's shelf systems provide a complete power solution in a rack mount package. The systems incorporate a Cordex™ controller, rectifiers and distribution options in a compact shelf design. Distribution can be located inside the shelf for applications with a few loads, or adjoined in integrated panels for those sites where additional distribution positions are needed. In either case, optional accessories such as Low Voltage Disconnects (LVD's), shunts and temperature compensation are common options on most integrated solutions.

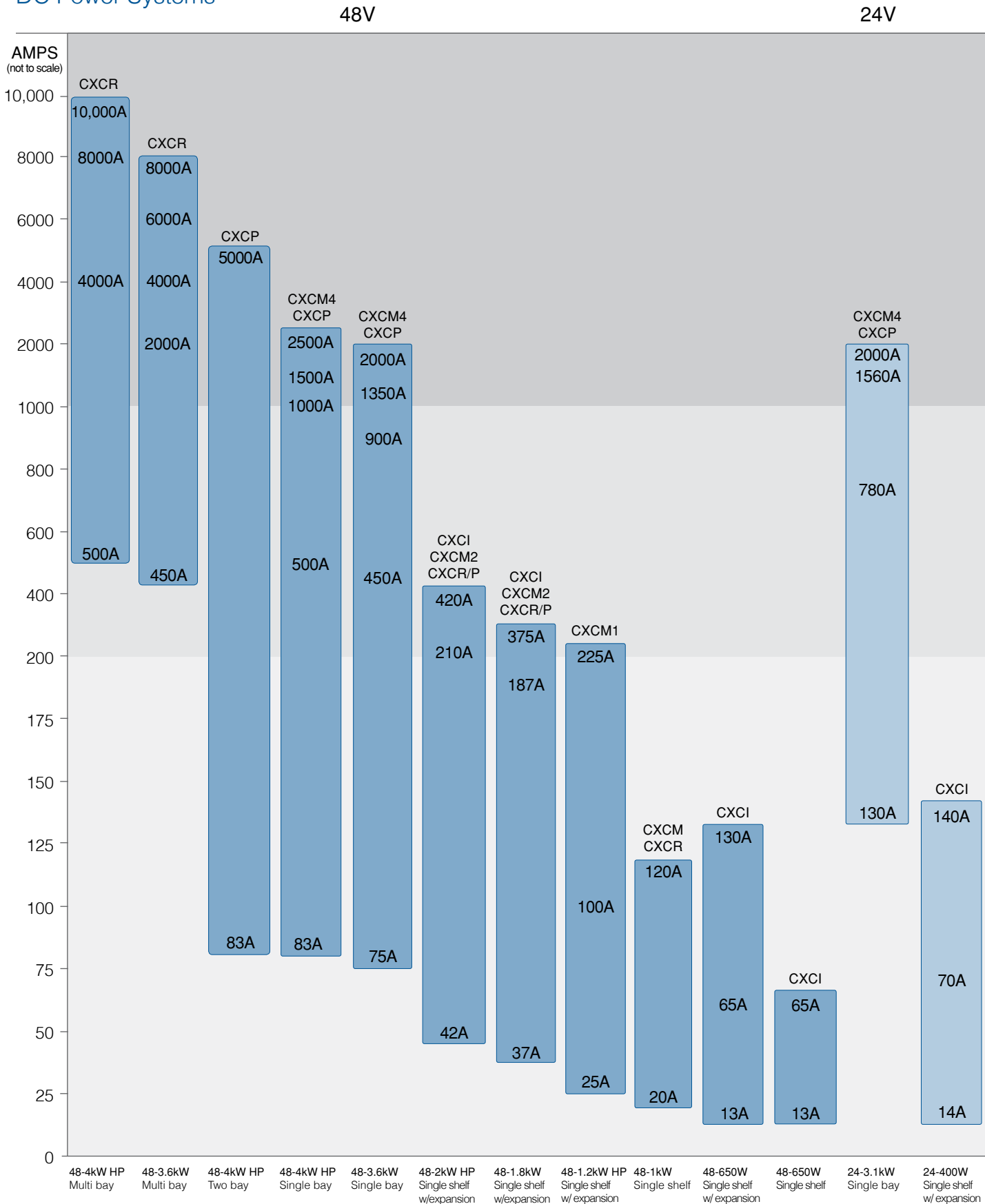
For medium to large system applications, Alpha offers a complete line of standard AC and DC system solutions designed to maximize space and cost savings. System options include various relay rack structures, custom distribution configurations, multiple voltage output designs and front accessibility. As with shelf systems, the standard accessories such as LVD's, shunts and temperature compensation are available.

On top of this extensive line of standard products, Alpha continues its legacy of designing new solutions to meet your exact need. Capitalizing on our experience in multiple markets plus our technical and application know-how, Alpha is ready to demonstrate our desire to earn your business with quick-to-market customized solutions that meet your unique requirements.

Cordex™ Power Systems

Compatibility Matrix

DC Power Systems



Cordex™ 650W

48Vdc Modular Rectifier Shelf Systems



Cordex™ 2.6kW Shelf Power System

- Multiple 48V configurations up to 67A for various 48Vdc applications
- Convection cooled design for high reliability in harsh industrial environments
- Front access options for space restricted enclosures
- Integrated DC system capability with controller and distribution module options

Cordex™ 48-650W Rectifier Shelves



➤**19/23in 2RU universal mount**
Cordex™ 2.6kW shelf power system
P/N:030-728-20
Rectifiers:4 x CXRC 48-650W
Controller:1 x CXCI
Distribution:(4) AM bullet type breakers



➤**19/23in 2RU universal mount**
Cordex™ 3.2kW bulk power system with CXCI controller
Optional LVD shunt with battery breaker
P/N:030-782-20
Rectifiers:5 x CXRC 48-650W
Controller:1 x CXCI
Distribution:Bulk power for external distribution



➤**23in 2RU front access**
Cordex™ 2.6kW front access shelf power system
P/N:030-722-20
Rectifiers:4 x CXRC 48-650W
Controller:1 x CXCI
Distribution:(4) AM bullet (10) GMT fuse



➤**19in 2RU front access**
Cordex™ 1.9kW front access shelf power system
P/N:030-727-20
Rectifiers:3 x CXRC 48-650W
Controller:1 x CXCI
Distribution:(4) AM plug-in (10) GMT fuse

Shelves

- 19" Shelves**
Dimensions:
mm:89H x 435W x 302D
inches:3.5H x 17.1W x 11.9D
Weight:6.9kg (15.5lbs)
- 23" Front Access Shelf**
Dimensions:
mm:89H x 544W x 307D
inches:3.5H x 21.42W x 12.0D
(excludes optional fan tray and baffle)
Weight:16.8kg (37lbs) (fully equipped with four rectifiers)

Note: Shelf P/Ns DO NOT include modules or distribution breakers
Weights DO NOT include modules
Dimensions do not include mounting bracket

Communication ports:
CAN:Interface to control rectifiers. Smart peripherals
Ethernet:10/100 Base-T for TCIP/SNMP features

Environmental

Temperature:
Standard:-40 to 50°C (-40 to 122°F)
Storage:-40 to 85°C (-40 to 185°F)
Humidity:0 to 95% RH non-condensing
Elevation:-500 to 3000m (-1640 to 9840ft)
Cooling:Natural or forced convection, vertical airflow

Related Components

Cordex™ 650W 48Vdc rectifier: See page 96
Cordex™ controller CXCI: See page 83
AM plug-in breakers: See page 125
GMT style fuses: See page 125

Cordex™ 400W

24Vdc Modular Rectifier Shelf Systems



Cordex™ 1.6kW Shelf Power System

- Multiple 24V configurations up to 70A for various 24Vdc applications
- Convection cooled design for high reliability in harsh industrial environments
- Wide range AC input for multiple worldwide AC services
- Integrated system capability with shelf controller and DC distribution

Cordex 24-400W Rectifier Shelves



➤19/23in 2RU universal mount

Cordex™ 1.6kW shelf power system with CXCI controller and bullet breaker distribution

P/N:030-763-20

Rectifiers:4 x CXRC 24-400W

Controller:1 x CXCI

Distribution:(4) AM bullet type breakers



➤19/23in 2RU universal mount

Cordex™ 2kW bulk power system with CXCI controller

P/N:030-773-20

Rectifiers:5 x CXRC 24-400W

Controller:1 x CXCI

Distribution:Bulk power for external distribution panel

Shelves

Dimensions:

mm:89H x 435W x 302D

inches:3.5H x 17.1W x 11.9D

Weight:6.9kg (15.5lbs)

Note: Shelf P/Ns DO NOT include modules or distribution breakers

Weights DO NOT include modules

Dimensions do not include mounting bracket

Communication ports:

CAN:Interface to control rectifiers. Smart peripherals

Ethernet:10/100 Base-T for TCIP/SNMP features

Environmental

Temperature:

Standard:-40 to 50°C (-40 to 122°F)

Storage:-40 to 85°C (-40 to 185°F)

Humidity:0 to 95% RH non-condensing

Elevation:-500 to 3000m (-1640 to 9840ft)

Cooling:Natural or forced convection, vertical airflow

Related Components

Cordex™ 400W 24Vdc rectifier: See page 104

Cordex™ controller CXCI: See page 83

AM plug-in breakers: See page 125

Cordex™ 250W

12Vdc Modular Rectifier Shelf Systems



Cordex™ 1kW Shelf Power System

- 83A capacity modular system for various 12Vdc applications
- Convection cooled design for high reliability in harsh industrial environments
- Wide range AC input for multiple worldwide AC services
- Integrated system capability with shelf controller and DC distribution

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Cordex 12-250W Rectifier Shelves



➤ **19/23in 2RU universal mount**
Cordex™ 1000W shelf power system with CXCI controller and bullet breaker distribution
P/N:030-770-20
Rectifiers: 4 x CXRC 12-250W
Controller: 1 x CXCI
Distribution: (4) AM bullet type breakers

Shelves

Dimensions:
mm:89H x 435W x 302D
inches:3.5H x 17.1W x 11.9D
Weight:6.9kg (15.5lbs)

Note: Shelf P/Ns DO NOT include modules or distribution breakers
Weights DO NOT include modules
Dimensions do not include mounting bracket

Communication ports:
CAN:Interface to control rectifiers. Smart peripherals
Ethernet: 10/100 Base-T for TCIP/SNMP features

Environmental

Temperature:
Standard:-40 to 50°C (-40 to 122°F)
Storage:-40 to 85°C (-40 to 185°F)
Humidity:0 to 95% RH non-condensing
Elevation:-500 to 3000m (-1640 to 9840ft)
Cooling:Natural or forced convection, vertical airflow

Related Components

Cordex™ 250W 12Vdc rectifier: See page 106
Cordex™ controller CXCI: See page 83
AM plug-in breakers: See page 125

Cordex™ 1kW

48Vdc Modular Rectifier Shelf Systems



Cordex™ 4kW Shelf Power System

- Multiple configurations up to 125A for various 48Vdc applications
- Convection cooled design for high reliability in harsh industrial environments
- Wide range AC input for multiple worldwide AC services
- Integrated system capability with modular controller and DC distribution

Cordex 48-1kW Rectifier Shelves



➤19/23in center mount

Cordex™ 5kW bulk power system with plug in controller

P/N:030-706-20

Rectifiers:5 x CXRC 48-1kW

Controller:CXCM

Distribution:Bulk power for external distribution panel



➤19in flush mount

Cordex™ 6kW bulk power system

P/N:030-707-20

Rectifiers:6 x CXRC 48-1kW

Controller:Requires CXCR rack mount controller

Distribution:Bulk power for external distribution panel



➤23in center mount

Cordex™ 4kW shelf power system with plug in controller and bullet type breaker distribution

P/N:030-704-20 L0

Rectifiers:4 x CXRC 48-1kW

Controller:1 x CXCM

Distribution:Integrated plug-in breakers and GMT fuse option

Shelves

➤19" & 19/23"

Dimensions:

mm:177H x 444W x 302D

inches:6.9H x 17.5W x 11.9D

Weight:7.5kg (16.5lbs)

➤23"

Dimensions:

mm:177H x 543W x 302D

inches:6.9H x 21.4W x 11.9D

Weight:10.2kg (22.5lbs)

Note: Shelf P/Ns DO NOT include rectifier modules or distribution breakers

Weights DO NOT include modules

Dimensions do not include mounting brackets

Communication ports:

CAN:Interface to control rectifiers

Ethernet:10/100 Base-T for TCIP/SNMP features

Related Components

Cordex™ 1kW 48Vdc rectifier: See page 97

Cordex™ controller CXCM: See page 84

AM plug-in breakers: See page 125

GMT style fuses: See page 125

Cordex™ HP 1.2kW

Modular 1RU Rectifier Shelf Systems



Cordex HP 1.2kW Shelf System with GMT Distribution

- Multiple 48V configurations up to 125A for various 48Vdc applications
- High efficiency design for reduced operating expenses
- High temperature rated fan-cooled design for harsh outdoor installations
- Wide range AC input and IEC line cords for multiple AC services
- Front access options for space restricted enclosures

Cordex 48-1.2kW Rectifier Shelves



- **19/23in 1RU shelf system with GMT distribution**
P/N:030-851-20
Rectifiers:3 x CXRF HP 48-1.2kW
Controller:1 x CXCM1
Distribution:(8) GMT fuse, battery shunt, optimal battery LVD



- **19/23in 1RU universal mount (Bulk Power with CXC)**
P/N:030-835-20
Rectifiers:4 x CXRF HP 48-1.2kW
Controller:1 x CXCM1
Distribution:Bulk power for external distribution



- **19/23in 1RU universal mount (Bulk Power)**
P/N:030-845-20
Rectifiers:5 x CXRF HP 48-1.2kW
Controller:N/A (External)
Distribution:Bulk power for external distribution

Environmental

- Temperature:
- Standard:-40 to 65°C (-40 to 149°F)
 - Extended:-40 to 80°C (-40 to 176°F) de-rated output
- Storage:40 to 80°C (-40 to 176°F)
- Humidity:0 to 95% RH non-condensing
- Elevation:-500 to 2800m (-1640 to 9186ft)
- Cooling:Fan cooled (front to rear)

Shelves

- Dimensions:
- mm:44H x 440W x 305D
 - inches:1.75H x 17.3W x 12.0D
- *Note: Rectifier front handle adds additional 12.5mm/0.49" Depth)

- Weight:
- Shelf:3.0kg (6.6lbs)
 - Rectifier:1.23kg (2.7lbs)
- Note: Shelf P/Ns DO NOT include modules or distribution breakers
Dimensions do not include mounting bracket

- Communication ports:CAN: Interface to control rectifiers
and smart peripherals
- Ethernet:10/100 Base-T for TCIP/SNMP features

Related Components

- 877-690-19:5-15P (120V) line cord, 2.5m
- 877-671-19:Universal line cord, flying leads, 3.5m
- 747-622-20-000:Blank plate
- 567-837-19:Kydex rear cover
- 036-201-20-000:CXCM1 I/O terminal block kit

- Cordex HP™ 1.2kW 48Vdc rectifier : See page 98
Cordex™ controller CXCM1: See page 85
GMT style fuses: See page 125

Cordex™ HP 1.2kW

Front Access Rectifier Shelf System

cordex HP™
HIGH PERFORMANCE



Cordex™ HP 1.2kW Front Access System

- Up to 100A capacity @ 48Vdc for various small power applications
- High efficiency design for reduced operating expenses
- High temperature rated fan-cooled design for harsh outdoor installations
- Wide range AC input and IEC line cords for multiple AC services
- Front access options for space restricted enclosures

P/N: 030-834-20

Electrical

Input voltage
Operating: 90 to 300Vac
[See output power for power derating]

Input current
(per module): 7.5A maximum (176 to 300Vac)
6.0A maximum (90 to 176Vac)

Efficiency: >93% at 240Vac input and 40-100% load

Power output
(per module): 1200W (176 to 300Vac input)
600W (110 to 130Vac Input)

*Power de-rated linearly from 1200-600W (176 to 130Vac input)
*Power de-rated linearly from 600-500W (110 to 90Vac input)

Current output
(per module): 25A@ 48Vdc (176 to 300Vac input)
12.5A @ 48Vdc (110 to 130Vac Input)

Performance / Features

Rectifiers: Cordex HP 48-1.2kW

Distribution:
Module: (10) GMT fuse positions
(4) AM plug-in breakers
Battery low voltage disconnect
Battery shunt

Supervisory: CXCM1 controller

Mechanical

Dimensions:
mm: 88H x 440W x 305D
inches: 3.5H x 17.3W x 12.0D
*Note: Rectifier front handle adds additional 12.5mm/0.49" Depth)

Mounting: 19" or 23" rack, 6" offset (center),
EIA rack spacing

Weight:
Shelf: 4.55kg (10lbs)
Rectifier: 1.23kg (2.7lbs)

Environmental

Temperature:
Standard: -40 to 65°C (-40 to 149°F)
Extended: -40 to 80°C (-40 to 176°F) de-rated output

Storage: -40 to 80°C (-40 to 176°F)

Humidity: 0 to 95% RH non-condensing

Elevation: 500 to 2800m (-1640 to 9186ft)

Cooling: Fan cooled (front to rear)

Heat dissipation: 1232 BTU hour/system max.

Standards

Safety: CSA C22.2 No 60950-1-03

CE: EN60950

NEBS: GR-1089-CORE
GR-63-CORE
NEBS certification pending

Related Components

877-690-19: 5-15P (120V) line cord, 2.5m

877-790-19: 120/240Vac Universal line cord,
flying leads, 3.5m

747-622-20-000: Blank plate

Cordex HP™ 1.2kW 48Vdc rectifier: See page 98

Cordex™ controller CXCM1: See page 85

GMT style fuses: See page 125

CXPS-HD 48-1.2-100

Standard 48Vdc Power System



CXPS-HD 48-1.2-100 Power System

- Integrated 48V, 100A system packages
- Ultra compact, high density (HD) design using the latest mini 1RU circuit breakers
- High efficiency design for reduced operating expenses
- High temperature rated, fan-cooled design for harsh outdoor installations
- Wide range AC input and IEC line cords for multiple AC services

P/N: 0530081

Electrical

Input:

Voltage: 176 to 312Vac (nominal)
90 to 176Vac (de-rated O/P power)

Current: 7.5A max (176 to 300Vac) per module
6.0A max (90 to 176Vac) per module

Frequency: 45 to 66Hz

Efficiency: >93% (50-100% load @ nominal voltage)

Power factor: >.99

Output:

Current:

System: 100A max @ 48Vdc (nominal I/P)
50A max @ 48Vdc (115Vac)

Rectifier: 25A max @ 48Vdc (nominal I/P)
12.5A max @ 48Vdc (115Vac)
(subject to de-rating below 110Vac)

Power:

System: 4,800W max @ nominal I/P
2,400W @ 115Vac I/P

Rectifier: 1200W max @ nominal I/P
600W @ 115Vac
(subject to de-rating below 110Vac)

Performance / Features

Configurations:

0530081-002: 100A System with LVBD

0530081-003: 100A System without LVBD

Rectifier: Up to 4x 48V-1.2kW rectifier positions

Distribution:

10x load breaker positions
(mini breaker, plug-in style)

4x battery breaker positions
(mini breaker, plug-in style)

225A Low voltage disconnect option

200A Battery shunt

Controller: CXCM1 Modular controller (included)

Mechanical

Dimensions:

mm: 90H x 438W x 381D

inches: 3.5H x 17.24W x 15D

Weight:

System: 18.3kg (40.4lbs)

Rectifier: 1.23kg (2.7lbs) each

Mounting: 19/23" universal mount (center or flush)

Connections:

Load breaker: 10x sets, 1/4"-20 studs on 5/8" centers

Battery breaker: 4x sets, 1/4"-20 studs on 5/8" centers

Return bar: 14x sets, 10-32 studs on 5/8" centers

Alarm: Screw terminal 1.31mm² to 0.128mm²
(#16 to #26 AWG)

Access: Front access for operation and maintenance

Environmental

Temperature: -40 to 65°C (-40 to 149°F)

Humidity: -40 to 75°C (-40 to 167°F) de-rated output

Elevation: 0 to 95% RH non-condensing

..... -500 to 2800m; to 4000m with temperature
de-rated to 40°C (-1640 feet to 9186 feet; to
13124 feet with temperature de-rated to
104°F) with de-rated output

Related Components

010-619-20-041 Cordex HP 1.2kW 48Vdc Rectifier Module

018-598-20-043 Cordex CXCM1

877-690-19: 5-15P (120V) Line Cord, 2.5M

877-790-19: Universal Line Cord, Flying leads, 3.5M

747-095-20-072 Temperature sensor assembly 12 ft, 1/4" lug

747-095-20-075 Temperature sensor assembly 12 ft, 3/8" lug

747-622-20-000: Blank Plate

See Page 125 for circuit breakers

CXPS-HD 48-1.2-225

Standard 48Vdc Power System



CXPS-HD 48-1.2-225 Power System

- Integrated 48V, 225A system packages
- Ultra compact, high density (HD) design using the latest mini 1RU circuit breakers
- High efficiency design for reduced operating expenses
- High temperature rated, fan-cooled design for harsh outdoor installations
- Wide range AC input and IEC line cords for multiple AC services

P/N: 0530081

Electrical

Input:

Voltage: 176 to 312Vac (nominal)
90 to 176Vac (de-rated O/P power)
Current: 7.5A max (176 to 300Vac) per module
6.0A max (90 to 176Vac) per module
Frequency: 45 to 66Hz
Efficiency: >93% (50-100% load @ nominal voltage)
Power factor: >.99

Output:

Current:
System: 225A max @ 48Vdc (nominal I/P)
112.5A max @ 48Vdc (115Vac)
Rectifier: 25A max @ 48Vdc (nominal I/P)
12.5A max @ 48Vdc (115Vac)
(subject to de-rating below 110Vac)
Power:
System: 10,800W max @ nominal I/P
5,400W @ 115Vac I/P
Rectifier: 1200W max @ nominal I/P
600W @ 115Vac
(subject to de-rating below 110Vac)

Performance / Features

Configurations:

0530082-002: 225A System with LVBD
0530082-003: 225A System without LVBD
Rectifier: Up to 9x 48V-1.2kW rectifier positions
Distribution: 10x load breaker positions
(mini breaker, plug-in style)
4x battery breaker positions
(mini breaker, plug-in style)
225A Low voltage disconnect option
200A Battery shunt
Controller: CXCM1 Modular controller (included)

Mechanical

Dimensions:

mm: 133H x 438W x 381D
Inches: 5.25H x 17.24W x 15D

Weight:

System: 21.3kg (47lbs)
Rectifier: 1.23kg (2.7lbs) each

Mounting: 19/23" universal mount (center or flush)

Connections:

Load breaker: 10x sets, 1/4"-20 studs on 5/8" centers
Battery breaker: 4x sets, 1/4"-20 studs on 5/8" centers
Return bar: 14x sets, 10-32 studs on 5/8" centers
Alarm: Screw terminal 1.31mm2 to 0.128mm2
(#16 to #26 AWG)
Access: Front access for operation and maintenance

Environmental

Temperature: -40 to 65°C (-40 to 149°F)
-40 to 75°C (-40 to 167°F) de-rated output
Humidity: 0 to 95% RH non-condensing
Elevation: -500 to 2800m; to 4000m with temperature
de-rated to 40°C (-1640 feet to 9186 feet; to
13124 feet with temperature de-rated to
104°F) with de-rated output

Related Components

010-619-20-041 Cordex HP 1.2kW 48Vdc Rectifier Module
018-598-20-043 Cordex CXCM1
877-690-19: 5-15P (120V) Line Cord, 2.5M
877-790-19: Universal Line Cord, Flying leads, 3.5M
747-095-20-072 Temperature sensor assembly 12 ft, 1/4" lug
747-095-20-075 Temperature sensor assembly 12 ft, 3/8" lug
747-622-20-000: Blank Plate

See Page 125 for circuit breakers

CXPS 48-1.2-225

Standard 48Vdc Power System



- Integrated 48V, 225A system package with front access distribution
- High efficiency design for reduced operating expenses
- High temperature rated fan-cooled design for harsh outdoor installations
- Wide range AC input and IEC line cords for multiple AC services
- Flexible ordering options including configurations with racks and battery trays



CXPS 48-1.2-225 Power System

P/N: 053-691-20

Electrical

Input:
Voltage:
Operating:208/220/240Vac
(Continuous Operation 90 to 300Vac)
Extended (High):277 to 300Vac (de-rated power factor)
Extended (Low):90 to 176Vac (de-rated output power)
Current:7.5A max per module (176 to 300Vac)
6A max per module (90 to 176Vac)
Frequency:45 to 66Hz
Efficiency:>93% (50-100% load @ nominal voltage)
Power factor:>.99

Output:
Current:
System:225A max @ nominal I/P
112.5A @ 115Vac I/P
Rectifier:25A @ 48Vdc (nominal I/P)
12.5A @ 48Vdc (115Vac)
(Subject to de-rating below 110Vac)

Power:
System:10,800W max @ nominal I/P
5400W @ 115Vac I/P
Rectifier:1200W max @ nominal I/P
600W @ 115Vac
(Subject to de-rating below 110Vac)

Performance / Features

Configurations:
053-691-20-000:Base system with 19/23" universal mounting
053-691-20-040:System mounted in 23", 44RU Z4 rack with
2x battery trays for 2x 48V strings
053-691-20-031:System mounted in 19", 44RU Z4 rack with
3x battery trays for 3x 48V strings
Rectifier:Up to 9x HP 48V-1.2kW rectifier positions
Distribution:14x load breaker positions (mid-trip, plug-in style)
4x battery breaker positions
(series-trip, plug-in style)
Low voltage disconnect

Shunt:
Controller:CXCM1 Modular Controller
Shunt

Mechanical

Dimensions:
mm:222H x 438W x 376D
inches:8.75H x 17.24W x 14.8D
(-000 configuration - excludes mounting
brackets, rear cover, and module handle)

Weight:
System:21.3kg (47lbs)
Rectifier:1.23kg (2.7lbs) each

Mounting:19/23" universal mount (center or flush)

Connections:
Load breaker:14x sets, 1/4"-20 studs on 5/8" centers
Battery breaker:4x sets, 1/4"-20 studs on 5/8" centers
Return bar:18x sets, 1/4" holes on 5/8" centers
Alarm:Screw terminal 1.31mm² to 0.128mm²
(#16 to #26 AWG)
CXCM1 input:25-pin D-Sub cable
Access:Front access after installation

Environmental

Temperature:-40 to 65°C (-40 to 149°F)
-40 to 75°C (-40 to 167°F) de-rated output
Humidity:0 to 95% RH non-condensing
Elevation:-500 to 2800m; to 4000m with temperature
de-rated to 40°C (-1640 feet to 9186 feet; to
13124 feet with temperature de-rated to 104°F)
with de-rated output

Related Components

877-690-19:5-15P (120V) line cord, 2.5m
877-671-19:Universal lmc cord, flying leads, 3.5m
747-622-20-000:Blank plate
470-347-10:100A battery breaker
747-503-20:150A battery breaker
747-504-20:250A battery breaker

Cordex HP™ 1.2kW 48Vdc rectifier: See page 98
Cordex™ controller CXCM1: See page 85
AM plug-in breakers: See page 125

cordex HP™
HIGH PERFORMANCE

-
- A black 1U rack-mountable server. The front panel is mostly black with a silver-colored top edge. On the left side of the front panel, there is a small silver logo and some text: "Eco-Mode", "Power Management", "24x7", "100W", and "100W". Below the text is a small red LED indicator. The bottom of the server features four large, black, circular cooling fans arranged horizontally. The server is mounted on a rack, with the mounting ears visible on the left and right sides.

CXPS 48-1.8-i Power System

Specifications shown for Cordex™ 48-2kW rectifier

P/N: 053-990-20

Electrical

Input:

Voltage: 187 to 312Vac (nominal)
90 to 187Vac (de-rated O/P power)

Current:..... 12A @ 240Vac (per module)
12A @ 120Vac (per module)

Frequency:45 to 66Hz

Efficiency:>94.2 peak @ 240Vac

Power factor: >.99

Output:

Current:

System:	.....167A max @ nominal I/P
	104A max @ 120Vac I/P
Rectifier:	.....41.7A @ 48Vdc (nominal I/P)
	26A @ 48Vdc (120Vac)
	(de-rated linearly to 18.75A @ 90Vac)

Power:

System:	.....8000W max @ nominal I/P
	5000W @ 120Vac I/P
Rectifier:	.....2000W max @ nominal I/P
	1250W (120Vac)

Performance / Features

Configurations:

053-990-20-000:	Base system with 19/23" universal mounting
053-990-20-040:	System mounted in 23", 44RU Z4 rack with 2x battery trays for 2x 48V strings
053-990-20-031:	System mounted in 19", 44RU Z4 rack with 3x battery trays for 3x 48V strings

Rectifier:.....Up to 4x rectifier positions

Distribution:..... 14x load breaker positions (mid-trip, plug-in style)
 4x battery breaker positions
 (series-trip, plug-in style)
 Low voltage disconnect
 Shunt

Controller:.....CXCI integrated controller

Mechanical

Dimensions:

mm:.....222H x 438W x 305D
inches:.....8.75H x 17.24W x 12D
(-000 configuration - excludes mounting
brackets, rear cover, and module handle)

Weight:

System:..... 19kg (42lbs)
Rectifier:2.3kg (5.1lbs) each

Mounting: 19/23" universal mount (center or flush)

Connections:

Load breaker: 14x sets, 1/4"-20 studs on 5/8" centers
Battery breaker: 4x sets, 1/4"-20 studs on 5/8" centers
Return bar: 18x sets, 1/4" holes on 5/8" centers
Rectifier input: HOT: 2x sets, 3/8" holes on 1" centers
RTN: 2x sets, 3/8" holes on 1" centers
Alarm: Screw terminal 1.31mm² to 0.128mm²
(#16 to #26 AWG)
CXCI input: 25-pin D-Sub cable
Access: Front access after installation

Environmental

Temperature:.....-40 to 55°C (-40 to 131°F)
 -40 to 75°C (-40 to 167°F) de-rated output
 ~1800W @ 65°C (149°F)
 Humidity:.....0 to 95% RH non-condensing
 Elevation:.....-500 to 2000m (-1640 to 6600ft)
 -500 to 4000m (-1640 to 13100ft)
 with de-rated output

Related Components

058-156-20:.....	23" battery tray expansion kit (for use with -040 configuration)
058-157-20:.....	19" battery tray expansion kit (for use with -031 configuration)
470-347-10:.....	100A battery breaker
747-503-20:.....	150A battery breaker
747-504-20:.....	250A battery breaker

Cordex HP™ 2kW 48Vdc rectifier: See page 100

Cordex™ 1.8kW 48Vdc rectifier: See page 99

Cordex™ controller CXCI: See page 83

AM plug-in breakers: See page 125

CXPS 48-1.8-M2

Standard 48Vdc Power System



- Integrated 48V, 292A system package with front access distribution
- High temperature rated fan-cooled design for harsh outdoor installations
- Wide range AC input for multiple worldwide AC services
- Modular controller with touch screen display for full local system control
- Flexible ordering options including configurations with racks and battery trays

Specifications shown for Cordex™ 48-2kW rectifier

P/N: 053-991-20

Electrical

Input:

Voltage: 187 to 312Vac (nominal)
90 to 187Vac (de-rated output power)
Current: 12A @ 240Vac (per module)
12A @ 120Vac (per module)
Frequency: 45 to 66Hz
Efficiency: >94.2% peak @ 240Vac
Power factor: >.99

Output:

Current:
System: 292A max @ nominal I/P
182A max @ 120Vac I/P
Rectifier: 41.7A @ 48Vdc (nominal I/P)
26A @ 48Vdc (115 to 135Vac)
(de-rated linearly to 18.75A @ 90Vac)
Power:
System: 14000W max @ nominal I/P
8750W @ 120Vac I/P
Rectifier: 2000W max @ nominal I/P
1250W (120Vac)
(de-rated linearly to 900W @ 90Vac)

Performance / Features

Configurations:

053-991-20-000: Base system with 19/23" universal mounting
053-991-20-040: System mounted in 23", 44RU Z4 rack with
2x battery trays for 2x 48V strings
053-991-20-031: System mounted in 19", 44RU Z4 rack with
3x battery trays for 3x 48V strings

Rectifier: Up to 7 rectifier positions

Distribution: 14x load breaker positions (mid-trip, plug-in style)
4x battery breaker positions
(series-trip, plug-in style)
Low voltage disconnect
Shunt

Controller: CXCM2 modular controller



CXPS 48-1.8-M2 Power System

Mechanical

Dimensions:

mm: 310.8H x 438W x 305D
inches: 12.25H x 17.24W x 12D
(-000 configuration - excludes mounting
brackets, rear cover and module handle)

Weight:

System: 28kg (62lbs)
Rectifier: 2.3kg (5.1lbs) each

Mounting: 19/23" universal mount (center or flush)

Connections:

Load breaker: 14x sets, 1/4"-20 studs on 5/8" centers
Battery breaker: 4x sets, 1/4"-20 studs on 5/8" centers
Return bar: 18x sets, 1/4" holes on 5/8" centers
Rectifier input: HOT: 2x sets, 3/8" holes on 1" centers
RTN: 2x sets, 3/8" holes on 1" centers
Alarm: Screw terminal 1.31mm² to 0.128mm²
(#16 to #26 AWG)
CXCM2 input: 3x DB-style cable connections
Access: Front access after installation

Environmental

Temperature: -40 to 55°C (-40 to 131°F)
-40 to 75°C (-40 to 167°F) de-rated output
~1800W @ 65°C (149°F)
Humidity: 0 to 95% RH non-condensing
Elevation: -500 to 2000m (-1640 to 6600ft)
-500 to 4000m (-1640 to 13100ft)
with de-rated output

Related Components

058-156-20: 23" battery tray expansion kit
(for use with -040 configuration)
058-157-20: 19" battery tray expansion kit
(for use with -031 configuration)
470-347-10: 100A battery breaker
747-503-20: 150A battery breaker
747-504-20: 250A battery breaker

Cordex HP™ 2kW 48Vdc rectifier: See page 100
Cordex™ 1.8kW 48Vdc rectifier: See page 99
Cordex™ controller CXCM2: See page 86
AM plug-in breakers: See page 125

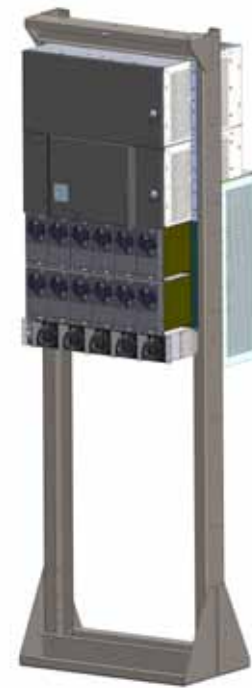
CXPS-M 1200

Modular Mid Capacity Power System

cortex HP™
HIGH PERFORMANCE

NEW

- -48V distributed power solution for CO's, MSC's, Data Center and Cable Headend facilities
- Each 1200A bay combines rectifiers, battery termination and distribution
- Dual voltage and options using high efficiency DC to DC converter
- High efficiency modular rectifiers reduce operating costs
- Compact front access design reduces floor space footprint
- Flexible low voltage load or battery disconnect, circuit breaker, TPS and TPL fuse options



CXPS-M 1200

Electrical

Rectifier shelf AC input:Single Phase, 208 to 277Vac
Dual 3 Phase, 208 to 240Vac (w/o neutral)
Dual 3 Phase, 360 to 480Vac (with neutral)
Rectifier Voltage:.....208 to 277Vac
Primary output voltage:.....+24V or -48V
Secondary output voltage: -48V or +24V
Max. output Power:57.6kW One bay system
Max. bus capacity:1,200A (primary), 600A (secondary)

Distribution and Termination

Modular distribution consists of up to 4 distribution modules.

Each module contains 2 banks of 12 plug-in bullet positions,
2 banks of 3 positions TPL fuses or 1 bank of 12 plug-in bullet
positions/1 bank of 3 positions TPL fuses combination.

Fuses

GMT:10 positions, up to 10A (max.)
TPL:24 position, 61 to 800A (max.)
TLS/TPS plug-in bullet: ..96 positions (max.)

Breakers

AM plug-in bullet:96 positions (max.)

Output termination

GMT Fuse:0.34 to 2.5mm² (14 to 22AWG)
TPL fuse:.....2 hole 3/8" dia. on 1" centers
6 fuse positions; dual cable landing
18 fuse positions; single cable landing
TLS/TPS/AM breaker:1 pole and 2 pole are 1/4" dia. on 3/8" centers
3 pole are 3/8" dia. on 1" centers

Internal Ground bar:1/4" dia. on 3/8" centers
External Ground bar:.....3/8" dia. on 1" centers (optional)

Battery:.....6 sets 3/8" dia. on 1" centers per polarity

Mechanical

Mounting:Standard center mount 23" relay rack

Dimensions (one bay):

mm:.....2133H x 660W x 482D
Inches:.....84H x 26W x 19D

Weight:

System:227kg (500lbs) approx
Rectifier:8.5kg (19lbs) each

Environmental

Temperature:0 to 50°C (32 to 122°F)
Humidity:0 to 95% RH non-condensing
Elevation:.....-500 to 2800m (-1640 to 9186ft)

System Level Alarms and Controls

Alarms/control parameters are user-programmable through built-in digital supervisory unit. See Cordex datasheet #048-631-10 for detailed information on alarms and controls.

Indicators:LCD with touch screen
System OK (green LED)
System minor alarm (yellow LED)
System major alarm (red LED)

Load Disconnect:48Vdc/600A x N mounted on load side
of each TPL fuse or each group of 12
Plug-in bullet positions

Alarm Connections:0.34 to 2.5mm² (14 to 22AWG)

Related Components

010-623-20Cordex HP 4kW 48Vdc rectifier
037-053-20-000External ground bar kit (one per bay)
520-059-10Plug In Bullet TPS/TLS Fuse Holder 1-125A

See page 125 for a list of available circuit breakers

CXPS-D 48-5000

Modular High Capacity Distributed Power System

cordex **HP**[™]
HIGH PERFORMANCE

NEW

- -48V distributed power solution for CO's, MSC's, Data Center and Cable Headend facilities (DPCO)
- Each 2500A bay combines rectifiers, battery termination and distribution
- Dual bay kit links two 2500A bays doubling capacity, breakers and termination
- High circuit count distribution eliminates BDFB's and reduce installation costs
- High efficiency modular rectifiers reduce operating costs
- Compact front access design reduces floor space footprint
- Flexible low voltage load or battery disconnect, circuit breaker, TPS and TPL fuse options



Typical Single Bay 2,500A Distributed Power System

Electrical

Rectifier shelf AC input:Single Phase, 208 to 277Vac
Dual 3 Phase, 208 to 240Vac (w/o neutral)
Dual 3 Phase, 360 to 480Vac (with neutral)

Rectifier Voltage:.....208 to 277Vac

Max. output Power:120kW One bay system
240kW Two bay system

Max. bus capacity:2,500A One bay system
5,000A Two bay system

Distribution and Termination

Modular distribution consists of up to 4 distribution modules.

Each module contains 2 banks of 12 plug-in bullet positions, 2 banks of 3 positions TPL fuses or 1 bank of 12 plug-in bullet positions/1 bank of 3 positions TPL fuses combination.

Fuses

GMT:10 positions, up to 10A (max.)
TPL:24 position, 61 to 800A (max.)
TLS/TPS plug-in bullet: ..96 positions (max.)

Breakers

AM plug-in bullet:96 positions (max.)

Output termination

GMT Fuse:0.34 to 2.5mm² (14 to 22AWG)
TPL fuse:2 hole 3/8" dia. on 1" centers
6 fuse positions; dual cable landing
18 fuse positions; single cable landing
TLS/TPS/AM breaker:1 pole and 2 pole are 1/4" dia. on 5/8" centers
3 pole are 3/8" dia. on 1" centers

Internal Ground bar:1/4" dia. on 5/8" centers

External Ground bar:3/8" dia. on 1" centers (optional)

Battery:4 sets 1/2" dia. on 1 3/4" centers per polarity

Mechanical

Mounting:Standard center mount 23" relay rack

Dimensions (one bay):

mm:2133H x 660W x 482D
Inches:84H x 26W x 19D

Weight:

System:227kg (500lbs) approx
Rectifier:8.5kg (19lbs) each

Environmental

Temperature:0 to 50°C (32 to 122°F)
Humidity:0 to 95% RH non-condensing
Elevation:-500 to 2800m (-1640 to 9186ft)

System Level Alarms and Controls

Alarms/control parameters are user-programmable through built-in digital supervisory unit. See Cordex datasheet #048-631-10 for detailed information on alarms and controls.

Indicators:LCD with touch screen
System OK (green LED)
System minor alarm (yellow LED)
System major alarm (red LED)

Load Disconnect:48Vdc/600A x N mounted on load side of each TPL fuse or each group of 12 Plug-in bullet positions

Alarm Connections:0.34 to 2.5mm² (14 to 22AWG)

Related Components

010-623-20Cordex HP 4kW 48Vdc rectifier
037-053-20-000External ground bar kit (one per bay)
520-059-10Plug In Bullet TPS/TLS Fuse Holder 1-125A

See page 125 for a list of available circuit breakers

CXDS-M 1200

Modular Distribution System

NEW

- Modular distribution solution for CO's, MSC's Data Center and Cable Headend facilities
- Single and dual feed options with a maximum rating of 1200A per feed
- Compact front access design reduces floor and rack space footprint
- Flexible input feed, circuit breaker, TPS and TPL fuse options
- Remote access, monitoring and data logging via Cordex™ controller



CXDS-M 1200

Electrical

System Voltage:+12V, -24V, +24V and -48V
Single Input:1200A maximum
Dual Input
common return:2x 1200A maximum
Dual input
isolated return:2x 600A maximum

Distribution and Termination

Modular distribution consists of up to 4 distribution modules in a 23" rack configuration and 2 modules in a 19" configuration.

Each module contains 2 banks of 12 plug-in bullet positions, 2 banks of 3 positions TPL fuses or 1 bank of 12 plug-in bullet positions/1 bank of 3 positions TPL fuses combination.

Fuses

GMT:10 positions, up to 10A (max.)
TPL:24 position, 61 to 800A (max.)
TLS/TPS plug-in bullet: ..96 positions (max.)

Breakers

AM plug-in bullet:96 positions (max.)

Output termination

GMT Fuse:0.34 to 2.5mm² (14 to 22AWG)
TPL fuse:2 hole 3/8" dia. on 1" centers
6 fuse positions; dual cable landing
18 fuse positions; single cable landing
TLS/TPS/AM breaker:1 pole and 2 pole are 1/4" dia. on 5/8" centers
3 pole are 3/8" dia. on 1" centers

Internal Ground bar:1/4" dia. on 5/8" centers
External Ground bar:3/8" dia. on 1" centers (optional)

Battery:4 sets 1/2" dia. on 1 3/4" centers per polarity

Mechanical

Mounting:Standard flush or center mount 19" or 23"
relay rack mounting options

Dimensions (one module):

mm:263H x 660W x 482D
Inches:10.5H x 26W x 19D

Weight:

Module:27.2kg (60lbs) approx

Environmental

Temperature:0 to 50°C (32 to 122°F)
Humidity:0 to 95% RH non-condensing
Elevation:-500 to 2800m (-1640 to 9186ft)

System Level Alarms and Controls

Alarms/control parameters are user-programmable through built-in digital supervisory unit. See Cordex datasheet #048-631-10 for detailed information on alarms and controls.

Indicators:LCD with touch screen
System OK (green LED)
System minor alarm (yellow LED)
System major alarm (red LED)

Load Disconnect:48Vdc/600A x N mounted on load side
of each TPL fuse or each group of 12
Plug-in bullet positions

Alarm Connections:0.34 to 2.5mm² (14 to 22AWG)

Related Components

037-053-20-000External ground bar kit (one per bay)
520-059-10Plug In Bullet TPS/TLS Fuse Holder 1-125A

See page 125 for a list of available circuit breakers

Standard 48Vdc System

- CXPS 48-1T 23"
Rail Mount Power System

P/N: 053-392-20 (with LVD)
P/N: 053-692-20 (no LVD)

Input:

Voltage:187 to 320Vac
Current:.....17.5A @ 240Vac nominal (per rectifier module)
Frequency:45 to 66Hz
Power factor:>.99

Output:

Voltage:44 to 60Vdc
Current:.....System: 417A
(expandable to 600A with additional CXRF shelf)
Rectifier: 83.3A @ 48Vdc
Power:.....System: 20kW
(expandable to 28.8kW with additional CXRF shelf)
Rectifier: 4000W max

Cordex HP™ 4kW 48Vdc rectifier: See page 102
Cordex™ 3.6kW 48Vdc rectifier: See page 101
Cordex™ controller CXCM4: See page 87
AM plug-in breakers: See page 125
GMT style fuses: See page 125

CXPS 48-2T

Standard 48Vdc System

- Integrated 48V, 916A system package with front access distribution
- High temperature rated fan-cooled design for harsh outdoor installations
- Modular controller with touch screen display for full local control over system
- Flexible ordering options including configurations with racks and battery trays
- Optional rectifier expansion kits for future growth potential

Specifications shown for Cordex™ 48-4.0kW rectifier

P/N: 053-393-20 (with LVD)
P/N: 053-693-20 (no LVD)

Electrical

Input:

Voltage: 187 to 320Vac
Current: 17.5A @ 240Vac nominal (per rectifier module)
Frequency: 45 to 66Hz
Power factor: >.99

Output:

Voltage: 44 to 60Vdc
Current: System: 916A
(expandable to 1200A with additional CXRF shelf)
Rectifier: 83.3A @ 48Vdc
Power: System: 44kW
(expandable to 57.6kW with additional CXRF shelf)
Rectifier: 4000W max

Performance / Features

Configurations:

053-693-20-000 Base system with 23" mounting
053-693-20-020 System mounted in 44RU zone 4 seismic rack
053-693-20-030 System mounted in 44RU Z4 rack with
3x battery trays for 3x 48V strings

Rectifier: Up to 11x rectifier positions

Distribution: 48x AM plug-in breaker positions (no LVD)
38x AM plug-in breaker positions (w/LVD)
10x GMT type fuse positions
Shunt
Low voltage disconnect

Controller: CXCM4 modular controller



CXPS 48-2T 23"
Rail Mount Power System

Mechanical

Dimensions:

mm: 755H x 584W x 477D
inches: 29.7H x 23W x 18.8D
(-000 configuration - excludes mounting brackets)

Weight: 70.3kg (155lbs)

Mounting: 23" center mount

Connections:

Load breaker: Hot: 1/4"-20 studs on 5/8" centers
Return: 1/4" holes on 5/8" centers
GMT fuses: Screw terminal 1.31mm² to 0.128mm²
(#16 to #26 AWG)
Battery terminations: 3/8" holes on 1" centers
4x sets per polarity
Rectifier input: 3/8" holes on 1" centers
Alarm connections: Screw terminal 1.31mm² to 0.128mm²
(#16 to #26 AWG)
Access: Cable: Top or bottom
User: front access after installation

Environmental

Temperature: -40 to 65°C (-40 to 149°F)
-40 to 75°C (-40 to 167°F) de-rated output
Humidity: 0 to 95% RH non-condensing
Elevation: -500 to 2800m (-1640 to 9186ft)
-500 to 4000m (-1640 to 13124ft)
with de-rated output

Related Components

058-716-20: Expansion kit, rectifier shelf
(shipped loose only)

Cordex HP™ 4kW 48Vdc rectifier: See page 102

Cordex™ 3.6kW 48Vdc rectifier: See page 101

Cordex™ controller CXCM4: See page 87

AM plug-in breakers: See page 125

GMT style fuses: See page 125

CXPS 24-2T

Standard 24Vdc System

- Integrated 24V, 1200A system package with front access distribution
- High temperature rated fan-cooled design for harsh outdoor installations
- Modular controller with touch screen display for full local control over system
- Flexible ordering options including configurations with racks and battery trays
- Optional converter expansion kits for dual voltage system configurations



CXPS 24-2T
23" Rail Mount Power System

P/N: 053-390-20

Electrical

Input:
Voltage: 176 to 312Vac
Current: 14.6A @ 240Vac nominal (per rectifier module)
Frequency: 45 to 66Hz
Power factor: >.99

Output:
Voltage: 21 to 29Vdc
Current: System: 1200A max (distribution limited)
Rectifier: 115A @ 27Vdc
Power: System: 28.8kW max
Rectifier: 3100W max

Performance / Features

Configurations:
053-390-20-000 Base system with 23" mounting
053-390-20-010 System mounted in 22RU (½ height) battery mount rack
053-390-20-020 System mounted in 44RU Zone 4 seismic rack
053-390-20-030 System mounted in 44RU Z4 rack with 3x battery trays for 6x 24V strings
Rectifier: Up to 11x 24V-3.1kW rectifier positions
Distribution: 38x AM plug-in breaker positions
10x GMT type fuse positions
Shunt
Low voltage disconnect
Controller: CXCM4 modular controller

Mechanical

Dimensions:
mm: 755H x 584W x 477D
inches: 29.7H x 23W x 18.8D
(-000 configuration - excludes mounting brackets)
Weight: 70.3kg (155lbs)
Mounting: 23" center mount

Connections:
Load breaker: Hot: ¼"-20 studs on ⅝" centers
Return: ¼" holes on ⅝" centers
GMT fuses: Screw Terminal 1.31mm² to 0.128mm² (#16 to #26 AWG)
Battery terminations: ⅝" holes on 1" centers
4x sets per polarity
Rectifier input: ⅝" holes on 1" centers
Alarm connections: Screw terminal 1.31mm² to 0.128mm² (#16 to #26 AWG)
Access: Cable: top or bottom
User: front access after installation

Environmental

Temperature: -40 to 65°C (-40 to 149°F)
-40 to 75°C (-40 to 167°F) de-rated output
Humidity: 0 to 95% RH non-condensing
Elevation: -500 to 2800m (-1640 to 9186ft)
-500 to 4000m (-1640 to 13124ft) with de-rated output

Related Components

038-257-20: Cordex™ converter CXDF 24-48/2kW upgrade kit: See page 59

Cordex™ 3.1kW 24Vdc rectifier: See page 105
Cordex™ controller CXCM4: See page 87
AM plug-in breakers: See page 125
GMT style fuses: See page 125

CXPS 24-4T

Standard 24Vdc System

- Integrated 24V, 1430A rack system with front access distribution
- Modular controller with touch screen display for full local control over system
- Expandable distribution center for future load growth
- Optional converter expansion kits for dual voltage system configurations
- Optional rectifier expansion kits for future growth potential



P/N: 053-391-20

Electrical

Input:

Voltage: 176 to 312Vac
Current: 14.6A @ 240Vac nominal (per rectifier module)
Frequency: 45 to 66Hz
Power factor: >.99

Output:

Voltage: 21 to 29Vdc
Current: System: 1430A
(expandable to 2000A with additional CXRF shelf)
Rectifier: 115A @ 27Vdc
Power: System: 34.1kW (expandable to 48.0kW)
Rectifier: 3100W max

Performance / Features

Configurations:

053-391-20-020: System mounted in 44RU zone 4 seismic rack

Rectifier: Up to 11x 24V-3.1kW rectifier positions

Distribution: 58x AM plug-in breaker positions
(expandable to 78x positions)
10x GMT type fuse positions
Shunt

Low voltage disconnect

Controller: CXCM4 modular controller

Mechanical

Dimensions:

mm: 2134H x 648W x 533D
inches: 84H x 25.5W x 21D (includes rack)

Weight: 172kg (379lbs)

Mounting: 23" center mount

Connections:

Load breaker: Hot: 1/4"-20 studs on 5/8" centers
Return: 1/4" holes on 5/8" centers

GMT fuses: Screw terminal 1.31mm² to 0.128mm²
(#16 to #26 AWG)

Battery terminations: 3/8" holes on 1" centers
5x Sets per polarity

Rectifier input: 3/8" holes on 1" centers

Alarm connections: Screw terminal 1.31mm² to 0.128mm²
(#16 to #26 AWG)

Access: Cable: top or bottom
User: front access after installation

Environmental

Temperature: -40 to 65°C (-40 to 149°F)
-40 to 75°C (-40 to 167°F) de-rated output

Humidity: 0 to 95% RH non-condensing

Elevation: -500 to 2800m (-1640 to 9186ft)
-500 to 4000m (-1640 to 13124ft) with
de-rated output

Related Components

058-736-20: Cordex™ rectifier CXRF 24-3.1kW
expansion shelf kit

038-257-20: Cordex™ converter CXDF 24-48/2kW
upgrade kit: See page 59

Cordex™ 3.1kW 24Vdc rectifier: See page 105

Cordex™ controller CXCM4: See page 87

AM plug-in breakers: See page 125

GMT style fuses: See page 125

Cordex™ 432kW

Large Power System

- Scalable large 48Vdc power system up to 10,000A capacity
- Various distribution configuration options available
- Internal bussing between rectifiers and distribution (no overhead bus requirements)
- Rack mount controller with touch screen display for full local control over system
- Expansion rectifier and distribution bays for future growth potential



Typical 48-108kW System

P/N: 025-999-20

Electrical

AC input:.....Single phase, 208 to 277Vac
Dual 3 phase, 208 to 240Vac (without neutral)
Dual 3 phase, 360 to 480Vac (with neutral)
Rectifier voltage:208 to 277Vac
Max. bus capacity:10,000A system
2,000A per bay

Performance / Features

System level alarms/controls: Alarms/control parameters are user-programmable through built-in digital supervisory unit.

Indicators:.....LCD with touch screen
System OK (green LED)
System minor alarm (yellow LED)
System major alarm (red LED)

Alarm connections:0.34 to 2.5mm² (14 to 22AWG)

Load disconnect:.....48Vdc/1200A x N mounted on load side (optional)

Mechanical

Enclosure:1.095mm (14 gauge) steel
Mounting:Standard 23" relay rack (flush rack mount) in box bay
Dimensions:
cm:213H x 71W x 71D
inches:84H x 28W x 28D
Weight:Approx. 272kg (600lbs) per bay (no rectifiers)

Environmental

Temperature:.....0 to 50°C (32 to 122°F)
Humidity:0 to 95% RH non-condensing
Elevation:-500 to 2800m (-1640 to 9186ft)

Distribution

Fuses:
TPL:2 position, 61 to 800A breakers
GJ/GJ1P:1 pole up to 225A, 2 pole 250 to 400A, 3 pole 450 to 700A
Output termination:
TPL fuse:.....2 hole 1/2" dia. on 1 3/4" centers or 2 hole 3/8" dia. on 1" centers
GJ breaker:.....1 pole and 2 pole are 3/8" to 16, 3 pole are 2 hole, 1/2" dia. on 1 3/4" centers or 3/8" dia. on 1" centers
Ground bar:Overhead buss ground, 15 sets of 2 hole 1/2" dia. on 1 3/4" centers (basic system)

Related Components

Cordex HP™ 4kW 48Vdc rectifier: See page 102
Cordex™ 3.6kW 48Vdc rectifier: See page 101
Cordex™ controller CXCR: See page 88
GJ breakers: See page 125
TPL fuses: See page 125

Cordex™ 3.3kW System

125/220V High Voltage Integrated Systems

- 125/220Vdc 3.3kW capacity solution for industrial and utility applications
- Convection cooled design for high reliability in industrial environments
- Wide range AC input for multiple worldwide AC services
- Integrated system solution with CXC controller and distribution

125V P/N: 030-788-20
220V P/N: 030-789-20

Electrical

Input voltage:

Nominal: 208 to 277Vac
Operating: 176 to 320Vac
Extended: 176 to 150Vac (de-rated to 75%)

Phase: 1 or 3

Frequency: 45 to 66Hz

Power factor: >0.99

Efficiency: >93% (50 to 100% load)

Output voltage: 90 to 160Vdc

Current: 8.8A per module @ 125Vdc,
5A per module @ 220Vdc,
up to 3 modules per shelf

Load regulation: Static <+0.5%

Line regulation: Static <+0.1%

Transient response: <+2% for 10 to 100% load step.
10ms recovery time.

Wide band noise: <10mVrms
<80mVp-p

Insulation: 2.5kVac input-earth
3kVac input-output
2kVac output-earth
0.5kVac signals-earth

Performance / Features

User interface:

GUI: Use Internet Explorer browser to access GUI
through ethernet or RS-232 port
Display: Full graphic LCD, 160 x 160 pixels, with
backlight and contrast adjustment
Controls: LCD touch screen with virtual alpha numeric
and numeric keyboards
Indicators: System OK—green LED
Minor alarm—yellow LED
Major alarm—red LED
Audio: Built in speaker for alarms and messages
Language: Multi language support including Chinese

Communication ports:

RS-232 (DB-9): Craft port on front panel for local PC connection
CAN OUT (RJ-12 offset): CAN communication BUSS to optional smart
peripheral modules
RS-485 (RJ-12 offset): For future service options
Ethernet (RJ-45): 10/100 Base T with half/full duplex

Alarms:

Output: 6 potential free form C contacts
Input: 4 digital inputs
GFD: Ground fault detect
SNMP: SNMP agent provides real time system status to
the network management software



Cordex™ 125-3.3kW System

Data logging:

Daily statistics: Minimum, maximum and average on input
channels, with date and time stamp
Battery current, rectifier current, and AC mains
voltage for last 90 days
Event log: On all events such as alarms, power on, any
change of state of the digital inputs, or other
miscellaneous events
Battery log: Battery health history on last 20 discharges,
time of discharge, and battery capacity
Control functions: Automatic, scheduled (periodic) or manual
equalize
Automatically terminated equalize charge
Battery current terminate equalize
Dynamic charge current control
Battery capacity and runtime prediction
Auto or manual battery test

DC Output Panel: 2 x 2 Pole, 32A breakers (10KAIC) with alarm
monitoring

AC Input (not a service entrance):

Single phase: 1 x 2-pole 10KAIC (30KAIC option)
Three phase: 1 x 3-pole delta connection 10KAIC
1 x 3-pole wye connection 10KAIC

Mechanical

Charger enclosure: Wall or rack mount

Dimensions:

inches: 12.2H x 17.1W x 11.9D
mm: 309H x 434W x 302D

Weight: 12.59kg (27.76lbs)*

Enclosure: NEMA 1 (charcoal finish)

Environmental

Temperature range:

Operating: -40 to 50°C (-40 to 122°F)
Extended: Rectifier de-rated to 600W @ 65°C (149°F)

Humidity: 0 to 95% RH non-condensing

Cooling: Natural convection

Heat dissipation: <900 BTU per hour/system

Agency Compliance

Safety: CSA C22.2 No. 60950-00 3rd edition
CE

EMC: ICES-003 Class A
FCC Part 15, Class A, FCC Part 68
EN 55022 Class AA (CISPR 22)
EN 61000-4-2 ESD
EN 61000-4-3 Radiated Immunity
EN 61000-4-4 EFRT/Burst
EN 61000-4-6 Conducted Immunity

*Rectifier module not included system weight

CXPS 24→48-i

24 to 48V DC-DC Converter System



CXPS 24→48-i Power System

- Integrated 8kW capacity 24-48Vdc converter system with front access distribution
- Support for small to medium 48Vdc loads from legacy 24V power system
- Integrated Cordex CXCi for advanced local and remote monitoring and control
- Internal low voltage shutdown for cost effective integration into existing systems
- Universal 19/23" mounting for flexible installation options into existing racks

P/N: 053-997-20

Electrical

Input:

Voltage:+21 to +30Vdc
Current:
System:Feed A: <188A @ +24V input (216A max)
Feed B: <188A @ +24V input (216A max)
Converter:<94A @ +24V input (108A max)
Efficiency:>88% (50-100% load @ nominal voltage)

Output:

Current:
System:148A max @ 54Vdc
Converter module:37A max @ 54Vdc
Power:
System:8000W max @ 54Vdc output
Converter module:2000W max @ 54Vdc output

Performance / Features

Configurations:
053-997-20-000:.....Base system with 19/23" universal mounting
Converter:Up to 4x CXDF 24-48/2kW converter positions
Distribution:18x load breaker positions (mid-trip, plug-in style)
Shunt:
Controller:.....CXCi integrated Controller

Mechanical

Dimensions:
mm:.....222H x 438W x 310D
inches:.....8.75H x 17.24W x 12.2D
(-000 configuration - excludes mounting brackets, rear cover, and module handle)
Weight:
System:.....19kg (42lbs)
Rectifier:2.8kg (6.2lbs) each
Mounting:19/23" universal mount (center or flush)

Connections:
Load breaker:18x sets, 1/4"-20 studs on 5/8" centers
Return bar:.....18x sets, 1/4" holes on 5/8" centers
Alarm:Screw terminal 1.31mm² to 0.128mm² (#16 to #26 AWG)
CXCi input:.....25-pin D-Sub cable
Access:.....Front access after installation

Environmental

Temperature:.....-40 to 65°C (-40 to 149°F)
-40 to 75°C (-40 to 167°F) de-rated output
Humidity:0 to 95% RH non-condensing
Elevation:-500 to 2800m (-1640 to 9186ft)

Related Components

Cordex CXDF 24-48/2kW: See page 111
Cordex controller CXCi: See page 83
AM plug-in breakers (load): See page 125

CXPS 48→24-i

48 to 24V DC-DC Converter System

NEW



CXPS 48→24-i Power System

- Integrated 8kW capacity 48-24Vdc converter system with front access distribution
- Support for small to medium 24Vdc loads from legacy 48V power system
- Integrated Cordex CXCi for advanced local and remote monitoring and control
- Internal low voltage shutdown for cost effective integration into existing systems
- Universal 19/23" mounting for flexible installation options into existing racks

P/N: 0530039-001

Electrical

Input:

Voltage:-42 to -60Vdc
Current:
System:Feed A: <96A @ +24V input (110A max)
Feed B: <96A @ +24V input (110A max)
Converter:<48A @ +24V input (105A max)
Efficiency:>88% (50-100% load @ nominal voltage)

Output:

Current:
System:296A max @ 54Vdc
Converter module:74A max @ 54Vdc
Power:
System:8000W max @ 54Vdc output
Converter module:2000W max @ 54Vdc output

Performance / Features

Configurations:
0530039-001:Base system with 19/23" universal mounting
Converter:Up to 4x CXDF 24-48/2kW converter positions
Distribution:18x load breaker positions (mid-trip, plug-in style)
Shunt:
Controller:.....CXCi integrated Controller

Mechanical

Dimensions:
mm:.....222H x 438W x 310D
inches:.....8.75H x 17.24W x 12.2D
(-000 configuration - excludes mounting brackets, rear cover, and module handle)
Weight:
System:.....19kg (42lbs)
Rectifier:2.8kg (6.2lbs) each
Mounting:19/23" universal mount (center or flush)

Connections:
Load breaker:18x sets, 1/4"-20 studs on 5/8" centers
Return bar:.....18x sets, 1/4" holes on 5/8" centers
Alarm:Screw terminal 1.31mm² to 0.128mm² (#16 to #26 AWG)
CXCi input:.....25-pin D-Sub cable
Access:.....Front access after installation

Environmental

Temperature:.....-40 to 65°C (-40 to 149°F)
-40 to 75°C (-40 to 167°F) de-rated output
Humidity:0 to 95% RH non-condensing
Elevation:-500 to 2800m (-1640 to 9186ft)

Related Components

Cordex CXDF 48-24/2kW: See page 112
Cordex controller CXCi: See page 83
AM plug-in breakers (load): See page 125



Line Powering Solutions

Alpha's CSM36, CSM46 and CSM 56 series converters are reliable, field proven options for remote network powering. Using an elevated DC voltage to transmit power long distances over twisted pair copper infrastructure, these converters are a great solution for remote site powering where AC utility is not available, or battery maintenance is cost prohibitive. Alpha's line power converters feature built-in current limiting and ground-fault protection to ensure the highest level of safety for technicians. Alpha's line power converters have been used to power remote DSLAMs, mini-DSLAMs and Fiber to the Home ONTs (Optical Network Terminals), enabling carriers to capitalize on the low cost and maintenance of a centralized battery plant.

-48Vdc to +/-190Vdc Converter



CSM35 19"
Converter Shelf

- 48V to +/-190V DC-DC Up Converter for remote/line powering applications (RFT-V)
- Utilize existing copper pair network for distributing power
- Reduce truck rolls and operating expenses with no batteries at remote site
- Very high reliability convection-cooled design with optional fan tray

P/N: 012-552-20

Electrical

Input voltage: -40 to -60Vdc
Output voltage:..... ±190Vdc
Power:..... 90W minimum per output
Efficiency:..... >88% (50 to 100% load)
 90% typical
Regulation:..... <-0.5% no load to full load
 <±0.05% line
Noise:
 Wide band: <300mVp-p to 100MHz
 <100mVRMS to 10MHz
 Acoustic:..... <60dBA @ 1m (3ft)

Performance / Features

Indicators:Power on
DC input OK
Converter fail alarm major
Converter fail alarm minor
Current limit

Protection:Power limiting
Input/output fuses
Input inrush current limiting
Output transient and OSP
Input high and low voltage shutdown
Current limit/short circuit fold back
Thermal shutdown
Input transient
5mA ground fault interrupt option

Mechanical

➤ Power module

Dimensions:
mm:..... 114H x 31.75W x 254D
inches:..... 4.5H x 1.25W x 10D

Environmental

Temperature: Optional:-40 to 65°C (-40 to 149°F)*
Humidity:0 to 95% RH non-condensing
Elevation:-500 to 2800m (-1640 to 9186ft)
*Fan module required for high temp operation above 50°C (122°F)

Shelves

19" shelf (12 modules) P/N: 030-702-20

Shelf cooling (48Vdc fan tray) P/N: Shelf list option 99

Top air baffle P/N: Shelf list option 96

Analog supervisory module P/N: 018-562-20

Assembly, cable, OP, DC power 5FT, CSM36 P/N: 8700288-001

➤19" shelf (12 modules)

Dimensions:
mm:.....132H x 432W x 314D
inches:.....5.2H x 17W x 12.36D
Weight:.....11.4kg (25lbs) fully equipped

➤ Analog supervisory module

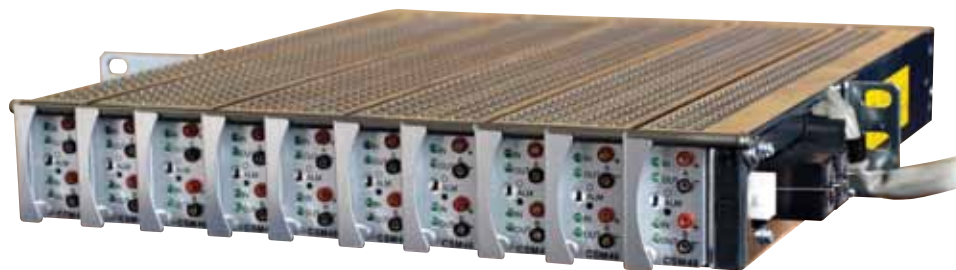
Alarm relays: Form C major
..... Form C minor

LED:..... System ok (green)
..... Minor alarm (yellow)
..... Major alarm (red)

Agency Compliance

CSA:	C22.2 60950-1 (NRTL/C)
	C22.2 60950-21
UL:	60950-1 (NRTL)
	60950-21 (RFT-V circuit)
FCC:	47 CFR part 15
	Class B radiated EMI
	Class A conducted EMI
EN:	55022 (CISPR 22)
	Class B radiated EMI
	Class A conducted EMI
	61000-4-2, -3, -4, -6
	60950 (CE)
Bellcore:	GR-63-CORE
	GR-1089-CORE
	GR-1089 Class A2 (with GFI) or A3
NEBS:	Consult factory on system application

+/-190Vdc to -48Vdc Converter



CSM46 10-Module Shelf

- +/-190V to 48V DC-DC Down Converter for remote/line powering applications (RFT-V)
- Utilize existing copper pair network for distributing power
- Reduce truck rolls and operating expenses with no batteries at remote site
- High reliability convection-cooled design and compact 1RU footprint

P/N: 012-554-20

Electrical

Input voltage:	195 to 380Vdc (+/- 97.5 to +/- 190Vdc)
Input current:	240mA +/- 2%
Efficiency:	>85%
Output power:	Up to 75W (de-rates linearly with input voltage)
Output voltage:	-50 to -55Vdc
Output current:	1.5A max (de-rates linearly with input voltage)
Noise:	<500mv p-p to 20MHz <250mVrms to 20MHz

Performance / Features

Indicators:

Converter A: I/P OK (green LED)
 Converter A: O/P OK (green LED)
 Converter B: I/P OK (green LED)
 Converter B: O/P OK (green LED)

Test points:

Converter A:I/P voltage
 Converter B:I/P voltage

Protection:

- Input fuses
- Input current limit
- Input transient portection
- Input high and low voltage shutdown
- Thermal shutdown
- Output parallel diodes
- Output OVP
- Reverse polarity protection

Miscellaneous:Alarm masking switch for disabling shelf level alarming

Mechanical

Dimensions:

mm:.....42H x 23W x 280D
in:.....1.65H x .9W x 11D
Weight:.....0.67kg (1.5lbs)

Environmental

Temperature:.....-40 to 75°C (-40 to 167°F) with external airflow
Humidity:.....0 to 95% NC

Shelves

10-Module shelf P/N: 030-831-20

➤ Mechanical

Dimensions:

mm:.....45H x 273W x 311D
in:.....1.75H x 10.75W x 12.25D
(excludes connectors and mounting brackets)
Weight:.....4.87kg (10.8lbs)

› Performance / Features

Access:.....Front access

Connections:

Connections:

Input:	50-pin amp-champ style connector and wireharness
Output:	Anderson SBS50 and molex style options and wireharness
Alarm:	Flying leads or molex style connector and wireharness
Chassis gnd:	¼" studs on ⅝" C

Alarms: Major form C relay
..... Minor form C relay
Note: Relays are field replaceable

Agency Compliance

Safety:.....CSA/UL 60950-1
CSA/UL 60950-21 (RFT-V circuit)
CE IEC/EN 60950

EMI:.....Class A radiated
GR-1089 issue 3 (applicable sections)

+/-190Vdc to -48Vdc Compact Converter

NEW



CSM56 Backup Module

- +/-190V to 48V DC-DC Down Converter for remote/line powering applications (RFT-V)
- Utilize existing copper pair networks for distributing power
- Reduce truck rolls and operating expenses with no batteries at remote site
- Provide at least four (4) seconds of backup power to ensure load equipment can ride through brief converter resets

P/N: 013-034-20

Electrical

Input voltage:	200 to 390Vdc (+/- 100 to +/- 195Vdc)
Input current:	0.25A (dc) maximum per input
Efficiency:	>85% @ 10% load
Output power:	250W nominal 375W maximum (derates linearly with input voltage)
Output voltage:	-50 to -55Vdc with inputs operational
Output current:	7.5A @ 50V (derates linearly with input voltage) 7.8A @ 45V
Noise:	<100mVRMS to 20MHZ (wide band) <500mVp-p to 20MHZ
Acoustic Noise:	< 45 dBA at 1m (3 ft)
Backed up output voltage:	-46Vdc \pm 3%
Duration backup:	350W for > 3.2 seconds @ -40°C (-40°F) 350W for > 6.4 seconds @ 25°C (77°F) 30 seconds maximum duration at low load

Performance / Features

Converter Status LED: Green – Outputs OK and inputs OK
 Yellow – Outputs OK and one or more inputs NOT OK
 Red or Off – Output NOT OK

Test Points:..... Converter output voltage

Status LED Green – charged
 Green, flashing – charging
 Red – failed

Mechanical

Dimensions:
mm:.....86H x 223x 239D, w/ fastener
86H x 223x 264D, w/ handle
in:.....3.4H x 8.8W x 9.4D, w/ fastener
3.4H x 8.8W x 10.4D, w/ handle

Weight:.....2.84kg (6.26lbs)

Mounting:.....Slides and fastens into Lucent Stinger®
DSLAM cabinet

Environmental

Temperature:
 Natural convection:-40 to 40°C (-40 to 104°F)
 with 200 LFM airflow-40 to 60°C (-40 to 140°F)
Humidity:0 to 95% RH non-condensing

Agency Compliance

Safety	CSA/EN/IEC/UL 60950-1
	CSA/UL/IEC 60950-21 (RFT-V)
EMC	ICES-003
FCC	47 CFR Part 15 Class B
NEBS	Telcordia GR-1089-CORE
Telcordia:.....	GR-57-CORE
	GR-909-CORE
	SR-332
	TA-NWT-001500
	GR-950-CORE

AlphaCap 350 and 665

Short Duration Backup Supply Module

NEW



AlphaCap 350

- Provide 3 to 10 seconds of backup power (holdup) of 48Vdc to remote loads such as xDSL and FTTx equipment to ensure maximum reliability
- Supply 350W and 750W, respectively, of continuous power output
- Ensure load equipment can ride through brief converter resets
- Reduce truck rolls and operating expenses with no batteries at remote site

AlphaCap 350 P/N: 013-012-20

Electrical

Input voltage:-48 to -56 Vdc
Input current (charge): 100 mA \pm 10% max
Backed up output voltage: -46Vdc \pm 3%
Power:350W maximum
Duration backup:.....can be ordered with three (3) different levels
2.5, 4, or 10 seconds

Mechanical

Dimensions:
mm:.....44H x 152Wx 305D
inches:..... 1.7H x 6W x 12D
Mounting:L-shaped brackets for wall mounting

Environmental

Temperature:
Operating-40 to 55°C (-40 to 131°F)
Storage:-40 to 85°C (-40 to 185°F)
Humidity:0 to 95% RH non-condensing

Agency Compliance

SafetyUL 60950-1
CSA C22.2 No. 60950
FCC47 CFR Part 15 Class A
Telcordia:.....GR-1089-CORE (where applicable)

AlphaCap 665 P/N: 013-015-20

Electrical

Input voltage:-48 to -56 Vdc
Input current (charge): 160 mA \pm 10% max
Backed up output voltage: -46Vdc \pm 3%
Power:665W nominal, 750W maximum
Duration backup:.....4.5 seconds, 665 W @ 5 to 55°C
3 seconds minimum, 665 W @ -40 to 65°C
30 seconds maximum duration at low load
3.8 seconds, 750 W load

Mechanical

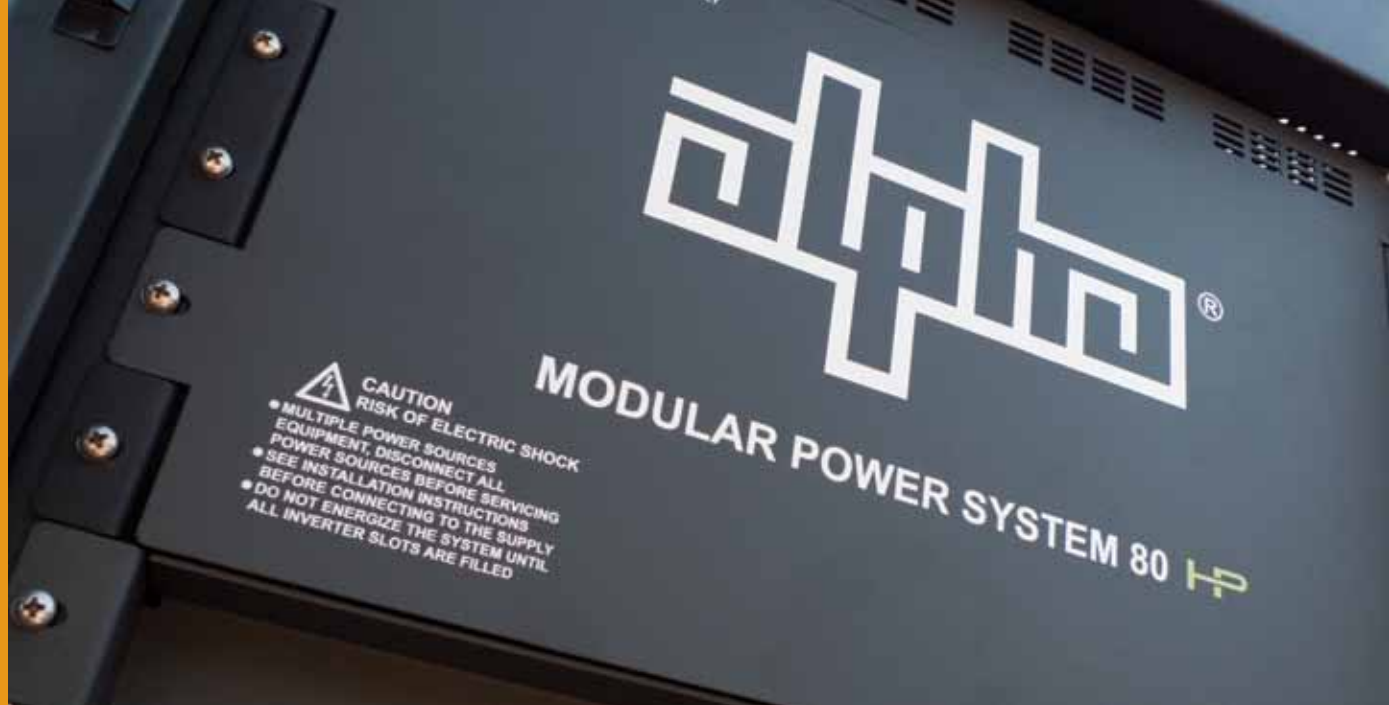
Dimensions:
mm:.....43H x 183Wx 350D
inches:..... 1.7H x 7.2W x 13.8D
Mounting:L-shaped brackets for wall mounting

Environmental

Temperature:
Nominal:5 to 55°C (41 to 131°F)
Extended:-40 to 65°C (-40 to 149°F)
Storage:-40 to 85°C (-40 to 185°F)
Humidity:0 to 95% RH non-condensing

Agency Compliance

SafetyUL 60950-1
CSA C22.2 No. 60950
FCC47 CFR Part 15 Class A
Telcordia:.....GR-1089-CORE (where applicable)



AC Power Solutions

Alpha offers the latest technology in modular power systems to support small to mid-sized critical AC loads in a variety of standard and custom configurations.

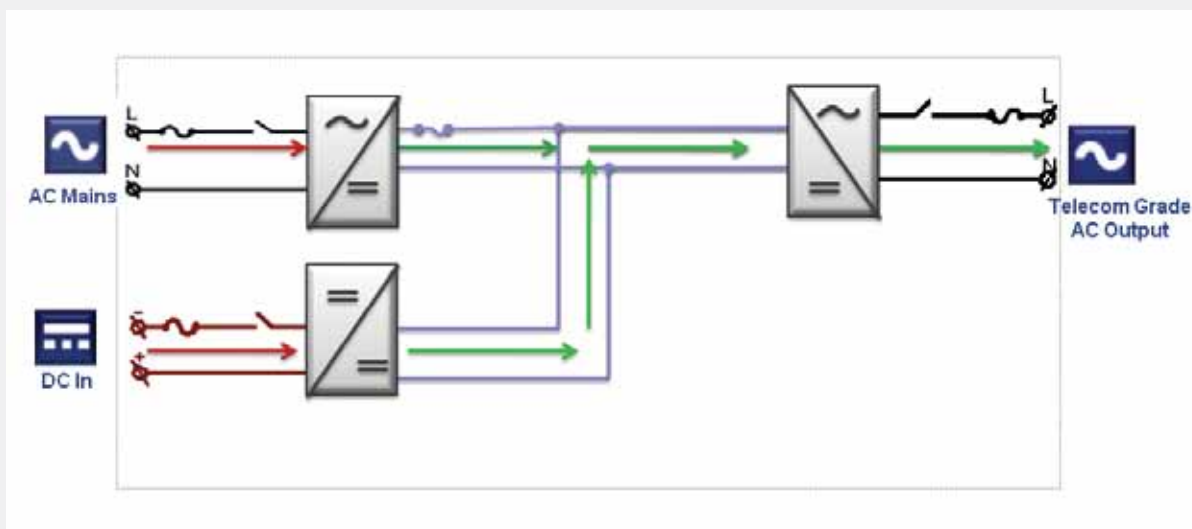
Alpha's Modular Power System 80HP (AMPS80 HP) and 24 HP (AMPS24 HP) offer Telecom-grade AC power for critical loads in central offices, switching stations, cable headends and data centers. These systems offer 99.999% system availability, up to 94% power efficiency and optimal power density through a scalable, modular platform with integrated, intelligent system control.

AMPS80 HP and AMPS24 HP are offered in 3-phase, 2-phase and single-phase UPS or Inverter configurations and may be configured to provide N+1 redundancy per phase. A smart unified controller with integrated SNMP interface monitors and manages both inverter and rectifier modules through a web based GUI and local LCD touch screen.

For less demanding applications, the INEX inverter is a fully integrated single phase system specifically designed to backup critical AC loads. With proven Alpha reliability and flexibility, the system may be configured to provide N+1 redundancy. An optional static transfer switch allows automatic transfer of power in less than a quarter of a cycle. A user friendly interface displays real time information, making the system easy to configure and manage.

AMPS HP is a revolutionary high performance technology that combines the high reliability of a telecom-grade inverter system with a highly efficient UPS.

Each AMPS module includes a reliable 48Vdc-to-120Vac inverter as well as an AC-to-DC rectifier. When AC Mains is available, AC power is converted to a high-voltage DC bus, which is then converted back to AC. In this high-performance 'HP' mode, AMPS delivers fully conditioned, line-regulated telecom-grade AC power with 94% system efficiency.

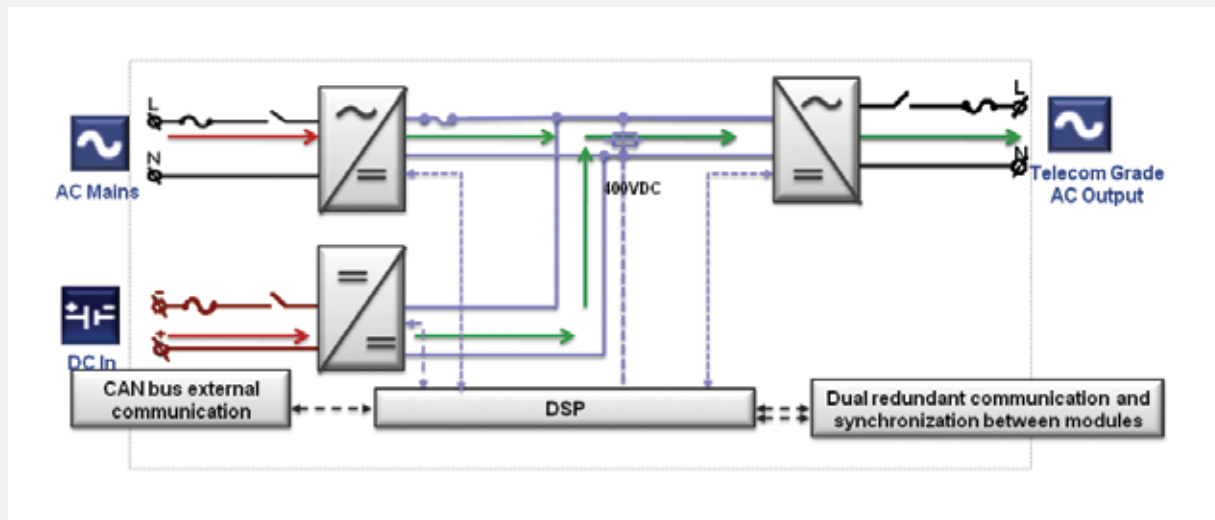


When AC Mains is unavailable, DC battery power is converted to AC with zero transfer time. An intelligent high voltage DC bus decides when to draw power, and how much power to draw, from AC or DC source. During AC input brown-out condition, output power is supplemented by battery power.

In case of a fault, advanced DSP controls allow the AMPS module to isolate itself, while the rest of the system continues to power the load (with reduced output). Hence, the 'system' static switch, which is the single point of failure in conventional systems, is eliminated.

AMPS modules also feature a 'Boost' over-current feature with 10 times the rated current capacity for 20ms, allowing it to trip breakers downstream, thus protecting the load.

Traditionally, customers have had two AC powering options – online AC UPS or Telecom grade (-48Vdc) inverters. While online AC UPS may offer higher power efficiency (up to 95%), they are able to do so by bundling hundreds of small capacity batteries (with only 3 to 5 year design life) into high voltage (240Vdc or 400Vdc) battery packs. Hence, while an AC UPS is able to offer high efficiency, it is much less reliable and uses higher voltages. To improve system uptime, UPS manufacturers offer maintenance contracts to maintain the system and replenish batteries. Hence, operational savings gained through higher power efficiency of the UPS are quickly consumed by expensive maintenance contracts.



Compared with online AC UPS, Telecom grade inverters offer much higher system reliability; utilizing DC power plants and Telecom-grade batteries. However, system efficiency is compromised and is typically in the low '80's, resulting in higher operating costs. Telecom grade inverter systems also require a DC power system with oversized rectifiers, resulting in higher capital investments. Since battery reliability is the biggest concern of MSO power engineers, both UPS and Telecom grade inverter systems deploy Static Transfer Switches (STS), which allow the power system to bypass DC mode to Mains (AC mode) in case of battery failure. When the STS bypasses to AC mode, unregulated AC power is passed to the loads, which may be highly hazardous for sensitive electronic communications loads. In both AC UPS and Telecom grade inverter system topologies, the STS becomes the "single point of failure", because if it fails to bypass DC when there is a battery failure, critical loads might get dropped, resulting in significant loss of revenue, damage to reputation and penalties for MSO's. Moreover, the STS must be sized at the time of installation and the site's future expansion is limited by the STS's rated capacity, thus making the UPS or Telecom grade inverter system much less scalable.

Compared to AC UPS and Telecom grade inverter systems, AMPS offers 94% power efficiency while utilizing the existing highly reliable DC power plant, including batteries with a 10 to 20 year design life. Elimination of a physical STS eliminates the single point of failure as each module has an AC input and a DC input at all times. When AC power is available, AMPS modules provide clean, regulated power to critical communications equipment and in case of brownouts or power outages; battery power is provided to the loads with zero transfer time. Hence, critical communication loads are assured of receiving clean, filtered AC power at all times. Elimination of the physical STS in AMPS also allows for a highly scalable, flexible architecture where N+1 redundancy is possible, resulting in high power density and allowing MSO's to utilize premium real estate for revenue generating equipment. Hence, by combining the high efficiency of an online AC UPS with the high system reliability and performance of a Telecom grade inverter system, AMPS offers the best of both worlds.

AMPS80 HP

Modular AC Power System



- Innovative, modular inverter system for critical facilities and Telecom applications
- Single, dual and three phase configurations with up to 75kVA/60kW capacity
- High performance AC power system offering 99.999% availability for mission critical applications
- 94% efficiency, 15 year design life and module MTBF (Mean Time Between Failures) greater than 200,000 hours results in class-leading TCO (Total Cost of Ownership)
- Intelligent system controller with integrated SNMP for local and remote management of AC power modules, optional rectifier modules, batteries and other peripherals
- Hot swappable 2.5kVA/2.0kW AC power modules and optional 1.8kW rectifier modules (for charging batteries) offer total flexibility, scalability and low MTTR (Mean Time To Repair)
- Small footprint system offers up to 75kVA/60kW in a single 19" box bay rack, freeing up valuable rack and floor space



AMPS80 HP

Consult your Alpha representative for P/N configurations

Features

- System controller with integrated SNMP communications
- Top AC and DC feed access; bottom DC feed access (All user connections are front accessible)
- AC input and output breaker/disconnect switch
- Industrial grade surge suppression (rated to 40kA)

Mechanical

Dimensions:

mm: 2134H x 600W x 680D
inches: 84H x 23.6W x 26.75D

System weight

(without modules): 270kg (595lbs)

Module dimensions:

mm: 88.9H x 102W x 435D
inches: 3.5H x 4W x 17.13D

Module weight: 5kg (11lbs)

Clearance:

Front: 100cm (33in)
Rear: 30cm (12in) minimum
Sides: 900mm (36in) to the left of the system
Top: 30cm (12in)

Environmental

Temperature:

Operating (full load): -20 to 40°C (-4 to 104°F)

Storage: -40 to 70°C (-40 to 158°F)

Relative humidity: Up to 95%, non-condensing

Operating altitude: Up to 2,000m (6,562ft) above sea level

Options

- Up to 8 x 1.8kW rectifier modules
- Internal maintenance bypass switch
- Inverter DC input breakers
- Service-entrance grade surge suppression: 140kA rating, per phase
- Lockable rack front-door
- Batteries (various sizes and technologies)

Agency Compliance

Safety: UL1778 (2nd Ed); CSA C22.2

No. 107.3-05 UPS General Safety

EMC: FCC CFR47 Part 15 Class A; ICES-003

Nominal Specifications

Model:	AMPS80-3-75	AMPS80-3-30	AMPS80-2-40	AMPS80-1-20
P/N	Consult your Alpha representative for P/N configurations			
Input & output phase	120/208V 3-ph	120/208V 3-ph	120/240V or 120/208V 2-ph	120V single ph
Output capacity	7,500 to 75,000VA	7,500 to 30,000VA	5,000 to 40,000VA	2,500 to 20,000VA
Output power (resistive load)	6,000 to 60,000W	6,000 to 24,000W	4,000 to 32,000W	2,000 to 16,000W
Maximum output current	208A rms per phase	83A rms per phase	168A rms per phase	168A rms
Max. no. of 2,500VA/ 2,000W inverter modules	30	12	16	8
Min. no. of 2,500VA/ 2,000W inverter modules	3	3	2	1
Technology	Proprietary HP technology. Each inverter module has DC input and AC input			
Static switch	Not required; each module has built-in DSP controlled static switch functionality			
Efficiency	94% AC-to-AC; 90% DC-to-AC (from 50 to 100% full resistive load)			
Waveform	Pure sine wave			
Output power factor	0.8 (can run capacitive & inductive loads)			
Transfer time	Zero transfer time			
Warranty	2 year standard (1 and 3 year optional extensions)			
Inverter Module AC Output				
Power rating	2,500VA/2,000W			
Voltage range (AC)	90 – 140V			
Voltage accuracy	±2%			
Frequency	60Hz (same as input frequency)			
Inverter frequency accuracy	0.03%			
Input power factor	>99%			
THD (resistive load)	<1.5%			
Transient load recovery time	0.4ms			
Soft start time	20s			
Maximum crest factor at nominal power	3.5			
Short circuit overload capacity	10 x I _n for 20msec (AC-to-AC mode)			
Short term overload capacity	150% for 5 seconds			
Permanent overload capacity	110%			
Synchronization range	57 – 63Hz			
Inverter Module DC Output				
Nominal voltage	48Vdc			
Voltage range (max)	40 – 60Vdc (User Adjustable)			
Max. DC Input Current				
@48Vdc	1375A	550A	734A	366A
@40Vdc	1700A	680A	900A	450A
Voltage ripple	<2mV/<38 dbrnc			
System Controller with Integrated SNMP				
Control & monitoring	Configure, control and monitor inverter and rectifier modules via Internet Explorer 7 onwards			
Display	LCD touch-screen display (160 x 160 pixels) OK/Major/Minor 3-Color LED display Web based GUI via ethernet			
Communication ports	RJ45 ethernet port RS232 Port (Front)			

AMPS24 HP

Modular AC Power System



NEW

- Innovative, modular inverter system for critical applications
- Single, dual and three phase configurations with up to 24kVA/19.2kW capacity
- 93% system efficiency for operational savings and reduced carbon footprint
- 'HP' technology engineered to deliver high efficiency, high system reliability and low upfront cost of ownership
- Intelligent system controller with integrated SNMP and ½ VGA color touchscreen LCD panel for full system management, locally and remotely
- High power density yields space for revenue generating equipment



AMPS24 HP

Features

- 3i + 1R system: Up to 3 x 1500VA/1200W inverter modules and 1 x 1800W rectifier module per shelf (1150W for single phase)
- 4i system: Up to 4 x 1500VA/1200W inverter modules per shelf
- System controller with integrated SNMP communications
- 5.7" VGA (640 x 480) color touch screen LCD panel
- Removable covers for ease of installation
- Industrial grade surge suppression
- Inverter AC input and AC output breakers
- Inverter DC breakers (1 breaker per shelf)
- Internal make-before-break rotary maintenance bypass switch

System Controller with integrated SNMP

- Control and Monitoring:**
Configure, control and monitor inverter and rectifier modules remotely via Internet Explorer 7 onwards and Firefox 3.6 onwards
- Display:**
- 5.7" VGA (640 x 480) color touch screen LCD display
 - OK/Major/Minor 3-Color LED display
 - Web based GUI via Ethernet
- Communication Ports:**RJ45 Ethernet Port
- Controller I/Os:**
- Voltage inputs:.....1
 - Temperature inputs:2
 - Current inputs:.....1
 - Digital inputs:.....6
 - Relay outputs:.....6

Mechanical

- System dimensions:**
- mm:.....622H* x 443W** x 432D
 - inches:24.5H* x 17.44W** x 17D
- Weight**
(without modules):.....52.16kg (115lbs)*
- Module dimensions**
- mm:.....88.9H x 102W x 300D (inverter)/235D (rectifier)
 - inches:3.5H x 4W x 12.5D (inverter)/9.25D (rectifier)
- Module weight:**.....2.4kg (5.3lbs) inverter/2.8kg (6.2lb) rectifier

Environmental

- Operating Temperature (full load):**.... -20 to 50°C (-4 to 122°F)
- Storage Temperature:**..... -40 to +70°C (-40 to 158°F)
- Relative Humidity:**..... Up to 95%, non-condensing
- Operating Altitude:**..... Up to 1500m (4,900ft) above sea level

Options

- Open relay racks and box bay racks for mounting
 - Front terminal UPS or Telecom batteries
- *Height and weight for 4-shelf system; other models vary in height and weight
- **Mounting ears for 19" or 23" racks

Agency Compliance

- Safety:**UL1778 (2nd Ed); CSA C22.2 No. 107.3-05 UPS General Safety
- EMC:**FCC CFR47 Part 15 Class A; ICES-003

AMPS24 HP Systems using 3i+1R Shelves (UPS)					
Model*	AMPS24-3-13.5-H3	AMPS24-2-18-H4	AMPS24-2-9-H2	AMPS24-1-9-H2	AMPS24-1-4.5-H1
Input & output phase	120/208V 3-ph	120/240V or 120/208V 2-ph		120V single ph	
Nominal output power (max)	4500 to 13500VA	3000 to 18000VA	3000 to 9000VA	1500 to 9000VA	1500 to 4500VA
Output power (resistive load)	3600 to 10800W	2400 to 14400W	2400 to 7200W	1200 to 7200W	1200 to 3600W
Maximum output current	37.5A rms per phase	75A rms per phase	37.5A rms per phase	75A rms per phase	37.5A rms
Max. no. of 1500VA/1200W inverter modules per system	9	12	6	6	3
Min. no. of 1500VA/1200W inverter modules per system	3	2	2	1	1
Max. no. of 1800W rectifier modules per system	3	4	2	2	1

AMPS24 HP Systems using 4i Shelves (Inverter)					
Model**	AMPS24-3-18-3i	AMPS24-2-24-4i	AMPS24-2-12-2i	AMPS24-1-12-2i	AMPS24-1-6-1i
Input & output phase	120/208V 3-ph	120/240V or 120/208V 2-ph		120V single ph	
Nominal output power (max)	4500 to 18000VA	3000 to 24000VA	3000 to 12000VA	1500 to 12000VA	1500 to 6000VA
Output power (resistive load)	3600 to 14400W	2400 to 19200W	2400 to 9600W	3600 to 9600W	2400 to 4800W
Maximum output current	50A rms per phase	100A rms per phase	50A rms per phase	100A rms per phase	50A rms per phase
Max. no. of 1500VA/1200W inverter modules per system	12	16	8	8	4
Min. no. of 1500VA/1200W inverter modules per system	3	2	2	1	1

Technology	Proprietary HP technology
Static switch	Not required; each module DSP controlled static switch functionality
Efficiency	93% AC-to-AC; 90% DC-to-AC (from 50 to 100% full resistive load)
Waveform	Pure sine wave
Output power factor	0.8 (can run capacitive & inductive loads)
Transfer time	Zero transfer time
Warranty	2 years (1 and 3 year optional extensions)

*Model Descriptor: AMPS24 - [Phase] - [Maximum kVA] - [Number of 3i + 1R Shelves]

**Model Descriptor: AMPS24 - [Phase] - [Maximum kVA] - [Number of 4i Shelves]

INEX™ System

48V Modular Inverter System



INEX™ System

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Standard Solutions

- Versatile modular design provides flexibility for different power applications
- Expandable capacity up to 18kVA with N+1 redundancy configuration
- "All master" dynamic mechanism eliminates single point failure to optimize reliability
- Hot swappable operation allows module addition or removal without powering down
- High power density and high efficiency

The INEX inverter series is an integrated telecommunications power system, including inverter, static switch, LCD display controller and interface modules. With a versatile "building block" design and N+1 redundant configuration, the INEX inverter system facilitates complex telecommunications and industrial power demands, and provides ultimate flexibility for your current and future power requirements.

N+1 parallel redundancy allows power capacity expandable up to 24kVA. INEX "all master" dynamic mechanism automatically shares and re-organizes critical loads to prevent interruption should any inverter module fail. The DSP-microprocessing controller gives real-time system status through a comprehensive LCD display, and allows programmable settings through the display panel. With a communication interface module installed, you can further control and monitor the system remotely.

Consult your Alpha representative for P/N configurations

Electrical

> Inverter Module

DC input:

Nominal voltage:48Vdc
Operating range:40.5Vdc ~ 58Vdc
Input protection:Reverse polarity protection
Psophometric
noise voltage:≤1.0mV ITU-T O.41 (16.66~6000Hz)

AC output:

Power rating:..... 1500VA/1200W
Waveform:Pure sine wave
Power factor:0.8
Nominal output voltage: . 110/115/120Vac, 208/220/230/240Vac
Voltage variation:Max ±2%
Output frequency:50/60Hz
Crest factor:3:1
THD:<3%, linear load
.....<5%, non-linear load
Efficiency:Min 88%
Isolation AC-enclosure:..Basic isolation (Pri-Gnd) 2121Vdc/1min
Dynamic response:<±10%
Over load protection:.....1.5*Inom >20s
.....1.25*Inom temperature controlled

> STS Module

Input:

Over voltage
threshold:.....Adjustable between
.....127 to 138Vac for 120Vac systems,
.....the default value is 132Vac
.....233 to 252Vac for 220Vac systems,
.....the default value is 242Vac

Under voltage
threshold:.....Adjustable between
.....100 to 114Vac for 120Vac systems,
.....the default value is 108Vac
.....176 to 209Vac for 220Vac systems,
.....the default value is 198Vac

Backfeed protection:Comply with safety requirement
Redundant power:Startup power-on by priority
Design:Source or alternative

Output:

Nominal output
voltage:Same as utility or the output of
.....inverter modules

Permissible
frequency area:Max. +/-2.5%
.....(inverter synchronization)
Transfer time:Typical ¼ cycle
Rated power:50A and 100A options
.....& 208/220/230/240Vac
Operation methods:Inverter priority/mains priority

Environmental

Operating temperature:-20 to 70°C (-4 to 158°F)
.....-5 to 58°C (23 to 122°F) with
.....full performance
Storage temperature:-40 to 85°C (-40 to 185°F)
Humidity:90% RH non-condensing
Audible noise:55dB

Controller Module

Input:

Nominal voltage:48Vdc
Operating range:30Vdc ~ 72Vdc
Over current protection: 2A fuse

Human interface:

LCD:Resolution (line X array)
.....4 X 16 character
LED indicator:3 colored indicators for normal, warning
.....and fault display
Alarm:Audio alarm when inverter, STS, controller
.....module operate abnormally

System parameter:

Baud Rate:Setting controller com port baud rate
Keypad tones:Setting keypad tones
Time & date:Setting current time and date
Setting password:Setting system password
Brightness:Setting LCD brightness
Default:Change current system parameters
.....to default value

Mechanical

> Inverter Module

Dimension:

mm:270D x 215W x 43.8H
inches:10.63D x 8.46W x 1.72H

Weight:3.0kg (6.61lbs)

> STS Module

50A Dimension:

mm:270D x 215W x 43.8H
inches:10.63D x 8.46W x 1.72H

Weight:2.0kg (4.4lbs)

100A Dimension:

mm:265D x 215W x 84H
inches:10.5D x 8.46W x 3.3H

Weight:4.2kg (9.2lbs)

> Controller Module

Dimensions:

mm:277D x 87.9W x 43.5H
inches:10.9D x 3.46W x 1.71H

Weight:1.0kg (2.2lbs)

> Hot-swap Chassis

19/23" mounting brackets

Inverter chassis dimension:

mm:329.5D x 440W x 44H
inches:13D x 17.32W x 1.73H

Weight:2.5kg (5.5lbs)

STS & controller chassis dimension:

mm:329.5D x 440W x 44H
inches:13D x 17.32W x 1.73H

Weight:3.4kg (7.5lbs)

Communication Interface

RS-232x1:Communicate with PC
RS-485x2:Communicate with supervision
Dry contactx5:Communicate with external monitor
USBx1:Communicate with PC

Agency Compliance

Safety:EN 60950-1, UL 60950-1, IEC 60950-1,
.....CSA C22.2 No. 60950-1
EMC:EN 55022:1998
Certifications:UL, CE
RoHS:Compliant

Media System

2RU 3kVA Inverter System

NEW



Media Inverter

- Revolutionary 'GREEN' technology provides 93% system efficiency
- Up to 3kVA/2.4kW of highly reliable, Telecom-grade AC power
- 2RU shelf system provides high power density
- Flexible mounting options for 19" or 23" box bay or open relay racks
- Seamless integration with Alpha's CXC controllers via CAN bus

Consult your Alpha representative for P/N configurations

General Specifications

Efficiency:.....93% AC-to-AC; 90% DC-to-AC (from 50 to 100% full resistive load)
Waveform:.....Pure sine wave
Output power factor:0.8 (can run capacitive & inductive loads)
Transfer time:Zero transfer time
Module MTBF:.....>200,000hrs
Warranty:.....1 year

Inverter Module AC Output

Power rating:.....1500VA/1200W
Nominal voltage:120Vac
Voltage accuracy:±2%
Frequency:60Hz (same as input frequency)
Inverter frequency accuracy:.....0.03%
THD (resistive load):<1.5%
Transient load recovery time:0.4 ms
Soft start time:.....20s
Maximum crest factor (nominal power):3.5
Short circuit overload capacity:.....10 x I_n for 20msec (AC-to-AC mode)
Short term overload capacity:.....150% for 5 seconds
Permanent overload capacity:.....110%
Synchronization range:.....57 - 63Hz
Heat dissipation:286 BTU per hour in AC-to-AC mode
410 BTU per hour in DC-to-DC mode

Inverter Module Input

Nominal AC voltage:120Vac
Input power factor:>99%
Nominal DC voltage:48Vdc
Maximum DC voltage range:40 - 60Vdc (user adjustable)
Voltage ripple:<2mV/<38 dbrnc

Monitoring and Control

- T2S Controller may be seamlessly integrated with Cordex CXC controller via CAN bus
- Dry contacts on shelf
- Status LEDs on modules

Environmental

Operating Temperature (full load):-20 to 50°C (-4 to 122°F)
Storage Temperature:.....-40 to +70°C (-40 to 158°F)
Relative Humidity:Up to 95%, non-condensing
Operating Altitude:.....Up to 1500m (4,900ft) above sea level

Mechanical

Dimensions:
mm:.....89H x 448W x 317.5D
inches:3.5H x 17.65W x 12.5D
Weight:12.7kg (5.3lbs)
.....(including 2 x Media modules)

Agency Compliance

Safety:UL 1778 (Ed.4)
EMC (immunity):.....IEC 1000-4
EMC (emission):.....FCC PART 15



UPS Solutions

With over 35 years of experience in the global outdoor market, Alpha is the leader in providing a complete line of AC powering solutions from indoor to rugged outdoor applications. This includes hardened outdoor enclosures, uninterruptible power supply (UPS) modules, specialty batteries, accessories and generators that can be custom integrated to meet your application.

A truly rugged UPS system has many distinguishing characteristics, including conformal coated printed circuit boards (PCBs) which protect against exposure to moisture and dust, and carefully selected components to operate reliably in extreme temperatures. In addition, products and solutions are designed to meet outdoor installation, shock and vibration standards. Alpha's UPS solutions also offer superior communication capabilities including remote monitoring via SNMP web-based communication. Real-time alerts and reports on UPS status can be sent to multiple email addresses, or can be monitored from your PC, Internet-connected mobile phone or PDA, each with selectable event severity levels to trigger different notifications of events, faults and alarms.

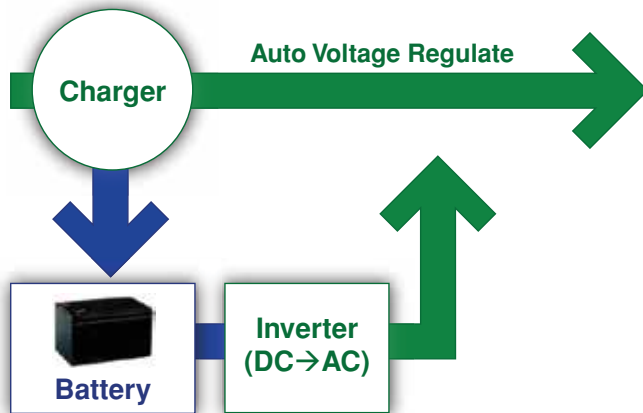
Alpha also offers a complete range of indoor UPS products providing the Alpha reliability, functionality and efficiency you have come to depend on.

UPS Topologies

The diagrams below will help you understand the different topologies used in Alpha's UPS products.

›Line Interactive

In normal operation, when AC line voltage is present, power is filtered for voltage spikes and output voltage is regulated. Some electricity is used to keep the batteries fully charged. When the AC line voltage is lost or falls outside the input range, AC power is supplied from the batteries through the inverter.



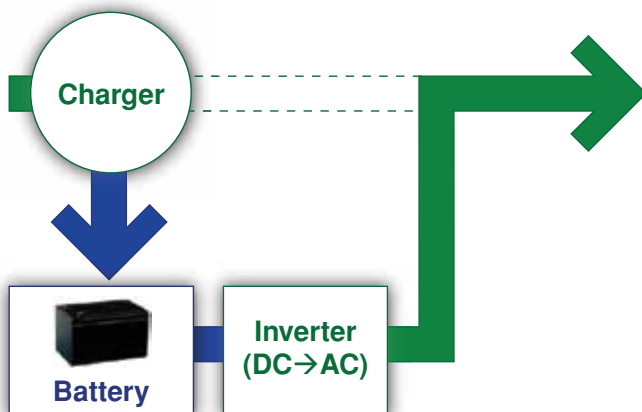
Advantages of line-interactive topology

- Automatic Voltage Regulation (AVR)
- Higher efficiency (less costly to operate) – Less power is consumed because inverter only operates during outages or extreme voltage fluctuations when acceptable AC input is present.
- Higher reliability – Lower component count and lower operating temperatures.

›Double Conversion

In normal operation, all incoming AC power is rectified to DC power, supplying the DC bus. The output inverter then inverts the DC power to AC power to support the critical loads. When the AC input is lost or goes out of range, the UPS draws power from its battery so that AC output is not affected. Because the AC input with its spikes, voltage blips and anomalies is first converted to DC, there is less need for using the battery when these AC input variances occur. Less battery usage preserves battery capacity for extended outages and extends battery service life.

Maximizing battery service life and the cost associated with it can offset the advantage of the lower initial purchase and operating costs of a line-interactive UPS thus making the overall cost similar. Situations that might call for a double-conversion on-line UPS are those that require power factor correction (PFC), small physical size or loads where any transfer time is unacceptable.

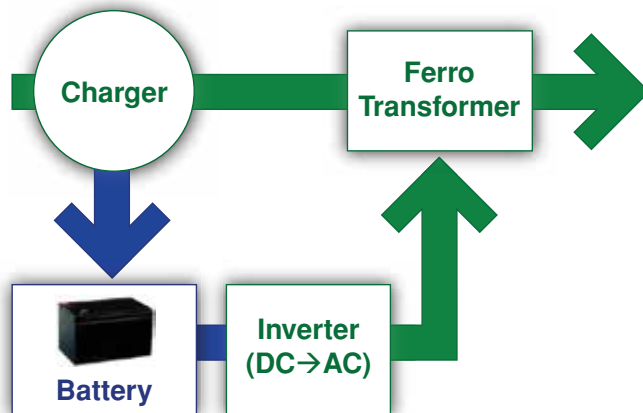


Advantages of double-conversion topology

- Operates less often from battery when the input voltage is highly distorted or wildly fluctuating
- Power factor correction (PFC) provided, regardless of load type
- More compact and lightweight, especially at higher power levels

➤Controlled Ferroresonant

The Ferroresonant Topology is similar to a Line Interactive topology with the addition of a ferroresonant transformer to offer constant output voltage regardless of the state of the input voltage. In both normal mode and battery mode, all output is first filtered through a ferroresonant transformer isolating the output. This also provides for a seamless transfer to UPS power and offers galvanic isolation to isolate the output from the input. Auto Voltage Regulation (AVR) is managed through Buck and Boost Mode.



Advantages of controlled ferroresonant topology

- Best spike and surge protection with output isolation
- Zero transfer time
- Good MTBF as inverter is in standby mode except during outages
- Batteries are not used in a brown-out condition

UPS Selection Considerations

Uninterruptible Power Supply selection guide

To help us design an Uninterruptible Power Supply (UPS) solution for your specific application, please review the following questions prior to contacting your Alpha representative:

›What is the type of application and what specific systems/devices will be backed up?

PBX, cell site, server, traffic, parking, security or other.

›What are the environmental conditions?

Indoor: Controlled environment, air conditioned, dust free

Outdoor: Non-controlled environment: snow, rain, elevation, humidity, dust etc.

Minimum ambient temperature surrounding the UPS

Maximum ambient temperature surrounding the UPS

›Where will the UPS be located (country, city/town)?

›What are the power requirements?

Volt-amps (VA) or Watts required by load

Input voltage to UPS and output voltage(s) to load

Frequency (Hz) 50 or 60

Type of loads: Motor loads, inductive loads

›How much backup time is required?

The amount of time in hours or minutes the UPS will operate on batteries when the utility power fails

The expected frequency of utility power failures: eg., once/year, twice/month

›How will the UPS be mounted?

Indoor applications: rack, tower, wall

Outdoor applications: pole, ground (is a pedestal required?), or wall

›What are the input/output configuration requirements?

Input plug type or terminal block

Output receptacle type(s) or terminal block

›Are any accessories required?

Bypass Switch (auto/manual), Ethernet/SNMP, Battery Heater Mats, Battery Management System, Enclosures, Racks

›What warranty/service needs are required?

Is extended warranty required? Periodic or special servicing needs? Installation/commissioning services?

›What quantities are needed?

Number of units required and when



FXM 350

- 350W/VA total output uninterruptible power supply module in small form factor provides cost efficient solution for various applications
- Multiple AC and DC output options, including 120Vac, 24Vac and 48/24/12Vdc makes this UPS suitable for applications with diverse loads*
- External communication via USB port and Ethernet SNMP interface provides local or remote monitoring and control
- Independently programmable and dry contact relays allow tracking and controlling of key functions
- Wide Automatic Voltage Regulation (AVR) range allows continuous operation without transferring to backup mode during voltage surge or sag
- A wide operating temperature range of -40 to 74°C (-40 to 165°F) is suitable for the most extreme operating environments
- Optional distribution enables easy integration with both AC and DC devices

Electrical

> North America

Battery string voltage:.....48/24Vdc

Input:

Voltage:Nominal 120Vac
Range: 84 to 142V
(without transferring to battery mode)
Current:.....3.1A nominal
Frequency:60Hz +/- 5Hz

Charger current:

0-6A selectable in 1A increments (24Vdc battery bus version)
0-4A selectable in 1A increments (48Vdc battery bus version)

Regulation:.....±10% over full input voltage range

Waveform:.....Pure sine wave

Output:

Voltage:120Vac, 24Vac, 48/24/12Vdc*
Current:.....2.92A nominal
Power at 50°C:.....350 W/VA

> International

Battery string voltage:.....48/24Vdc

Input:

Voltage:Nominal 230Vac
Range: 150 to 328V
Current:.....1.6A nominal
Frequency:50Hz +/- 5Hz

Charger current:

0-6A selectable in 1A increments (24Vdc battery bus version)
0-3A selectable in 1A increments (48Vdc battery bus version)

Regulation:.....±10% over full input voltage range

Waveform:.....Pure sine wave

Output:

Voltage:230Vac, 24Vac, 24Vdc, 48Vdc*
Current:.....1.52A nominal
Power at 50°C:.....350 W/VA

Mechanical

Dimensions:

mm:.....89H x 340W x 198D
Inches:.....3½H x 13¼W x 7.8D

Weight:.....8.62kg (19lbs)

Environmental

Operating

temperature range*:.....-40 to 74°C (-40 to 165°F)

Audible noise @ 25°C:.....45dBa @ 1 metre (39in)

*Derates after 60°C)

Performance

Typical output voltage THD: ...<5%

Typical efficiency:.....>95% (resistive load)

Typical transfer time:.....<5ms

Agency Compliance

Electrical safety:.....UL1778, CSA22.2, No. 107.3, EN60950-1-2

Marks:  

EMI:FCC Class A / CISPR22

*Some output voltages may require distribuion; 48Vdc output requires 48V battery string

FXM 650
UPS Module



FXM 650

- Clean, uninterruptible backup power ensures your system will remain running during power outages
- Wide range Automatic Voltage Regulation without going to batteries lengthens battery life, even during periods of surge or sag in the line voltage
- External communications via RS-232 port or (optional) Ethernet SNMP interface provides local or remote monitoring and control
- Independently programmable and dry contact relays allow tracking and controlling of key functions
- A wide operating temperature range of -40 to 74°C (-40 to 165°F) is suitable for the most extreme operating environments
- Temperature compensated battery charging protects batteries from over charging at extreme temperatures, extending the life of the battery
- White text on blue display improves readability in bright daylight

Consult your Alpha representative for P/N configurations

Electrical

>North America

Battery string voltage:.....24Vdc/48Vdc
Nominal voltage: 120Vac
Nominal frequency:.....Auto-sensing
Input:
Current:.....5.6A nominal
Voltage:85 to 175Vac
Output:
Current:.....5.4A nominal (no charge current)
Voltage regulation: +/- 10% over input voltage range
Power at 55°C:.....650W/VA
Charge current: 10A max

>International

Battery string voltage:.....24Vdc
Nominal voltage:230Vac
Nominal frequency:.....Auto-sensing
Input:
Current:.....3.0A nominal
Voltage range: 150 to 328Vac
Output:
Current:.....2.8A nominal
Voltage regulation +/- 10% over input voltage range
Power at 55°C:.....650W/VA

Mechanical

Dimensions:
mm:.....88H x 432W x 229D
inches:3.47H x 17W x 9D
Weight: 11kg (25lbs)

Environmental

Operating
temperature range*:-40 to 74°C (-40 to 165°F)
Audible noise @ 25°C:.....45dBa @ 1 metre (39in)
*Derates after 55°C

Performance

Typical output voltage THD: <3%
Typical efficiency:.....>98% (resistive load)
Typical transfer time:.....<5ms

Agency Compliance

Electrical safety:.....UL1778, CSA 22.2 No 107.3-03
Marks:cCSA_{US}/CE**
EMI:Class A FCC/CISPR
[EN 50091-2:1995]

**CE applies to 230 Vac version only

FXM 1100

UPS Module



FXM 1100

- Clean, uninterruptible backup power ensures your system will remain running during power outages
- Wide range Automatic Voltage Regulation without going to batteries lengthens battery life, even during periods of surge or sag in the line voltage
- External communications via RS-232 port or (optional) Ethernet SNMP interface provides local or remote monitoring and control
- Independently programmable and dry contact relays allow tracking and controlling of key functions
- A wide operating temperature range of -40 to 74°C (-40 to 165°F) is suitable for the most extreme operating environments
- Temperature compensated battery charging protects batteries from over charging at extreme temperatures, extending the life of the battery
- White text on blue display improves readability in bright daylight

Consult your Alpha representative for P/N configurations

Electrical

➤ North America

Battery string voltage:.....48Vdc
 Nominal voltage:120Vac
 Nominal frequency:.....Auto-sensing
 Input:
 Current:.....9.7A nominal
 Voltage:85 to 175Vac

Output:
 Current:.....9.2A nominal
 Voltage regulation: +/- 10% over input voltage range
 Power at 50°C:.....1100W/VA

➤ International

Battery string voltage:.....48Vdc
 Nominal voltage:230Vac
 Nominal frequency:.....Auto-sensing
 Input:
 Current:.....8.0A nominal
 Voltage range:150 to 328Vac

Output:
 Current:.....5.1A nominal
 Voltage regulation: +/- 10% over input voltage range
 Power at 50°C:.....1100W/VA

Mechanical

Dimensions:

mm:.....133H x 394W x 222D
 inches:5.22H x 15.5W x 8.75D

Weight:16kg (35lbs)

Environmental

Operating

temperature range*:-40 to 74°C (-40 to 165°F)
 Audible noise @ 25°C:.....45dBa @ 1 metre (39in)

*Derates after 55°C

Performance

Typical output voltage THD: <3%
 Typical efficiency:.....>98% (resistive load)
 Typical transfer time:.....<5ms

Agency Compliance

Electrical safety:.....UL1778, CSA 22.2 No 107.3-03
 Marks:CSA_{US}/CE**
 EMI:Class A FCC/CISPR
 [EN 50091-2:1995]

**CE applies to 230Vac version only

FXM 2000

UPS Module



FXM 2000

- Clean, uninterruptible backup power ensures your system will remain running during power outages
- Wide range Automatic Voltage Regulation without going to batteries saves energy and lengthens battery life, even during periods of surge or sag in the line voltage
- External communications via RS-232 port or (optional) Ethernet SNMP interface provides local or remote monitoring and control
- Independently programmable and dry contact relays allow tracking and controlling of key functions
- Event and alarm logging with time and date stamping simplifies and accelerates troubleshooting
- A wide operating temperature range of -40 to 74°C (-40 to 165°F) is suitable for the most extreme operating environments
- Temperature compensated battery charging protects batteries from over charging at extreme temperatures, extending the life of the battery
- White text on blue display improves readability in bright daylight

Consult your Alpha representative for P/N configurations

Electrical

➤ North America

Battery string voltage:.....48Vdc
Nominal voltage:120Vac
Nominal frequency:Auto-sensing
Input:
Current:.....17.5A nominal
Voltage:85 to 150Vac

Output:
Current:.....16.7A nominal
Voltage regulation: +/- 10% over input voltage range
Power at 50°C:.....2000W/VA

➤ International

Battery string voltage:.....48Vdc
Nominal voltage:230Vac
Nominal frequency:Auto-sensing
Input:
Current:.....9.15A nominal
Voltage range:150 to 281Vac

Output:
Current:.....8.7A nominal
Voltage regulation: +/- 10% over input voltage range
Power at 50°C:.....2000W/VA

Mechanical

Dimensions:

mm:.....133H x 394W x 222D
inches:5.22H x 15.5W x 8.75D

Weight:16kg (35lbs)

Environmental

Operating

temperature range*:-40 to 74°C (-40 to 165°F)

Audible noise @ 25°C:45dBa @ 1 metre (39in)

*120Vac module derates after 50°C. 230Vac module derates after 55°C

Performance

Typical output voltage THD: <3%

Typical efficiency:.....>98% (resistive load)

Typical transfer time:.....<5ms

Agency Compliance

Electrical safety:.....UL1778, CSA 22.2 No 107.3-03

Marks:cCSA_{US}/CE**

EMI:Class A FCC/CISPR
[EN 50091-2:1995]

**CE applies to 230 Vac version only

Micro Secure 100

UPS System



Micro Secure 100

- All weather protection with durable outdoor NEMA 3R rated plastic enclosure
- Enhanced battery life with wide-range Automatic Voltage Regulation
- Local or remote monitoring and control through RS-232 port or (optional) SNMP Ethernet interface
- Independently programmable relays allow tracking and controlling of key functions
- Simplified troubleshooting through event and alarm logging with time and date stamping
- Maximum mounting flexibility for accommodation of space requirements*

Consult your Alpha representative for P/N configurations

Electrical

➤ **North America**

Battery string voltage:24Vdc
Input:
Nominal voltage:120Vac
Nominal frequency:60Hz
Current:2.0A
Voltage range:85 to 150Vac
Output current:0.83A @ 120Vac
4.2A @ 24Vac

➤ **International**

Battery string voltage:24Vdc
Input:
Nominal voltage:230Vac
Nominal frequency:50Hz
Current:1.0A
Voltage range:154 to 323Vac
Output current:
4.2A @ 24Vac:0.43A @ 230Vac

Mechanical

Dimensions:
mm:292H x 381W x 152D
inches:11.5H x 15W x 6D
Weight
(with 4 x 9Ah batteries):20.4kg (45lbs)

Environmental

Operating
temperature range*:-40 to 50°C (-40 to 122°F)
Audible noise @ 25°C:45dBa @ 1 metre (39in)

Performance

Run time**:2 hrs 15 mins @ full load

Agency Compliance

Electrical safety:UL1778, CSA 22.2 No. 107.1
Marks:cCSA_{US}, CE***
EMI:Class A FCC/CISPR, EN50091-1-2,
EN60950
NEMA:3R

*Mounting brackets sold separately
**Using 4 x 9Ah batteries @ 25°C.
***CE applies to 230 Vac version only

Micro 350

UPS and enclosure

NEW

- Integrated backup power system designed to operate in extreme environments and provide maximum flexibility in ensuring critical loads remain up and running during power outages
- 350W/VA total output in AC and/or DC including 120Vac, 24Vac, 48Vdc, 24Vdc and 12Vdc enables application with diverse load requirements*
- Temperature compensated battery charging and battery heater mat option provides prolonged battery life and operation at extreme temperatures
- Wide range of input with Automatic Voltage Regulation (AVR) extends battery life by not reverting to batteries during periods of surge or sag in utility power voltage
- External communication via USB port and Ethernet SNMP interface provides local or remote monitoring and control
- Optional distribution panel enables easy integration with both AC and DC devices



Micro 350

Electrical

North America

Battery string voltage:.....48Vdc/24Vdc
Input voltage:Nominal 120Vac
Range: 84 to 142V
(without transferring to backup mode)
Input current:.....3.1A nominal
Input frequency:60Hz +/- 5Hz
Charger current:
0-6A selectable in 1A increments (24Vdc battery bus version)
0-4A selectable in 1A increments (48Vdc battery bus version)
Output voltage:.....120Vac, 24Vac, 48Vdc/24Vdc*
Regulation:±10% over full input voltage range
Waveform:Pure sine wave
Output current:.....2.92A nominal
Output power at 50°C:350 W/VA

International


Battery string voltage:.....48/24Vdc
Input voltage:Nominal 230Va
Range: 150 to 328V
Input current:.....1.6A nominal
Input frequency:50Hz +/- 5Hz
Charger current:
0-6A selectable in 1A increments (24Vdc battery bus version)
0-3A selectable in 1A increments (48Vdc battery bus version)
Output voltage:.....230Vac, 24Vac, 24Vdc, 48Vdc*
Regulation:±10% over full input voltage range
Waveform:Pure sine wave
Output current:.....1.52A nominal
Output power at 50°C:350 W/VA


*Output voltages depend on specific unit. Contact your Alpha Sales Representative to determine the unit best suited to your needs.


Performance

Typical output voltage THD: ...<5%
Typical efficiency:..... >95% (resistive load)
Typical transfer time:..... <5ms
Runtime: 2 x 50Ah
Batteries; 2hrs 15 mins

Mechanical

	➤ Alpha Micro		
	Dimensions	mm	500H x 358W x 294D
		inches	19.7H x 14.1W x 11.6D
Weight (without batteries)		25kg (56lbs)	

	➤ Alpha Micro XL		
	Dimensions	mm	776H x 358W x 294D
		inches	30.6H x 14.1W x 11.6D
Weight (without batteries)		29kg (65lbs)	

	➤ Alpha Micro XL3		
	Dimensions	mm	1330H x 358W x 294D
		inches	52.4H x 14.1W x 11.6D
Weight (without batteries)		33kg (74lbs)	

Environmental

Temperature range:..... -40 to 50°C (-40 to 122°F) de-rated up to 74°C
Humidity: 15% to 95% RH non condensing
Audible noise@25°C: <45dBa @ 1 metre (39in)

Agency Compliance

Electrical safety:..... UL1778, CSA22.2, No.107.3, CE: EN60950-1-2

Marks:  

EMI:FCC Class A / CISPR22

Alpha Micro 1000

UPS and enclosure

- Compact, integrated UPS system provides clean, uninterruptable backup power
- Wide range Automatic Voltage Regulation without going to batteries extends battery life, even during periods of surge or sag in voltage from utility power
- External communications via RS-232 port or (optional) Ethernet SNMP interface provides local or remote monitoring control
- Independently programmable control and report relays allow tracking and controlling of key functions
- Event and alarm logging with time and date stamping simplifies and accelerates troubleshooting
- A wide operating temperature range of -40 to 74°C (-40 to 165°F)* is suitable for most extreme operating environments
- Temperature compensated battery charging protects batteries from over charging at extreme temperatures



Micro 1000

Consult your Alpha representative for P/N configurations

Electrical

➤ North America

Battery string voltage:48Vdc

Input:

Nominal voltage:120Vac

Nominal frequency:60Hz

Current:8.8A nominal

Voltage range:85 to 175Vac

Output:

Current:8.3A nominal

Voltage regulation: +/- 10% over input voltage range

Power @ 50°C:1000W/VA

➤ International

Battery string voltage:48Vdc

Input:

Nominal voltage:230Vac

Nominal frequency:50Hz

Current:4.6A nominal

Voltage range:150 to 328Vac

Output:

Voltage:230Vac

Current:4.3A nominal

Voltage regulation: +/- 10% over input voltage range

Power @ 50°C:1000W/VA

Performance

Typical output voltage THD: <3%

Typical efficiency:>98% (resistive load)

Typical transfer time:<5ms

Run time**:4 x 50Ah batteries - 1 hrs 14 mins (Micro XL)

Mechanical

	➤ Alpha Micro		
	Dimensions	mm	500H x 358W x 294D
		inches	19.7H x 14.1W x 11.6D
	Weight (without batteries)		19.7kg (43.4lbs)

	➤ Alpha Micro XL		
	Dimensions	mm	776H x 358W x 294D
		inches	30.6H x 14.1W x 11.6D
	Weight (without batteries)		19.7kg (49.8lbs)

	➤ Alpha Micro XL3		
	Dimensions	mm	1330H x 358W x 294D
		inches	52.4H x 14.1W x 11.6D
	Weight (without batteries)		22.6kg (69.2lbs)

Environmental

Temperature range: -40 to 50°C (-40 to 122°F) de-rated up to 74°C

Humidity: 15% to 95% RH non condensing

Audible noise@25°C: <45dBa @ 1 metre (39in)

Agency Compliance

Electrical safety:UL1778, CSA 22.2 No. 107.3, EN50091-1-2, EN60950

Marks:CSA_{US}, CE***

EMI:Level A FCC, CISPR22, EN55022

NEMA:3R

* This applies to the UPS module only. Batteries may require a heater mat at lower temperatures. Output power derates after 50°C

**Run time on battery power can vary based on loads, temperature and battery. Other battery options are available.

***CE applies to 230Vac version only

- 1kVa to 3kVa
- One of the highest MTBF in the UPS industry - lowers total cost of ownership
- Complete input to output isolation provides complete surge and lightning protection for sensitive loads
- The CFR's controlled output voltage design provides efficiency ratings up to 92%, saving energy
- Features a RS-232 communication port and is SNMP and modem compatible for monitoring from any Internet connection location



CFR

Consult your Alpha representative for P/N configurations

Electrical

Input

Operating voltage range: -23 to 10%
 Frequency operating range:..... ±1.4Hz
 Power factor 0.95 to 0.99
 Current THD: 5% Typical

Output:

Waveform: Pure sine wave
 Voltage regulation: ±1%
 Typical voltage THD: <5% 1kVA to 5kVA
 Inverter frequency stability: ±0.1%
 Spike attenuation: 2000 to 1

Environmental

Operating temperature: 0 to 40°C (32 to 104°F)
 Audible noise: 40dBA Typical @ 1m

Communications

All Alpha CFR products feature RS-232 communication ports and are SNMP and modem compatible. The following is a list of optional communication, monitoring and control products:

SNMP agent: Furnishes real time UPS/power status to Network Power Management Software.

Application Specific Models

CFR-NT: Specifically designed to be compatible with Northern Telecom Meridian telephone switches and other telephony products
 CFR-E: 50Hz configuration

Plug and receptacle diagram

5-15P	5-15R	CS6361
5-30P	5-30R	Terminal block
5-20P	5-20R	British
5-50P	L5-15R	Schuko
L5-15P	L5-20R	Australian
L5-30P	L5-30R	
L6-30P	L6-20R	
	L6-30R	

Warranty

UPS warranty:24 month limited warranty
 Battery:.....24 month limited warranty

Agency Compliance

Lightning &
 surge protection:ANSI C62.41-1980 (IEEE 587)

Nominal Specifications

Model number:	CFR 1000 CFR 1000 E	CFR 1500 CFR 1500 E CFR 1500 NT	CFR 2000 CFR 2000 E CFR 2000 NT	CFR 2500 CFR 2500 E CFR 2500 NT	CFR 3000 CFR 3000 E CFR 3000 NT
Output power rating	1000VA/750W	1500VA/1000W	2000VA/1334W	2500VA/1667W	3000VA/2000W
60Hz models (CFR, CFR-NT & CFR-M)					
Input voltage (Vac) nominal	120	120/208/240	120/208/240	120/208/240	120/208/240
Output voltage (Vac) nominal	120	120/208/240	120/208/240	120/208/240	120/208/240
50Hz models (CFR-E)					
Input/Output voltage (Vac) nominal	230	230	230	230	230
Typical efficiency - AC/AC 100% load	90%	90%	90%	90%	90%
Typical heat output - line mode	284 BTU/h	427 BTU/h	398 BTU/h	636 BTU/h	758 BTU/h
Mechanical					
Dimensions	inches	10H x 8.5W x 20D	21H x 8.5W x 22.5D	21H x 8.5W x 22.5D	21H x 8.5W x 22.5D
	mm	254H x 216W x 508D	533H x 216W x 571D	533H x 216W x 571D	533H x 216W x 571D
60Hz weight	42kg (92lbs)	69kg (151lbs)	78kg (171lbs)	84kg (185lbs)	128kg (283lbs)
60Hz ship weight	44kg (97lbs)	73kg (162lbs)	83kg (182lbs)	91kg (200lbs)	142kg (312lbs)
50Hz weight	42kg (93lbs)	74kg (163lbs)	82kg (181lbs)	86kg (190lbs)	142kg (313lbs)
50Hz ship weight	44kg (98lbs)	79kg (174lbs)	87kg (192lbs)	93kg (205lbs)	151kg (332lbs)
Internal battery runtime 100%*	12min	18min	15min	10min	27min
Internal battery recharge time (to 80% of capacity)	5hrs typical	5hrs typical	5hrs typical	5hrs typical	5hrs typical
Extended battery runtime options*					
A. External Battery Pack	EBP 24C	EBP 48A	EBP 48A	EBP 48A	EBP 48A
Total runtime**	2hrs 12min	1hr 39min	1hr 10min	52min	1hr 15min
B. External Battery Pack	EBP 24E	EBP 48E	EBP 48E	EBP 48E	EBP 48E
Total runtime**	5hrs 12min	3hrs 45min	2hrs 48min	2hrs 10min	2hrs 30min
60Hz power connector options†					
Input: CFR, CFR-C, CFR-M, CFR-RM models	5-15P	5-15P T. B. L5-15P	5-20P T. B. L5-20P	5-30P L5-30P L6-30P T. B.	5-30P L5-30P L6-30P Terminal Block
CFR-NT models	N/A	L6-30R	L6-30R	L6-30R	L6-30
Output: CFR, CFR-C, CFR-M, CFR-RM models	5-15R L5-15R	5-15R 5-20R 6-20R L5-15R L5-20R L5-30R L6-20R 5-30R L6-30R T. B.	5-15R 5-20R 6-20R L5-15R L5-20R L5-30R L6-20R 5-30R L6-30R T. B.	5-15R 5-20R 6-20R L5-15R L5-20R L5-30R L6-20R 5-30R L6-30R T. B.	5-15R 5-20R 6-20R L5-15R L5-20R L5-30R L6-20R 5-30R L6-30R Terminal Block
CFR-NT models	N/A	5-15R 2-L6-30R	5-15R 2-L6-30R	5-15R 2-L6-30R	5-15R 2-L6-30R
50Hz power connector options†					
Input /Output: CFR-E models	British Australian Schuko	British Australian Schuko	British Australian Schuko	British Australian Schuko T.B.	British Australian Schuko T.B.

* Battery runtimes are calculated at 100% rated loads and will vary according to battery age, loads, temperature and other factors.

** Total runtime include the internal batteries and the External Battery Pack (EBP) at 100% load.

*** Contact factory for 5kVA configurations.

† Refer to Plug and Receptacle Diagram: See page 54

- Maximum power protection for complete isolation and uninterruptible power, assuring the ongoing performance of sensitive medical equipment
- Meets demanding UL 60601-1 medical safety standards, allowing use in most medical and healthcare environments
- Low current leakage supports patient vicinity equipment
- Optional external battery packs greatly extend backup time
- Generator compatibility meets even the longest runtime requirements

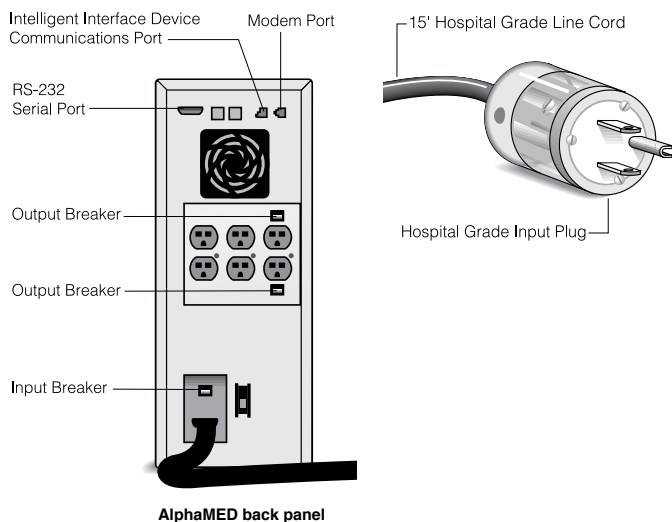


Output Power Connector Configuration Options

- 1) Any combination of 3 or less duplex receptacles.
 - 2) Any combination of 2 or less single receptacles.
 - 3) Any duplex receptacle with any single receptacle.
 - 4) Single terminal block.
- (Other Configurations may be available)

Agency Compliance

Marks: CSA 107.1-01, CAN/CSA 601.1-M90
Safety: UL 1778 (2nd Edition), UL Std No 60601-1 (1st Edition)



Power Connector Options

Input: Hospital Grade NEMA STD

5-15P	5-15P	5-20P
L5-15P	5-20P	6-15P
	6-15P	6-20P
	6-20P	

Output: Hospital Grade NEMA STD

5-15R	5-15R	5-20R	6-20R
L5-15R	5-15R	5-20R	6-20R

Nominal Specifications

Model number		AlphaMED® 1000 AlphaMED® 1000E	AlphaMED® 1500 AlphaMED® 1500E	AlphaMED® 2000 AlphaMED® 2000E	AlphaMED® 2500 AlphaMED® 2500E	AlphaMED® 3000 AlphaMED® 3000E
Output power rating		1000VA/750W	1500VA/1000W	2000VA/1334W	2500VA/1667W	3000VA/2000W
Input/Output voltage (Vac)		120	120/208/240*	120/208/240*	120/208/240*	120/208/240*
Nominal		230	230	230	230	230
Typical efficiency - AC/AC 100% load		90%	90%	90%	90%	90%
Typical THD		5%	5%	5%	5%	5%
Typical heat output - Line mode			427 BTU/h	398 BTU/h	636 BTU/h	758 BTU/h
Audible noise at 1m		<38dBA	<38dBA	<39dBA	<39dBA	<39dBA
Waveform		sine	sine	sine	sine	
Noise attenuation						
Common mode (100k to 1MHz)		-120dB	-120dB	-120dB	-120dB	-120dB
Normal mode (100k to 1MHz)		-60dB	-60dB	-60dB	-60dB	-60dB
Operation temperature		0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)
Mechanical						
Dimensions	inches	10H x 8.5W x 20D	21H x 8.5W x 22.5D	21H x 8.5W x 22.5D	21H x 8.5W x 22.5D	21H x 8.5W x 29.5D
	mm	254H x 216W x 508D	533H x 216W x 571D	533H x 216W x 571D	533H x 216W x 571D	533H x 216W x 749D
Weight		42kg (92lbs)	69kg (151lbs)	78kg (171lbs)	84kg (185lbs)	128kg (283lbs)
Internal battery runtime**			18min	15min	10min	27min
Max. battery charger current		3A	3A	3A	3A	3A
Battery recharge time		5 hrs typical	5hrs typical	5hrs typical	5hrs typical	5hrs typical
Extended battery run time options*						
A. External Battery Pack (EBP)		EBP 24C	EBP 48A	EBP 48A	EBP 48A	EBP 48A
Total runtime***		2hts 12min	1hr 39min	1hr 10min	52min	1hr 15min
B. External Battery Pack (EBP)		EBP 24E	EBP 48E	EBP 48E	EBP 48E	EBP 48E
Total runtime***		5hrs 12min	3hrs 45min	2hrs 48min	2hrs 10min	2hrs 30min

* Factory configured

** Battery runtimes are calculated at 100% load and will vary according to battery age, loads, temperature and other factors.

*** Total runtime include the internal batteries and the External Battery Pack (EBP).

EBP Options

Alpha's plug-in External Battery Packs provide extended backup for all CFR models including AlphaMEDs. All battery packs are shipped fully assembled and include interconnecting cables. Longer runtimes are obtained by cascading additional battery cabinets.

Available for CFR 1500, 2500, 3000

Battery pack 48V

 EBP 48A Dimensions: inches: ... 10.5H x 8.5W x 10.5D mm: 267H x 216W x 267D Weight: 58kg (127lbs) Capacity: 33Ah	 EBP 48E Dimensions: inches: ... 21.5H x 8.5W x 21.5D mm: 546H x 216W x 546D Weight: 141kg (312lbs) Capacity: 88Ah	 EBP 1275-48R Dimensions: inches: 30.3H x 22.0W x 31.5D mm: 770H x 660W x 800D Weight: 411kg (905lbs) Capacity: 264Ah
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Sentra 750 - 3000

Line-interactive Sine Wave UPS

NEW

- Highly efficient line interactive sine wave UPS with 0.9 output power factor
- Rack/tower convertible design with rotating LCD panel provides compact and flexible form factor
- Advanced Automatic Voltage Regulation (AVR) lengthens battery life
- USB and RS232 interfaces, plus customer definable slot, provide additional communication flexibility
- Hot swappable battery function facilitates ease of maintenance



Sentra Rack Configuration



Sentra Tower Configuration

Technical Specifications					
Models	Sentra 750	Sentra 1000	Sentra 1500	Sentra 2200	Sentra 3000
Input					
Acceptable Voltage Range	83-159Vac or 160-300Vac				
Voltage Window	110/120/127Vac or 220/230/240Vac +/-25%				
Frequency	45~65Hz (auto-sensing)				
Phase	Single phase + ground				
Output					
Voltage Range (Vac) Battery Mode	110/120/127Vac or 220/230/240Vac +/-5%				
Frequency	50/60Hz Auto-sensing				
Capacity	750VA/750W	1000VA/900W	1500VA/1350W	2100VA/1920W	3000VA/2700W
Wave Form	Pure Sine Wave				
Transfer Time	4-6ms typical				
Efficiency	Line Mode: Up to 95%; Boost/Buck Mode: Up to 94%				
Cold Start	Yes				
Battery					
Type	Sealed Lead Acid Maintenance-free				
Capacity	12V/7AH	12V/7AH	12V/9AH	12V/7AH	12V/9AH
Quantity	3	3	3	6	6
Voltage	36V	36V	36V	72V	72V
Autonomy (80% load)	8.5 mins	6.8 mins	5.1 mins	5.0 mins	5.1 mins
Recharge Time	5 hours to 90% after complete discharge at 100% load				
Display					
Status on LCD	Line bypass, AVR Boost(Buck), Backup, Battery Level, Battery Low, Load				
	Level, Battery Fault, UPS Fault				
Status on LED	Line Mode, Battery Mode & Fault				
Self-diagnostics	Upon Power On and Software Control				

Protection						
Overload	Line Mode	>100%-110% buzzer alarms only				
		>110%-120% for 10 min. and then shutdown				
		>120% shutdown after 1 cycle				
	Battery Mode	>100%-120% buzzer alarms only				
		>120%-130% shutdown after 10 sec.				
		>130% shutdown after 1 cycle				
Short Circuit	Line Mode	Resettable Breaker				
	Battery Mode	Electronic Circuit				
Battery Low		Alarm and Switch Off				
EPO		UPS shuts down immediately				
Battery		Electronic System of Management of Battery Discharge				
Heat Dissipation		48W	48W	72W	105W	143W
Alarms						
Acoustics & display		Mains Fault, Low Battery, Overload and Fault conditions				
Mechanical						
Dimensions	mm	88H x 440W x 412D			88H x 440W x x 657D	
	inches	3.5H x 17.3W x 16.2D			3.5H x 17.3W x 25.9D	
Input Connectors	120Vac	NEMA5-15P			NEMA 5-20P	NEMA L5-30P
	230Vac	IEC-320-C14			IEC-320-C20	
Output Connectors	120Vac	(8) NEMA 5-15R			(6) NEMA 5-15R (2) NEMA 5-20R	(5) NEMA 5-15R (2) NEMA 5-20R (1) NEMA L5-30R
	230Vac	(8) IEC-320-C13			(8) IEC-320-C13, (1) IEC-320-C19	
Net Weight	120Vac	19.7kg (43lbs)	19.7kg (43lbs)	21.1kg (47lbs)	34.6kg (76lbs)	38.2kg (84lbs)
	230Vac	15kg (33lbs)	19.4kg (43lbs)	20.9kg (46lbs)	33.8kg (75lbs)	37.2kg (82lbs)
Environment						
Operating Temperature		0 to 40°C (30 to 104°F)				
Warning Temperature		The battery design life is based on a temperature of 25°C (77°F)				
		Ambient temperature above this range will affect battery life				
Altitude		0-2000M up to 40°C (104°F); 0~3000M up to 35°C (95°F)				
Humidity		90% RH Maximum, No Condensing				
Noise		Line Mode: 40 dB Max; Bat. Mode: 45 dB Max.				
Computer Interface						
Interface Type		Standard RS232 and USB				
Communication Slot		Dry Contact Card or SNMP card				
Compatible Platforms		Windows 95/98/NT/2000/XP/Vista/Win7, Novell Netware, Linux, Mac				
Agency Compliance						
Quality		ISO 9001 certified manufacturing				
Security		EN62040-1-1, UL1778				
Standard EMC		EN62040-2, EN61000-3-2, FCC Class A				
Marking		CE, UL, cUL, FCC				

Sentra XL 1000 - 3000

Line-interactive Sine Wave UPS

NEW

- Highly efficient line interactive sine wave UPS with 0.9 output power factor
- Optional external battery cabinets with "daisy-chainable" connections and dependable high rate charger provide extended backup and optimal runtime
- Rack/tower convertible design with rotating LCD panel provides compact and flexible form factor
- Advanced Automatic Voltage Regulation (AVR) lengthens battery life
- Hot swappable battery function facilitates ease of maintenance
- USB and RS232 interfaces, plus customer definable slot, provide additional communication flexibility



Sentra XL Rack Configuration



Sentra XL Tower Configuration

Specifications

Models	Sentra XL 1000	Sentra XL 1500	Sentra XL 2200	Sentra XL 3000
Input				
Acceptable Voltage Range	83-159Vac or 160-300Vac			
Voltage Window	110/120/127Vac or 220/230/240Vac +/-25%			
Frequency	45~65Hz (auto-sensing)			
Phase	Single phase + ground			
Output				
Voltage Range Battery Mode	110/120/127Vac or 220/230/240Vac +/-5%			
Frequency	50/60Hz Auto-sensing			
Capacity	1000VA/900W	1500VA/1350W	2100VA/1920W	3000VA/2700W
Wave Form	Pure Sine Wave			
Transfer Time	4-6ms typical			
Efficiency	Line Mode: Up to 95%; Boost/Buck Mode: Up to 94%			
Cold Start	Yes			
Battery				
Type	Sealed Lead Acid Maintenance-free			
Capacity	12V/7AH	12V/9AH	12V/7AH	12V/9AH
Quantity	4	4	8	8
Voltage	24V	24V	48V	48V
Autonomy (80% load)	8.6 mins	7.1 mins	7.9 mins	7.3 mins
Recharge Time	5 hours to 90% after complete discharge at 100% load			
Display				
Status on LCD	Line bypass, AVR Boost (Buck), Backup, Battery Level, Battery Low, Load			
	Level, Battery Fault, UPS Fault			
Status on LED	Line Mode, Battery Mode & Fault			
Self-diagnostics	Upon Power On and Software Control			

Protection					
Overload	Line Mode	>100%-110% buzzer alarms only			
		>110%-120% for 10 min. and then shutdown			
		>120% shutdown after 1 cycle			
	Battery Mode	>100%-120% buzzer alarms only			
		>120%-130% shutdown after 10 sec.			
		>130% shutdown after 1 cycle			
Short Circuit	Line Mode	Resettable Breaker			
	Battery Mode	Electronic Circuit			
Battery Low		Alarm and Switch Off			
EPO		UPS shuts down immediately			
Battery		Electronic System of Management of Battery Discharge			
Heat Dissipation		96W	108W	192W	216W
Alarms					
Acoustics & display		Mains Fault, Low Battery, Overload and Fault conditions			
Mechanical					
Dimensions	mm	88H x 440W x 491D		88H x 440W x 701D	
	inches	3.5H x 17.3W x 19.3D		3.5H x 17.3W x 19.3D	
Input Connectors	120Vac	NEMA 5-15P		NEMA 5-20P	NEMA L5-30P
	230Vac	IEC-320-C14		IEC-320-C20	
Output Connectors	120Vac	(6) NEMA 5-15R		(4) NEMA 5-15R, (2) NEMA 5-20R	(4) NEMA 5-15R, (2) NEMA 5-20R, (1) NEMA L5-30R
	230Vac	(6) IEC-320-C13		(6) IEC-320-C13, (1) IEC-320-C19	
Net Weight	120Vac	25kgs (51lbs)	27.8kgs (61lbs)	41.8kgs (92lbs)	47.8kgs (105lbs)
	230Vac	25kgs (51lbs)	27.8kgs (61lbs)	42kgs (93lbs)	46.2kgs (102lbs)
Environment					
Operating Temperature		0 to 40°C (30 to 104°F)			
Warning Temperature		The battery design life is based on a temperature of 25°C (77°F)			
		Ambient temperature above this range will affect battery life			
Altitude		0-2000M up to 40°C (104°F); 0~3000M up to 35°C (77°F)			
Humidity		90% RH Maximum, No Condensing			
Noise		Line Mode: 40 dB Max; Bat. Mode: 45 dB Max.			
Computer Interface					
Interface Type		Standard RS232 and USB			
Communication Slot		Dry Contact Card or SNMP card			
Compatible Platforms		Windows 95/98/NT/2000/XP/Vista/Win7, Novell Netware, Linux, MAC			
Agency Compliance					
Quality		ISO 9001 certified manufacturing			
Security		EN62040-1-1, UL1778			
Performance		EN62040-3			
Standard EMC		EN62040-2, EN61000-3-2, FCC Class A			
Marking		CE, UL, cUL, FCC			

Continuity 1000-3000

Convertible Indoor On-line UPS Series

NEW

- Feature rich on-line UPS series with rack / tower convertible design with rotating LCD panel enabling easy integration into a wide variety of applications and locations
- Wide input power frequency and voltage window accommodates broad operating range for different working requirements
- Advanced digital control technology achieves higher reliability and greater immunity from utility power problems
- Emergency shutdown control through EPO complies with national safety regulations and local code
- Programmable receptacles enable flexible power backup
- Powerful built-in charger shortens battery charging time and extends runtime
- Hot swappable battery allows replacement without interruption to critical loads



Continuity Rack Configuration



Continuity Tower Configuration

Specifications

Models	Continuity 1000		Continuity 2000	Continuity 3000
Input				
Voltage Window	60~144Vac for 120V system			
Frequency	50/60+/-5% (Auto Sensing)			
Phase/Wire	Single, Line + Neutral + Ground			
Power Factor	>0.99 (Full Load)			
Output				
Voltage	100/110/115/120/127Vac			
Voltage Regulation	<±0.1% until low battery warning			
Capacity	1000VA/800W	2000VA/1600W	3000/2400W	
Power Factor	0.8* Lagging			
Wave Form	Sine Wave, THD<3% (no load to full load)			
Frequency Stability	±0.1% unless synchronized to line			
Frequency Regulation	3Hz or 1Hz (Setting by software)			
Transfer Time	0 m sec			
Crest Factor	3:1			
Efficiency (AC to AC)	>85%		>88%	
Autonomy (80% load)	7.9 mins		6.5 mins	
DC Start	Yes			
Battery				
Type	Sealed Lead Acid Maintenance Free			
Capacity	7Ah		9Ah	
Quantity	3	6		
Voltage	36Vdc	72Vdc		
Recharge Time	3 hours to 90%			
Built-in Charger (max. Charging Current)	1.8A	2.1A		2.7A
Display				
LED	Normal, Battery, Bypass, Programmable Outlet 1, Programmable Outlet 2, Self-Test, Battery Weak & Bad, Site Wiring Fault , Fault, Overload, and Load/Battery Level conditions.			
Key	On button / Off button (Test / Alarm silence button)			
Self-Diagnostics	Upon Power On and Software Control			
Communication Slots	Relay contact board or SNMP card			

Display		
LED		Normal, Battery, Bypass, Programmable Outlet 1, Programmable Outlet 2, Self-Test, Battery Weak & Bad, Site Wiring Fault , Fault, Overload, and Load/Battery Level conditions.
Key		On button / Off button (Test / Alarm silence button)
Self-Diagnostics		Upon Power On and Software Control
Protection		
Overload AC Mode & Backup Mode (delay before switching to bypass)		<105% continuously. >106%~120% for 30 seconds transfer to bypass >121%~150% for 10 seconds transfer to bypass >150% immediately transfer to bypass Buzzer continuously alarms
Bypass Mode		<105% continuously. >106%~120% for 250 seconds shut down >121%~130% for 125 seconds shut down >131%~135% for 50 seconds shut down >136%~145% for 20 seconds shut down >146%~148% for 5 seconds shut down >149%~157% for 2 seconds shut down >158%~176% for 1 seconds shut down >177%~187% for 0.32 seconds shut down >188% for 0.16 seconds shut down Buzzer continuously alarms
Short Circuit		Hold Whole System
Overheat		AC Mode: Switch to Bypass; Backup Mode: UPS shuts down immediately
Battery Low		Alarm and Switch Off
EPO		UPS shuts down immediately
Battery		Advanced Battery Discharge Management (ABDM)
Noise Suppression	115V System	400 Joules
	230V System	300 Joules

Models		Continuity 1000	Continuity 2000	Continuity 3000
Alarms				
Audible and Visual		Line Failure, Battery Low, Overload, System Fault Conditions		
Mechanical				
Dimensions	mm	440W x 88H x 405D	440W x 88H x 650D	
	inch	17.3W x 3.5H x 16D	17.3W x 3.5H x 25.6D	
Outlets 120Vac		6 x NEMA 5-15R	2x5-15R + 2 x 5-20R	4x5-15R + 1xL5-30R
Outlets 230Vac		6 x IEC320-C13		4 x IEC320-C13 1 x IEC320-C19
Net Weight		15.1kg (33.3lbs)	27.9kg (61.5lbs)	29.7kg (65.4lbs)
Environment				
Operating Temperature		0-40°C (32-104°F)**		
Altitude		0~2000m/6600ft up to 40°C (104°F), 3000m/9900ft up to 35°C (95°F)		
Humidity		90% RH Maximum, Non-Condensing		
Noise		<50dB (at 1 meter/3.3ft)		
Computer Interface				
Interface Type		Standard RS232 and USB		
Communication Slot		Dry Contact Card or SNMP card		
Agency Compliance				
Quality Assurance		ISO9001 Certified Company		
Safety Standard		EN62040-3 complied		
Performance		EN62040-3 complied		
EMC Standard		EN62040-2, EN61000-3-2, EN61000-3-3, FCC Class A		
Marks		CE, UL, cUL, FCC		

Battery Pack

Model		BP Continuity 1000	BP Continuity 2000	BP Continuity 3000
Battery Type		7Ah		9Ah
Maximum Quantity		12pcs		
Output Voltage		36Vdc	72Vdc	
Weight Without Batteries		8kg (17.7lbs)		
Weight With Batteries		38kg (83.7lbs)		
Dimensions	mm	88H x 440W x 650D		
	inch	3.5H x 17.3W x 25.6D		

*Based on load(%) - 0~33/33~66/66~100% respectively. ** Operation 0~3°C (54°F) if the power factor is at 0.8.Specifications are subject to change without prior notice.

Continuity 6K-10K

Indoor On-line UPS Series

NEW

- Feature rich on-line UPS series with superior output power factor, enabling energy efficient system performance
- Simple parallel installation simplifies the setup of N+1 redundant systems
- Up to 4 units working in parallel increases potential power output capacity
- Smart ECO mode allows automatic transfer to inverter supply, maximizing efficiency
- LCD / LED display panel provides user-friendly interface to UPS
- Emergency shutdown control through EPO complies with national safety regulations and local code
- Hot swappable battery allows replacement without interruption to critical loads



Continuity Rack Configuration



Continuity Tower Configuration

Specifications

Models	Continuity 6K	Continuity 10K
Input		
Voltage Window	160~280Vac	
Frequency	45-65Hz	
Phase/Wire	Single, Line + Ground	
Power Factor	Up to 0.99 at 100% Linear Load	
Current THD (100% linear load)	<7%	
Output		
Voltage Window	200/208/220/240Vac Selectable (208/120Vac optional)	
Voltage Adjustment	Nominal +1%, +2%, +3%, -1%, -2% or -3%	
Voltage Regulation	±1%	±2%
Capacity	6000VA/5400W	10000VA/9000W
Rated Power Factor	0.9 Lagging	0.9 Lagging
Wave Form	Sine Wave, THD<3% (no load to full load)	
Frequency Stability	±0.2% (Free Running)	
Frequency Regulation	±1Hz; ±3Hz	
Transfer Time	0ms	
Crest Factor	3:1	
Efficiency (AC to AC, Normal)	Up to 90%	
Efficiency (AC to AC, ECO)	Up to 95%	
Autonomy (80% load with 1 external battery pack)	7.1 mins	4.8 mins
DC Start	Yes	
Display		
Status On LED + LCD	Line Mode, Backup Mode, ECO Mode, Bypass Supply, Battery Low, Battery Bad/Disconnect, Overload, Transferring with interruption & UPS Fault.	
Readings on LCD	Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage & Inner Temperature.	
Self-Diagnostics	Upon Power-on, Front Panel Setting & Software Control, 24-hour routine checking	

Alarms			
Audible and Visual		Line Failure, Battery Low, Transfer to Bypass, System Fault Conditions	
Protection			
Overload (w/simulated thermal tripping I-T Curve)		Inverter Supply: 105%~150% for 160 seconds ~ 2 cycles before switching bypass. Bypass Supply: 105%~200% for 500 seconds ~8 cycles before stopping supply load.	
Short Circuit		Switch off Immediately	
Overheat		AC Mode: Switch to Bypass Backup Mode: Switch off the UPS	
Battery Low		Alarm and Switch Off	
Noise Suppression		Complies with EN62040-2	
Spike Suppression		Complies with EN61000-4-5	
Heat Dissipation (At Full Linear Load)	Without Isolated Transformer Module	<450W	10K: <600W 10KP: <550W
	With Isolated Transformer Module	<615W	10K: <1100W 10KP: <1050W
Leakage Current		<3mA at Full Load	
Models		Continuity 6K	Continuity 10K
Mechanical			
Dimensions	mm	132H x 440W x 543D	132H x 440W x 680D
	inch	5.2H x 17.3W x 21.3D	5.2H x 17.3W x 26.8D
Input/Output Connection		Hardwire	
External Battery Connection		Plug-in & Play	
Net Weight		24kg (52.9lbs)	26.0kg (57.3lbs)
Environment			
Operating Temperature		0-40°C (32-104°F)	
Temperature Warning		The battery design life is based on a temperature of 25°C (77°F), Ambient temperature above this range will affect battery life	
Altitude		0~2000M/6600ft up to 40°C (104°F), 3000M/9900ft up to 35°C (95°F)	
Humidity		90% RH Maximum, Non-Condensing	
Noise		<50dB (at 1M/3.3ft)	
Computer Interface			
Interface Type		Standard RS232	
Communication Slot		2nd RS232, USB, RS485, Dry Contact Card or SNMP Card	
Agency Compliance			
Quality Assurance		ISO9001 Certified	
Safety Standard		EN62040-1-1, UL1778	
EMC Standard		EN62040-2, EN61000-3-2, EN61000-3-3, FCC Class A	
Marks		CE, cUL, UL	
Battery Pack			
Model		BP Continuity 6K	BP Continuity 6K
Battery Type		7Ah	9Ah
Maximum Quantity		20pcs	
Output Voltage		240Vdc	
Weight Without Batteries		18.0kg (39.7lbs)	
Weight With Batteries		52kg (115lbs)	68.0kg (149.8lbs)
Dimensions	mm	132H x 440W x 680D	
	inch	5.2H x 17.3 x 26.8D	

Electrical Receptacles

Electrical receptacles, outlets and wall sockets are used in a variety of residential, general-purpose, commercial, industrial, laboratory and hospital applications. Several blade or pin types are available. Straight (non-locking) electrical receptacles are inserted at a right angle to the plane of the matching device face. By contrast, locking receptacles fix or lock a plug in place when the plug is inserted and then rotated. Electrical receptacles provide maximum voltage and maximum current ratings. Typically, devices are designed for either single-phase or three-phase power.

Below are diagrams to help identify plugs and receptacles for your electrical applications. Consult your Alpha representative for part numbers.

NEMA configurations for plugs and receptacles

Non-locking plugs and receptacles	15 Ampere		20 Ampere		30 Ampere		50 Ampere	
	Receptacle	Plug	Receptacle	Plug	Receptacle	Plug	Receptacle	Plug
125V								
For Canadian customers only		EEMAC Configuration						
250V								
Alpha P/N	531-004-10	530-002-10	531-008-10	530-004-10	531-010-10	530-006-10	531-012-10	530-008-10
For Canadian customers only		EEMAC Configuration						

Locking plugs and receptacles	15 Ampere		20 Ampere		30 Ampere		50 Ampere	
	Receptacle	Plug	Receptacle	Plug	Receptacle	Plug	Receptacle	Plug
125V							(Not NEMA config)	
250V							(Not NEMA config)	
125V/250V								

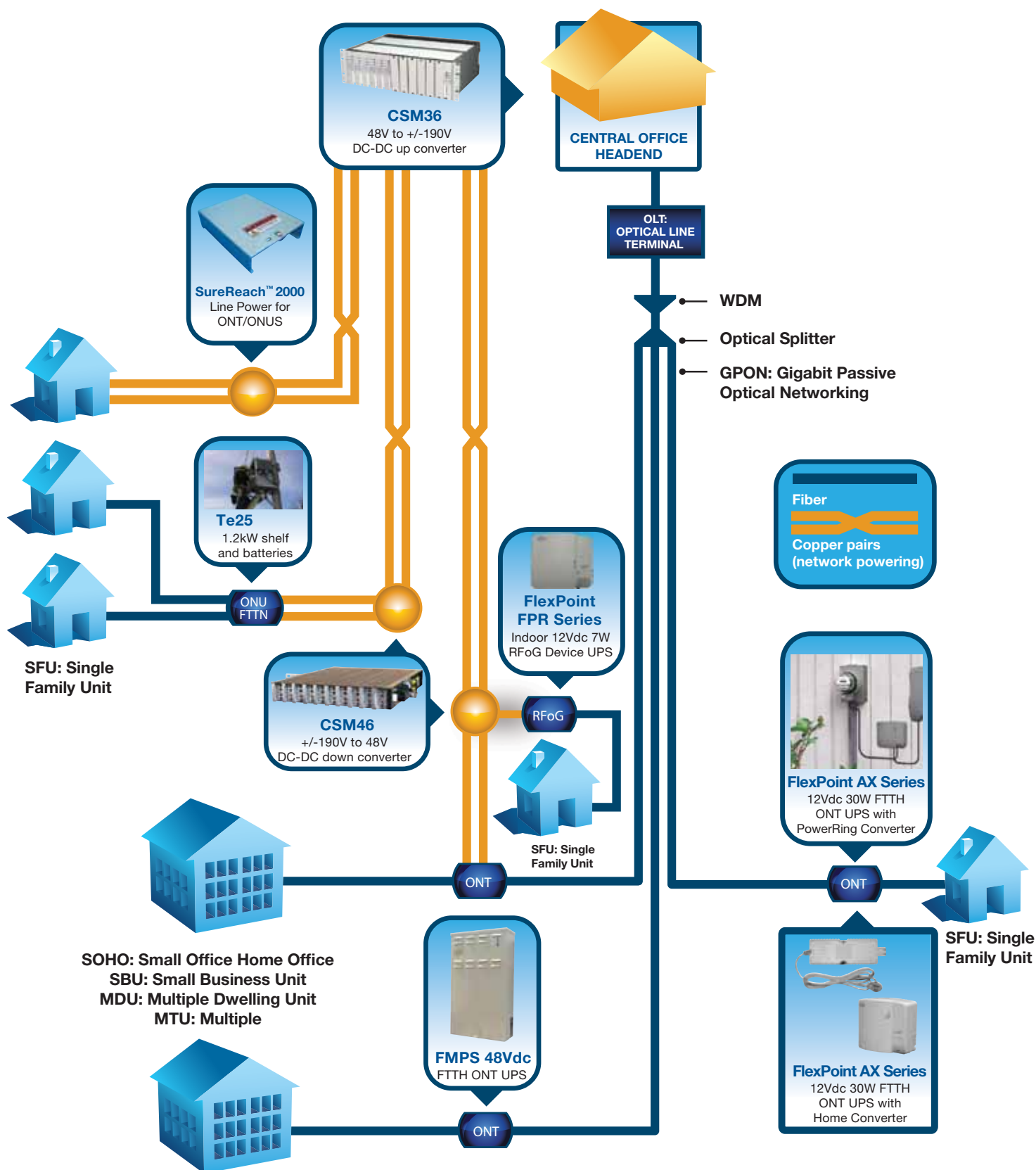


Fiber Network Powering Solutions

Now available to over 20 million North American households, fiber is fast becoming the technology of choice for next-generation, high-speed access to Internet, video and emerging applications. Alpha offers a complete portfolio of fiber powering options with the FlexPoint™ line of 12Vdc single-family solutions (SFU) and the FlexNet line of 48Vdc multiple dwelling unit (MDU) and small office home office (SOHO) power supplies. All of Alpha's powering solutions are engineered to perform reliably in the most demanding environmental conditions while optimizing battery life and performance.

FTTx

Architecture Overview



FlexNet™ MPS 48-7

MPS48-7F and MPS48-7T 50W 48Vdc Indoor/Outdoor UPS

NEW



FlexNet MPS 48-7

- Rugged 48Vdc 50W wall or pole mountable UPS
- LED local status indicators
- Local and remote status monitoring and reporting
- Temperature compensated battery charging for optimum battery life
- Optional battery heater provides extended runtimes in cold conditions
- MPS48-7F supports fiber-to-the-home applications including MDU, MTU and SBU ONT loads
- MPS48-7T supports critical network communication loads

FlexNet MPS48-7F P/N: 021-511-10-030
FlexNet MPS48-7T P/N: 021-511-10-040
Battery Heater Mat Kit for MPS48-7: 189-078-21

Electrical

AC input voltage:90 to 132, or 180 to 264Vac (switch selectable)
or 250 to 305Vac with optional step-down transformer
AC input frequency:47 to 63Hz
Output power:50W continuous
Output voltage:42 to 56Vdc
Ripple:<250mVrms
Noise:<2Vp-p

Performance / Features

Battery:Four x 7Ah Valve Regulated Lead Acid (VRLA)
(Batteries sold separately)

Mechanical

Dimensions:
mm:.....445H x 324Wx 133D
in:17.5H x 12.7W x 5.25D
Weight (without batteries): 4.9kg (11lbs)

Environmental

Operating Temperature:
with heater option:-40 to 55°C (-40 to 131 °F)
without heater option: -20 to 55°C (-4 to 131 °F)
Storage Temperature:-50 to 70°C (-58 to 158 °F)
Humidity:0 to 95%
Altitude:Up to 10000ft (3048M) with ambient de-rating
Above 6000ft (1828.8m), 2°C/1000ft (304.8m)

Agency Compliance

- FCC/GR1089 Class B, CSA-NRTL\C (CSA60950), CE, C-Tic,
- RoHS compliant per European Union's Directive
- 2002/95/EC, Restrictions of Hazardous Substances
- Seismic Zone 4 rated per GR-63
- Complies with IPx5 water intrusion criteria per IEC 60529 standard

- FlexNet FMPS

Standard Solutions

FlexNet™ ELPM-300

Element Powering - 48Vdc 300W UPS

NEW



FlexNet ELPM-300

- Rugged 48Vdc UPS for outdoor or indoor applications
- Power modules can be used in a variety of Alpha enclosures
- Temperature compensated battery charging for extended battery life
- Visual and electrical indicators for on-site and remote reporting
- Flexible cabinet mounting options – wall, pole or pedestal mount

ELPM 300-48 56V Maximum output
P/N : 010-322-22

Electrical

AC input voltage:85 to 170Vac or 132 to 264Vac selectable
AC input frequency:50 or 60Hz
Surge protection:IEEE Std C62.41-1991 level C
Output power (max.):300W
Output voltage:48Vdc (42 to 54Vdc)
Ripple (DC):500mVrms
Transfer Characteristics: ...Uninterrupted output

Performance / Features

Battery:4 x 50AH (85GXL) VRLA Gel batteries
(sold separately)
Battery Charging:Temperature compensated
Backup Time Approx.:8hrs @ 270W load
Reverse Battery Polarity Protection

Mechanical

Dimensions:
mm:152H x 256.5W x 82.6D
in:6H x 10.1W x 3.25D
Weight:4.5kg (10lbs)
Mounting:Bracket mounted inside enclosure

Environmental

Operating Temperature: ...-40° to 65°C / -40° to 149°F
Storage Temperature:-50° to 70°C / -58° to 158°F
Humidity:0 to 95% non-condensing

User Interface

LED Indicators

Green:Output
Green blinking:Standby
Red blinking:Low/missing battery
Red:Replace battery

Alarm Indicators

AC FAIL (TELM 1)
Replace Battery (TELM 2)
Battery Missing (TELM 3)
Battery Low (TELM 4)

Note: Compliant with PacketCable™ UPS specifications
Embedded MTA Primary Line Support specifications

Agency Compliance

FCC part 15 Class B
CSA-NRTL/C (CSA950)

FlexNet™ ELPM-300 in Alpha Enclosures

LPE and PMR/GMR Series



FlexNet ELPM-300 in LPE Enclosure

- Rugged 48Vdc UPS for outdoor or indoor applications
- Power modules can be used in a variety of Alpha enclosures
- Temperature compensated battery charging for extended battery life
- Visual and electrical indicators for on-site and remote reporting
- Flexible cabinet mounting options – wall, pole or pedestal mount

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Standard Solutions

Consult your Alpha representative for P/N configurations

LPE Enclosure Specifications

Enclosure Dimensions:
mm661H x 420W x 305D
in26H x 16.5W x 12D
Enclosure Weight:11.3kgs (25lbs)
Material:.....Exterior Powdercoated aluminum
Number of Batteries:4 x 12Vdc 17Ah VRLA batteries
Door and Lid Seal:Poron gasketing
Approx. Backup Time:.....4 Hours at 250W load

PMR and GMR Enclosures Specifications

PMR-S1 Dimensions:
mm818H x 660W x 489D
in32.2H x 26W x 19.25D
Weight:18kg (40lbs)

GMR-S1 Dimensions:
mm787Hx 699W x 508D
in31H x 27.5W x 20D
Weight:22kg (49lbs)

PMR-S2 Dimensions:
mm940H x 762W x 489D
in37H x 30W x 19.25D
Weight:21kg (47lbs)

GMR-S2 Dimensions:
mm965H x 787W x 508D
in38H x 31W x 20D
Weight:29kg (63lbs)

Number of Batteries:4 x 12Vdc 50Ah (85GXL) batteries
Approx. Backup Time:.....8 Hours at 275W load
Enclosure Mounting
and Door - PMR Series:.....Galvanized steel brackets for wood, and
concrete pole mount and wall mount

Enclosure Mounting
and Door - GMR Series:Precast polymer concrete pad or PS-6/PS-6XL
pedestal systems

Fiber Strain Relief
Tie Bar Optional:19" mounting provides ability to strain relief fiber
cable plugged into the front of communications
equipment

Splice Tray:.....Splice Tray Kit (12 count), includes Splice tray
with Elastomer Splice Block, Felt Tape, Tie
Wraps, Cover and Recording Label

Fiber Management
Panel:Provides fiber slack storage and secures a
splice tray using a Velcro strap. Tie wrap slots
on sides permit securing fiber cables to panel

FlexPoint™ AX Series

FTTP ONT UPS System

- Scalable FTTP/FTTx power supply systems with or without standby
- Full or partial outdoor configurations
- Outdoor rated including battery for 24/7 availability
- Utility meter base provides most reliable source of AC power at home
- No homeowner appointments needed for access and maintenance
- Safe, low-voltage distribution
- 30W with battery module, 24W without battery module



FlexPoint AX series

Consult your Alpha representative for P/N configurations

Electrical

➤ AC input voltage

AX30-12D-HC:85 to 132Vac (120Vac nominal)
AX-30-12D-PC:..... 170 to 264Vac (230Vac nominal)
AC input frequency:.....50 to 60Hz

Note: International AC selections and line cords available.

➤ DC output voltage

PC/HC + BBPS (UPS system): 10.5 to 14.4Vdc
PC/HC (non UPS): 11.6Vdc

➤ Continuous output power

PC/HC + BBPS (UPS system):30W at nominal battery float voltage
PC/HC (non UPS):24W

Max output power:

UPS system:(<10s) 45W
Non UPS: 2.4A current limit (HC/PC)

Short circuit protection:Electronic

DC ripple: 150mV

Performance / Features

Battery:.....Maintenance-free, leak-proof, sealed
VRLA (valve regulated lead acid)

Recharge time:

AX-12D-BBPS-7.2:<16hrs with 24W

AX-12D-BBPS-17 load:<36hrs with 24W load

Environmental

➤ Operating temperature range

AX-30-12D-PC + BBPS:.....-40 to 65°C (-40 to 149°F)

AX-30-12D-HC + BBPS:

HC:-40 to 45°C (-40 to 113°F)

BBPS:.....-40 to 65°C (-40 to 149°F)

AX-30-12D-HC:-40 to 45°C (-40 to 113°F)

Humidity:0 to 95% RH non-condensing

Battery storage:-15 to 65°C (5 to 149°F)
0 to 95% humidity

Elevation:

Operation max:.....10000ft (3000m)

Storage max:50000ft (15000m)

User Interface

➤ Status Alarms

Local (LED indicators):

Green steady:..... Output OK
Green blinking:..... Standby operation
Red steady: Replace battery
Red blinking: Battery missing/battery low

Remote (Status Alarms – PacketCable Compliant):

AC fail: Output power drawn from battery
Replace battery:..... Battery has failed periodic self-test
Battery missing:..... Battery is disconnected
Battery low:..... Battery has 20% remaining runtime

Agency Compliance

Home converter: UL-listed system, FCC part 15,
Class B, EN55022, class B

Power ring: UL-recognized components





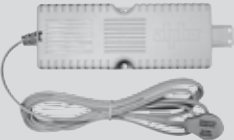







Power ring converter:..... UL-recognized components

BBPS modules: CSA

FlexPoint UPS runtimes (mins) over temperature

7.2Ah			
Load/Temp	-40°C/-40°F	-20°C/-4°F	25°C/ 77°F
7W	360	560	800
10W	160	360	500
15W	110	195	320
18W	80	156	240
20W	60	130	210
25W	50	100	170
30W	30	80	130
17Ah			
Load/Temp.	-40°C/-40°F	20°C/-4°F	25°C/ 77°F
10W	750	1080	1240
15W	400	680	940
20W	60	440	680
25W	160	340	480
30W	140	232	400

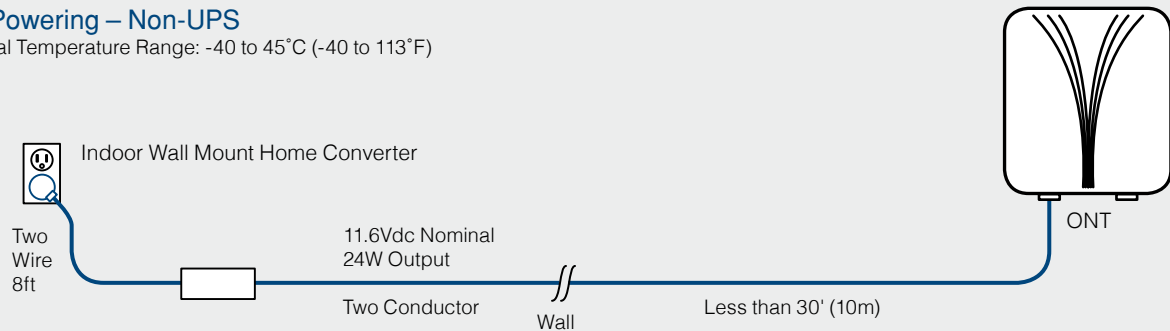
Module Descriptions

	<p>Power-Ring </p> <p>Compatible with ring and ringless style meter sockets and provides a receiving socket for the FlexPoint AC to DC Power-Ring converter module. Depending on the model, the Power-Ring can tap the AC power before or after the meter and comes supplied with a blanking plate.</p> <p>200A continuous, 240A rated</p> <ul style="list-style-type: none"> • AX-POWER-RING-A (power tap after meter) — P/N: 021-053-021 • AX-POWER-RING-B (power tap before meter) — P/N: 021-053-020 <p>320A Continuous, 400A Rated</p> <ul style="list-style-type: none"> • AX-400ARING-A (power tap after meter) — P/N: 021-053-030 • AX-400ARING-B (power tap before meter) — P/N: 021-053-031 <p>Dimensions:</p> <p>mm: 120H x 178Dia</p> <p>in: 4.75H x 7.0Dia</p> <p>Weight: 0.68kg (1.5lbs)</p>
	<p>Power-Ring Converter </p> <p>Contains highly-reliable environmentally-hardened 240Vac to 12Vdc converter circuitry in a pluggable housing. Outputs 24W and 11.6Vdc as a stand-alone module, or supports 30W and 11.6 to 16Vdc battery backup power supply (BBPS) module output.</p> <p>AX30-12D-PC — P/N: 010-318-034</p> <p>Dimensions:</p> <p>mm: 209H x 51W x 51D</p> <p>in: 8.0H x 2.0W x 2.0D</p> <p>Weight: 0.32kg (0.7lbs)</p>
	<p>Home Converter </p> <p>Contains highly-reliable environmentally-hardened 120Vac to 12Vdc converter circuitry in a wall mount housing. Comes with a two-conductor AC line cord and should be mounted in locations sheltered from rain or snow. Outputs 24W and 11.6Vdc as a stand-alone module or supports 30W and 11.6 to 16Vdc battery backup power supply (BBPS) module output.</p> <p>AX30-12D-HC — P/N: 010-318-39</p> <p>Dimensions:</p> <p>mm: 209H x 70W x 38D</p> <p>in: 8.25H x 2.75W x 1.5D</p> <p>Weight: 0.32kg (0.7lbs)</p>
	<p>Battery Modules </p> <p>The Battery Backup Power Supply (BBPS) module outputs 30W of continuous power and includes a microprocessor-based battery charge management system providing the correct charge voltage to the battery over a wide temperature range, while performing periodic battery capacity testing and status reporting to the ONT and customer. The onboard battery heater provides extended standby runtimes in cold conditions to -40°C (-40°F). The 7.2Ah battery model provides standard runtimes and the 17Ah model provides extended runtimes.</p> <p>AX-12D-BBPS-7.2 — P/N: 031-264-021</p> <p>Dimensions:</p> <p>mm: 203H x 230W x 102D</p> <p>in: 8.0H x 9.0W x 4.0D</p> <p>Weight: ..... .68kg (1.5lbs)</p> <p>AX-12D-BBPS-17 — P/N: 031-192-031</p> <p>Dimensions:</p> <p>mm: 355H x 241W x 127D</p> <p>in: 14H x 9.5W x 5.0D</p> <p>Weight: 2.04kg (4.5lbs)</p>
	<p>The UPS Modules </p> <p>Provides the network operator the capability to place the battery management element inside other enclosures located at the subscriber's home. UPS modules contain the same electronics used in the AX-12D-BBPS products without the battery heater and are to be used with FlexPoint Home converter and Power-Ring converter.</p> <p>AX-12D-7.2Ah (for 7.2Ah battery) — P/N: 745-816-023</p> <p>AX-12D-17Ah (for 17Ah battery) — P/N: 745-816-022</p>
	<p>Batteries </p> <p>The FlexPoint AX battery modules use valve regulated lead acid (VRLA) AGM batteries.</p> <p>7Ah Standard-life battery, 1-year warranty P/N: 1810007</p> <p>Weight: 2.4kg (5.29lbs)</p> <p>7Ah Long-life battery with wide temperature range, 3-year warranty, P/N: 1810063</p> <p>Weight: 5.5kg (12.130lbs)</p>

Applications

Indoor Powering – Non-UPS

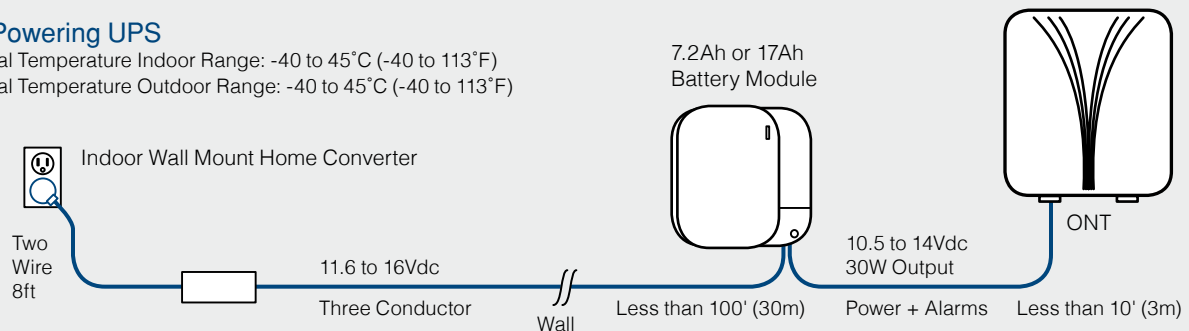
Operational Temperature Range: -40 to 45°C (-40 to 113°F)



Indoor Powering UPS

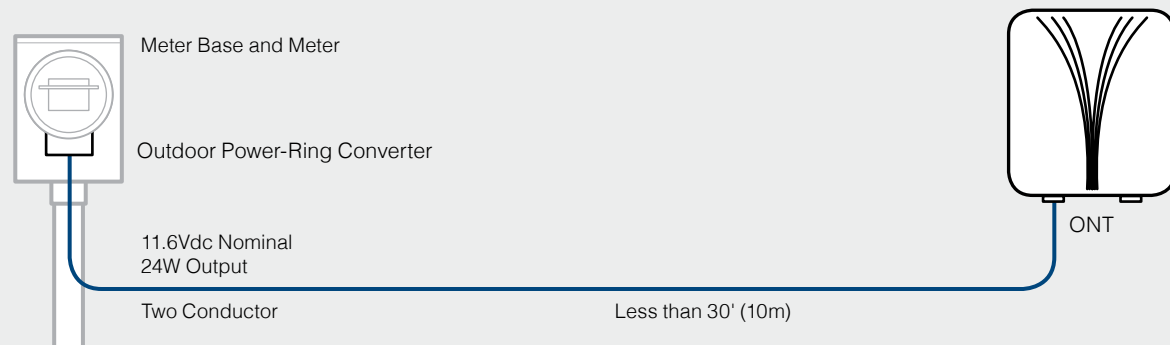
Operational Temperature Indoor Range: -40 to 45°C (-40 to 113°F)

Operational Temperature Outdoor Range: -40 to 45°C (-40 to 113°F)



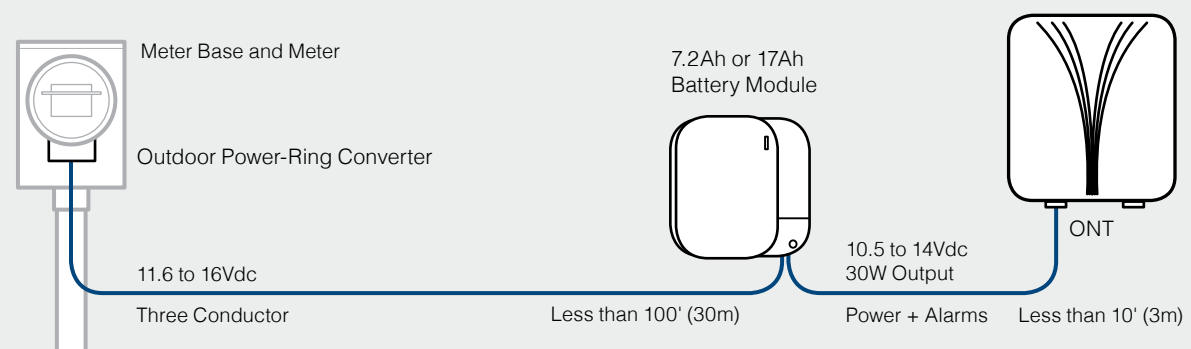
Outdoor Powering – Non-UPS

Operational Temperature Range: -40 to 45°C (-40 to 113°F)



Outdoor Powering UPS

Operational Temperature Range: -40 to 45°C (-40 to 113°F)



CXCM1



AV



MODEM



RST



CordexTM
HIGH PERFORMANCE
CXRF 48-12kW



Controllers and Communications

Whether it's a UPS being programmed for time of day operation at an intersection or a rectifier plant being monitored remotely via SNMP at a Network Operations Center, Alpha offers a wide array of feature-rich controllers and communications options. The industry-leading Cordex™ Controller logic is the intelligence behind our modular systems through the Cordex™ controllers and is integrated into our FXM family of Uninterruptable Power Supplies.

Alpha's controller software offers an outstanding combination of advanced features and reliability. Developed with the end-user in mind, our local and remote controller interfaces present critical information clearly and consistently; whether it's data logging, event monitoring or fault reporting.

Controllers

The Cordex™ CXC is Alpha's latest generation of advanced digital controllers for power system monitoring and control. Cordex™ supervisory controllers come in a wide array of modular designs for integration into compact Alpha power systems. Stand-alone rack mount versions are also available for DC systems and legacy controller upgrades.

A graphic LCD display with touch-screen interface allows simple and convenient set up, control and monitoring of Cordex™ rectifiers. Simple Network Management Protocol (SNMP) based Internet communication and built-in web servers allow complete configuration and monitoring from any location via the Internet using a standard web browser. Events and alarms can be sent to portable devices such as pagers and smart phones.

Cordex™ CXC controllers come standard with several advanced battery management features to allow for significant savings of energy and operational expenses.

Additional features include user definable alarms with custom algorithms, digital and/or analog input monitoring and data logging. Software upgrades are easily downloaded from Alpha's website for local or remote upload to the controller.

Alpha's CXC family of controllers communicate to other power devices in the system via the highly robust Controller Area Network (CAN) protocol, ensuring the reliable operation of all of your power solutions.

›General

- **Web based GUI interface:** Web browser support for local or remote control and monitoring of power system
- **Single point setup and control**
- **Auto voltage adjustment and load sharing**
- **Analog and digital inputs**
- **Configurable form C relay outputs**
- **Multiple preset alarms:** Ability to configure up to 20 customized alarms
- **User programmable logic statements:** Create an event or alarm based on criteria you define
- **Legacy power system upgrade:** Controls legacy Pathfinder based systems and can be used as a site monitor for any Alpha or 3rd party DC power system
- **CAN communications:** Common platform for Alpha power electronics and peripherals, rugged and field proven protocol
- **Fail safe system operation:** In the event of CXC failure, rectifiers continue to run with default settings, fail alarm generated, and LVD's (if equipped) remain energized
- **Power save function:** Improves operational efficiency by running minimum number of rectifier modules required depending on system load
- **System start delay:** Allows delay for other AC powered equipment to start before rectifiers
- **Ramp test control:** Disables fail alarm on no-load conditions
- **SNMP support:** Network management service support for managing multiple systems in a single network
- **Email notifications:** Via TCP/IP
- **Cordex™ peripheral support:** Optional add-on's for individual cell and temperature monitoring and for expanding controller I/O
- **Multi language support:** Including Chinese characters

›Battery Management

- **Temperature compensated float voltage:** Increases voltage with temperatures below 25°C (77°F) and decreases charge voltage above 25°C (77°F), maximizes life and capacity of battery and prevents thermal runaway
- **Battery equalize:** Manual, automatic and periodic equalize charge modes, optional Battery Current Terminate function to prevent over charging of battery
- **Battery boost mode:** Offline high-voltage equalize charge with interlock safety feature
- **Dynamic charge current control:** Limits battery recharge current to a fixed value, helps to prevent thermal runaway
- **Battery test:** Sets rectifier voltage low and performs safe discharge of batteries through the connected system loads
- **Battery capacity prediction:** Calculates current battery capacity after a discharge
- **Battery runtime estimate:** Based on current battery capacity and system load
- **Battery logging:** Retain up to 40 records of battery statistics and events

›Maintenance

- **Data logger:** Record any system input(s), and set sample rate or record on deviation. Store up to 500 events via manual or auto start/stop
 - Typical data log applications: Detailed battery discharge info, AC voltage watch dog, outdoor cabinet thermal performance
- **Easy remote software upgrades:** Fail-safe protected upgrades for controllers, rectifiers and peripherals

- Integrated package with small footprint for various 2RU rectifier shelves
- Internet ready and remotely accessible for complete system monitoring and control
- Integrated SNMP functionality for cost effective multiple site monitoring
- Advanced battery monitoring and power save features for OPEX savings and reduced carbon footprint
- Highly configurable platform with user definable alarms and data logging

P/N: Integrated option on 1.8kW, 650W, 400W, 250W shelves

Electrical

Input voltage:..... 17 to 65Vdc
Current:..... <100mA @ 48Vdc or < 200mA @ 24Vdc

Performance / Features

Display:.....4 segment LCD for V/I display
 "OK / Major / Minor" 3-color, LED display
 Web based GUI via ethernet

Communication ports:.....RJ45 ethernet port (front)
RS232 modem port (front)

System I/O:
 Alarm relays:.....4 (3+1 internal on some models)
 Voltage inputs:.....1 + 1 internal
 Temperature inputs:.....2
 Current inputs:.....1 (0+1 internal on some models)
 Digital inputs:.....2



Mechanical

Dimensions:
mm:.....88H x 26W x 280D
inch:.....3.5H x 1W x 11D
Mounting:.....Integrated on Cordex™ 2RU series
19" & 23" shelves

Environmental

Temperature:.....-40 to 65°C (-40 to 149°F)
Humidity:.....0 to 95% RH non-condensing

Agency Compliance

Safety:CSA C22.2 No 60950-1-03
CE marked

Cordex™ CXCM
System Controller

- Modular, hot swappable controller for use with 1kW rectifier platform
- Internet ready and remotely accessible for complete system monitoring and control
- Integrated SNMP functionality for cost effective multiple site monitoring
- Advanced battery monitoring and power save features for OPEX savings
- Highly configurable platform with user definable alarms and data logging



CXCM

P/N: 018-557-20

Electrical

Input voltage: 17 to 65Vdc
Current: <100mA @ 48Vdc or < 200mA @ 24Vdc

Performance / Features

Display:..... LCD touchscreen display (160 x 160 pixels)
 "OK / Major / Minor" 3-color, LED display
 Web based GUI via ethernet

Communication ports:..... RJ45 ethernet port (front accessible rear port)
 RS232 craft port (front)
 RS232 modem port (optional)

Controller I/O:

Voltage inputs:..... 1 + 1 internal
Temperature inputs: 2
Current inputs:..... 1
Digital inputs:..... 3 (2 + 1 internal on some models)
Relay alarm:..... 8
Bi voltage inputs:..... 1

Mechanical

Mounting: Modular controller for 1kW rectifier shelves

Dimensions:

mm:..... 177H x 74W x 255D
inches:..... 6.9H x 2.9W x 10D

Weight:..... 1.8kg (3.9lbs)

Environmental

Temperature:
Extended: -40 to 65°C (-40 to 149°F)
Humidity: 0 to 95% RH non-condensing

Agency Compliance

Safety: CSA C22.2 No 60950-1-03
 CE marked

EMC: ETSI 300 386

Emissions:..... CFR47 (FCC) Part 15 Class B
 ICES-03 Class B
 EN55022 (CISPR 22) Class B
 C-Tick (Australia)

Immunity:..... EN 61000-4-2
 EN 61000-4-3
 EN 61000-4-4
 EN 61000-4-5
 EN 61000-4-6

Cordex™ CXCM1

System Controller

- Modular, hot swappable controller for use with HP 1.2kW rectifier platform
- Internet ready and remotely accessible for complete system monitoring and control
- Integrated SNMP functionality for cost effective multiple site monitoring
- Advanced battery monitoring and power save features for Op-Ex savings
- Highly configurable platform with user definable alarms and data logging

P/N: 018-598-20

Electrical

Input voltage: 17 to 65Vdc
Current: <100mA @ 48Vdc or < 200mA @ 24Vdc
Cordex™ CXCI
System Controller

Performance / Features

Display: 4 segment LCD for V/I display
"OK / Major / Minor" 3-color, LED display
Web based GUI via ethernet

Communication ports: RJ45 ethernet port (front)
RS232 modem port (front)

System I/O:
Alarm relays: 4 (3+1 internal on some models)
Voltage inputs: 1 + 1 internal
Current inputs: 1 (0+1 internal on some models)
Temperature inputs: 2
Digital inputs: 2



CXCM1

Mechanical

Mounting: Modular controller for 1.2kW shelves.
Horizontal and vertical mounting configurations
available (consult factory)

Dimensions:
mm: 44H x 88W x 318D
inches: 1.73H x 3.5W x 12.5D
weight: 1.8kg (3.9 lbs)

Environmental

Temperature: -40 to 65°C (-40 to 149°F)
Humidity: 0 to 95% RH non-condensing

Agency Compliance

Safety: CSA C22.2 No 60950-1-03
CE marked

Cordex™ CXCM2

System Controller



CXCM2

- Modular, hot swappable site controller for use with 1.8kW and 2kW rectifier platforms
- Internet ready and remotely accessible for complete system monitoring and control
- Integrated SNMP functionality for cost effective multiple site monitoring
- Advanced battery monitoring and power save features for Op-Ex savings
- Highly configurable platform with user definable alarms and data logging

P/N: 018-573-20

Electrical

Input voltage: 17 to 65Vdc
Current: <100mA @ 48Vdc or < 200mA @ 24Vdc

Performance / Features

Display:..... LCD touchscreen display (160x160 pixels)
 "OK / Major / Minor" 3-color, LED display
 Web based GUI via Ethernet

Communication ports:..... RJ45 ethernet port (front)

Controller I/O:
Voltage inputs:..... 1 + 1 internal
Current inputs:..... 2
Temperature inputs: 2
Digital inputs:..... 6
Relay:..... 6

Mechanical

Dimensions:
mm:..... 96.4H x 128W x 247D
inches:..... 3.4H x 5W x 9.7D
Mounting: Modular controller for 1.8kW shelves

Environmental

Temperature:..... -40 to 65°C (-40 to 149°F)
Humidity: 0 to 95% RH non-condensing

Agency Compliance

Safety: CSA C22.2 No 60950-1-03
 CE marked

EMC: ETSI 300 386

Emissions:..... CFR47 (FCC) Part 15 Class B
 ICES-03 Class B
 EN55022 (CISPR 22) Class B
 C-Tick (Australia)

Immunity:..... EN 61000-4-2
 EN 61000-4-3
 EN 61000-4-4
 EN 61000-4-5
 EN 61000-4-6

Cordex™ CXCM4

System Controller

- Modular, hot swappable controller for use with 3.1kW and 3.6kW rectifier platforms
- Internet ready and remotely accessible for complete system monitoring and control
- Integrated SNMP functionality for cost effective multiple site monitoring
- Advanced battery monitoring and power save features for OPEX savings
- Highly configurable platform with user definable alarms and data logging

P/N: 018-574-20

Electrical

Input voltage: 17 to 65Vdc
Current: <100mA @ 48Vdc or < 200mA @ 24Vdc

Performance / Features

Display:.....LCD touchscreen display (160 x 160 pixels)
 "OK / Major / Minor" 3-color, LED display
 Web based GUI via ethernet

Communication ports:.....RJ45 ethernet port
 RS232 craft port (front)

Controller I/O:
 Voltage inputs:..... 1 + 1 internal
 Current inputs:..... 4
 Temperature inputs: 2
 Digital inputs:..... 4
 Bi voltage inputs:..... 2
 Relay outputs:..... 8

Mechanical

Dimensions:
 mm:..... 177H x 87W x 257D
 inches:..... 7.0H x 3.4W x 10.1D
Weight: 1.8kg (3.9lbs)
Mounting:Modular controller for 3.1kW and 3.6kW shelves



Environmental

Temperature:
 Extended: -40 to 65°C (-40 to 149°F)
 Humidity: 0 to 95% RH non-condensing

Agency Compliance

Safety: CSA C22.2 No 60950-1-03
 CE marked
EMC: ETSI 300 386
Emissions:..... CFR47 (FCC) Part 15 Class B
 ICES-03 Class B
 EN55022 (CISPR 22) Class B
 C-Tick (Australia)
Immunity:..... EN 61000-4-2
 EN 61000-4-3
 EN 61000-4-4
 EN 61000-4-5
 EN 61000-4-6

Cordex™ CXCR/CXCP

System Controller



CXCR Rack Mount Controller

- Flexible rack and panel mount controller for use with all Cordex™ rectifier platforms
- Internet ready and remotely accessible for complete system monitoring and control
- Integrated SNMP functionality for cost effective multiple site monitoring
- Advanced battery monitoring and power save features for OPEX savings
- Highly configurable platform with user definable alarms and data logging

P/N: 018-557-20

Electrical

Input voltage: 17 to 65Vdc
Current: <100mA @ 48Vdc or < 200mA @ 24Vdc

Performance / Features

Display:.....LCD touchscreen display (160 x 160 pixels)
 "OK / Major / Minor" 3-color, LED display
 Web based GUI via ethernet

Communication ports:.....RJ45 ethernet port (front accessible rear port)
 RS232 craft port (front)
 RS232 modem port (optional)

Controller I/O:

Voltage inputs:.....2
Current inputs:.....4
Temperature inputs:2
Digital inputs:.....8
Bi voltage inputs:.....2
Relay outputs:.....8

Mechanical

Mounting:CXCR with 19" or 23" rack mounting
 CXCP panel mount

➤ CXCP/R (excludes mounting brackets)

Dimensions:

mm:..... 131H x 431W x 100D
inches:5.1H x 16.9W x 3.9D

Weight:6.2kg (13.8lbs)

Environmental

Temperature:
Extended:-40 to 65°C (-40 to 149°F)
Humidity:0 to 95% RH non-condensing

Agency Compliance

Safety:CSA C22.2 No 60950-1-03
 CE marked

EMC:ETSI 300 386

Emissions:.....CFR47 (FCC) Part 15 Class B
 ICES-03 Class B
 EN55022 (CISPR 22) Class B
 C-Tick (Australia)

Immunity:.....EN 61000-4-2
 EN 61000-4-3
 EN 61000-4-4
 EN 61000-4-5
 EN 61000-4-6

Cordex™ CXCR 125/220V

System Controller



CXCR 125/220V
Rack Mount Controller

- Flexible rack mount controller for use with 125/220Vdc Cordex™ rectifier platforms
- Internet ready and remotely accessible for complete system monitoring and control
- Integrated SNMP functionality for cost effective multiple site monitoring
- Advanced battery monitoring and power save features for OPEX savings
- Highly configurable platform with user definable alarms and data logging

P/N: 018-570-20

Electrical

Input voltage: 17 to 65Vdc
Current: <100mA @ 48Vdc or < 200mA @ 24Vdc

Performance / Features

Display:.....LCD touchscreen display (160 x 160 pixels)
 "OK / Major / Minor" 3-color, LED display
 Web based GUI via ethernet

Communication ports:.....RJ45 ethernet port (front accessible rear port)
 RS232 craft port (front)
 RS232 modem port (optional)

Controller I/O:

Voltage inputs:.....1
Current inputs:.....1 shunt +1 hall effect
Temperature inputs:2
Digital inputs:.....4
Bi voltage inputs:.....4
Relay outputs:.....8

Mechanical

Mounting: 19" or 23" rack mounting

➤CXCR 125/220V (excludes mounting brackets)

Dimensions:

mm:.....131H x 431W x 100D
inches:5.1H x 16.9W x 3.9D

Weight:6.2kg (13.8lbs)

Environmental

Temperature:
Extended:-40 to 65°C (-40 to 149°F)
Humidity:0 to 95% RH non-condensing

Agency Compliance

Safety:CSA C22.2 No 60950-1-03
 CE marked

EMC:ETSI 300 386

Emissions:.....CFR47 (FCC) Part 15 Class B
 ICES-03 Class B
 EN55022 (CISPR 22) Class B
 C-Tick (Australia)

Immunity:.....EN 61000-4-2
 EN 61000-4-3
 EN 61000-4-4
 EN 61000-4-5
 EN 61000-4-6

Cordex™ Controller Series

Reference Guide

Model	CXCM	CXCM1	CXCM2	CXCM4
Specifications				
Screen	Full graphic LCD 160 x 160 pixels	Basic current / Volts display only	Full graphic LCD 160 x 160 pixels	Full graphic LCD 160 x 160 pixels
Inputs				
Analog	2V, 2T, 1C, 1BIV	1V, 1C, 2T	1V, 2T, 2C, 4BIV	2V, 2T, 4C, 2BIV
Digital	3	2	6	4
Alarm relay outputs	8 Form C	4 Form C	6 Form C	8 Form C
Dimensions				
mm	177H x 74W x 255D	41.4H x 84.4W x 256.8D	86.4H x 128W x 247D	177H x 87W x 257D
inches	6.9H x 2.9W x 10D	1.63H x 3.34W x 10.11D	3.4H x 5W x 9.7D	7H x 3.4W x 10.1D

Model	CXCI	CXCR/CXCP	CXCR HV
Specifications			
Screen	Basic current / Volts display only	Full graphic LCD 160 x 160 pixels	Full graphic LCD 160 x 160 pixels
Inputs			
Analog	1V, 1C, 2T	2V, 2T, 4C, 2BIV	1V, 2T, 1C, 4BIV, 1GFI
Digital	2	8	4
Alarm relay outputs	4 Form C	8 Form C	8 Form C
Dimensions			
mm	88H x 26W x 280D	131H x 431W x 100D	131H x 431W x 100D
inches	3.5H x 1W x 11D	5.1H x 16.9W x 3.9D	5.1H x 16.9W x 3.9D

Rectifier shelf option availability							
Model	CXCM	CXCM1	CXCM2	CXCM4	CXCI	CXCR/CXCP	CXCR HV
250W (12Vdc)					Yes		
400W (24Vdc)					Yes		
650W (48Vdc)					Yes		
1kW (48Vdc)	Yes					Yes	
1.2kW (48Vdc)		Yes					
1.8kW/2.0kW (48Vdc)			Yes		Yes	Yes	
2.4kW (48Vdc)						Yes	
3.1kW (24Vdc)				Yes		Yes	
3.6kW/4.0kW (48Vdc)				Yes		Yes	
1.1kW (125/220Vdc)							Yes
4.4kW (125/220Vdc)							Yes

Cortex™ 4R/8D and 8R/8D ADIO

CXC Smart Peripheral



- Provides additional I/O expansion to existing CXC site controller
- Seamless expansion of four or eight relay outputs and eight digital inputs
- Flexible 1RU rack mounting system integration options
- Ideal for alternate device monitoring and control such as HVAC and generators

4R/8D P/N: 018-590-20	8R/8D P/N: 0180002-001, 0180002-002, 0180002-003
Electrical	Electrical
Power supply: Voltage: .....9V to 60Vdc Current:.....500mA Power:.....5W	Power supply: Voltage: .....9V to 60Vdc Current:.....500mA Power:.....5W
Digital inputs: Inactive voltage: .....-1.5 to 1.5V Active voltage:.....± (5 to 60V)	Digital inputs: Inactive voltage: .....-1.5 to 1.5V Active voltage:± (5 to 60V)
Relay outputs: Voltage: .....Up to 60V Current:.....500mA	Relay outputs: Voltage: .....Up to 60V Current:.....1A
User Interface	User Interface
Status indication: LED's: .....Power on (green) Module acquired (green)	Status indication: LED's: .....Power on (green) Module acquired (green)
Connections: Power supply:.....Terminal block (#16 to 26AWG) Digital input: .....Terminal block (#16 to 26AWG) Relay output: .....Terminal block (#16 to 26AWG) CAN In/Out: .....RJ12 offset connector	Connections: Power supply:.....Terminal block (#14 to 22AWG) Digital input: .....Terminal block (#14 to 22AWG) Relay output: .....Terminal block (#14 to 22AWG) CAN In/Out: .....RJ12 offset connector
Environmental	Environmental
Operating: Temperature: .....-40 to 75°C (-40 to 167°F) Humidity: .....0 to 95% non-condensing	Operating: Temperature: .....-40 to 75°C (-40 to 167°F) Humidity: .....0 to 95% non-condensing
Related Components	Related Components
Rack mount shelf: .....030-734-20 Wall mount shelf:.....030-764-20	Rack mount shelf: .....030-734-20
Agency Compliance	Agency Compliance
Unit is designed to meet the following standards	Unit is designed to meet the following standards
Safety: .....CSA C22.2 No 60950-1-03 CE marked	Safety: .....CSA C22.2 No 60950-1-03 CE marked

SD08

Battery Mid-Point Monitor



➤ Simple, easy to use battery monitoring solution for 48V applications

The SD08 Battery Fail Monitor module is designed to monitor the status of a single string, using mid-point monitoring. The SD08 splits the battery string voltage in half and the string voltage halves are compared. If the difference between the two exceeds the programmed value (set by front panel rotary switch) then an alarm is sent via a Form "C" relay and the red "BATT FAIL" LED is illuminated. The red LED is latching and requires manual intervention to reset (front panel push button).

A complete battery monitoring system consists of one or more SD08 modules installed in a 19" or 23" panel or wall mount unit. Additional SD08 modules can be added at a later time.

P/N: 747-109-020-040

Electrical

Input voltage:±20 to 60Vdc

Performance / Features

- LEDs:
- Green:.....battery cond. OK
 - Red:battery cond. fail
- Front panel reset
- Rear output Form C relay: battery fail
- Front panel switch:.....adjust volt deviation to max 1.6V in 0.1V increments

Mechanical

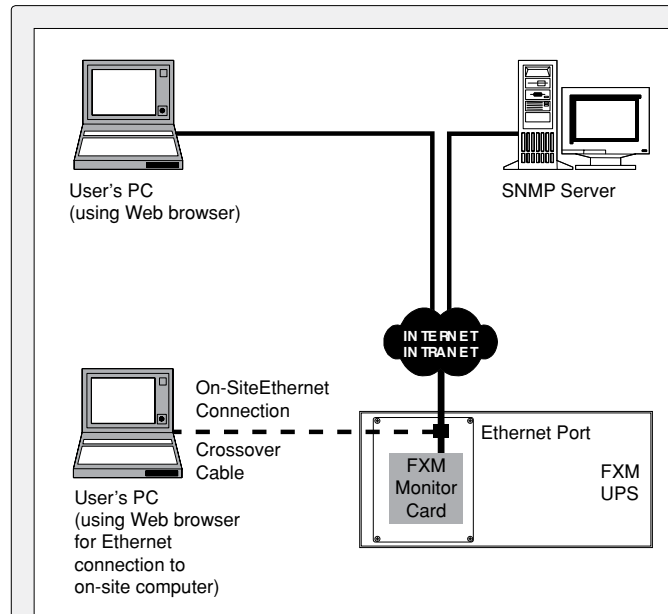
- Dimensions:
- mm:.....38.1H x 114.3W x 25.4D
 - inches: 1.5H x 4.5W x 1D
- Mounting:Wall or rack optional (19 or 23" rack)

Environmental

- Temperature:.....-40 to +50°C
- Humidity:.....0 to 95% RH non-condensing

Ethernet/SNMP Card* - Alpha FXM, Alpha Micro, Alpha Micro Secure

For greater effectiveness, control and communication with your UPS system, choose the Ethernet/SNMP card option for our Alpha FXM, Alpha Micro and Alpha Micro Secure products.** The Ethernet/SNMP card allows for communication with the Alpha UPS remotely through a web based interface. The Ethernet/SNMP card is powered by the UPS batteries eliminating the need for an external power source. Using Alpha's renowned CXC software, the communication card is capable of providing notifications to four different email addresses and to devices such as your PC, a mobile phone or PDA. Outgoing notifications can be customized with selectable severity levels and triggered by events, faults and/or alarms. Firmware updates for the UPS or the card itself can be downloaded from our website and uploaded to the device remotely.



The Alpha user Software is a graphical user interface (GUI) designed to help Alpha UPS users monitor, control and set various parameters for their UPS systems through a computer using a standard RS-232 connection or through the internet when the UPS is equipped with an Ethernet/SNMP card. Users are able to read and display UPS events, warnings, date, time and relay configurations through this Windows-based environment. The software is an excellent maintenance and troubleshooting tool that automatically updates information every five seconds and records events and warnings with time/date stamps. The UPS event log can be downloaded to your PC via the user interface.



Alpha UPS Monitor

Get real-time notification of every alarm and fault that occurs so that you are immediately in a position to take action. Easy to customize to your exact needs, the Ethernet edition allows you to set your own notification preferences via PC and receive notifications to any PC, mobile phone, PDA, or any device that accepts email.

*Ethernet/SNMP option must be chosen at time of order

**Standard on Micro 350 / FXM 350

01.50V

No Alarms Present

2008/1/9 18:01:02

STATUS

OK MIN MAJ RST

C
CXO



48-3.6kW

AC ON

DC ON

ALARM

Cordex™



Power Modules

Alpha power modules feature some of the most innovative technology on the market today. Many options are available for a variety of powering applications including inverters, rectifiers and DC-DC converter modules. Multiple power sizes and voltages are available to enable the most flexible, compact and cost-effective power system design.

Combining a unique blend of advanced features, high reliability and high efficiency, Alpha power modules offer users significant operational and capital savings. High temperature rated designs are ideal for harsh environments including outdoor enclosure solutions.

Rectifiers, DC-DC converters and AIM inverter modules are designed to operate seamlessly with the advanced Cordex™ CXC controllers, providing local and remote access to system control and monitoring.

Rectifiers

Cordex rectifiers are available in a wide array of power sizes from 250W to 12,000W per module, enabling the most compact and cost-effective power system design. Multiple DC output and AC input options are available to provide an ideal solution for most telecommunications and utility applications.

Combining a unique blend of advanced features, high reliability and greater efficiency, Cordex rectifiers offer significant operational and capital savings. High power diversity modules provide users with greater rack space for additional revenue generating equipment in space restricted environments. Fan cooled rectifier options are industry leading in terms of high temperature operation in harsh environments.

48Vdc Modular Switched Mode Rectifier

- Available in 20.8A @ 48Vdc
- Power limiting and wide range AC input
- 92% efficiency and power factor correction
- Convection cooled
- Hot swappable, 4RU ultra compact design

P/N: 010-566-20

Electrical

Input voltage:
 Nominal: 208 to 277Vac
 Operating: 150 to 320Vac
 Extended: 150 to 90Vac (de-rated power)

Input frequency: 45 to 66Hz

Power factor: >0.99

Efficiency: >92%

Power output: 1000W continuous/module

Output voltage: 42 to 60Vdc

Output current: 18.5A @ 54Vdc (20.8A max)

Load regulation: $\pm 0.5\%$ (static)

Line regulation: $\pm 0.1\%$ (static)

Transient response: $\pm 1\%$ for 50 to 100% load step,
 2ms recovery time

Noise:
 Voice band: <32dB_{BrnC}
 Wide band: <5mV_{rms}
 <100mV_{pk} to pk

Psophometric: <1mV

Performance / Features

Indicators:	AC mains OK—green LED
	Module OK—green LED
	Module alarm—red LED
Cooling:	Natural convection
Adjustments:	Float and equalize voltage
(via CXC Controller)	Battery test voltage
	High and low voltage alarms
	High voltage shutdown
	Current limit
	Start delay timers
	Slope %
Protection:	Current limit/short circuit
	Start delay
	Input/output fuses
	Output high voltage shutdown
	Output power limiting
	Thermal foldback/shutdown
	Input transient
	AC low line foldback/shutdown
	AC high voltage shutdown



Cordex™ 48-1kW

Mechanical

Dimensions:
mm:.....177H x 71W x 250D
inches:.....6.9H x 2.8W x 9.8D
Weight:.....2.9kg (6.4lbs)

Environmental

Temperature:

Operation:.....-40 to 50°C (-40 to 122°F)
(with short periods up to 70°C/158°F)

Storage:-40 to 85°C (-40 to 185°F)

Humidity:0 to 95% RH non-condensing

Elevation:-500 to 4000m (-1640 to 13120ft)

Heat dissipation:<295 BTU per hour

Agency Compliance

Safety: CSA C22.2 No 60950-1-03
 UL 60950-1 1st edition
 CE marked
 IEC/EN 60950-1

EMC: ETSI 300 386

Emissions: CFR47 (FCC) Part 15 Class B
 ICES-03 Class B
 EN55022 (CISPR 22) Class B
 C-Tick (Australia)
 EN 61000-3-2
 EN 61000-3-3

Immunity: EN 61000-4-2
 EN 61000-4-3
 EN 61000-4-4
 EN 61000-4-5
 EN 61000-4-6
 EN 61000-4-11
 ANSI/IEEE C62.41 Cat B3
 EN 61000-4-11
 ANSI/IEEE C62.41 Cat B3

Cordex™ HP 1.2kW

48Vdc Modular Switched Mode Rectifier



- >93% efficiency for reduced operating expenses and carbon footprint
- High temperature operation for installation in harsh outdoor environments
- 1RU x 2RU footprint for flexible and multiple mounting options
- High power density (21.8W/in³) yields more space for revenue generating equipment
- Wide AC input range for a variety of global installation requirements



Cordex™ HP 48-1.2kW

P/N: 010-619-20

Electrical

Input voltage:

Nominal: 176 to 276Vac
Extended (low): 90 to 175Vac (de-rated output power)
Extended (high): 277 to 300Vac (de-rated power factor)

Input current:

Nominal: 7.4A max
90 to 132Vac: 6A max

Input frequency: 45 to 70Hz

Power factor: >99%

THD: <5% @ nominal input voltage

Efficiency: >93% 40%-100% load (nominal AC input)
..... >90% 40%-100% load (120Vac input)

Output voltage: 42 to 58Vdc

Output power:

Nominal AC input: 1200W
110 to 132Vac: 600W (de-rated linearly to 491W @ 90Vac)

Output current:

Nominal AC input: 22.2A @ 54V (25A max @ 48V)
110 to 132Vac: 12.5A max (de-rated linearly to 10.2A @ 90Vac)

Load regulation:

Static: <±0.5%
Dynamic: <±1% for 40 to 90 to 40% load step,
2ms recovery time

Line regulation:

Static: <±0.1%
Dynamic: <±1% for any change within rated limits

Wide band noise: <30mVrms
..... <150mVp-p

Psophometric noise: <2mV

Performance / Features

Indicators: AC mains OK — green LED
..... DC output OK — green LED
..... Module alarm — red LED

Cooling: Fan cooled

Adjustments: Float and equalize voltage
(via CXC controller) Battery test voltage
High and low voltage alarms high voltage
shutdown

Protection: Current limit
..... Input/output fuses
..... Output high voltage shutdown
..... Output power limiting
..... Thermal foldback/shutdown
..... Input transient
..... AC low line foldback/shutdown
..... AC high voltage shutdown

Mechanical

Dimensions:

mm: 41.4H x 84.8W x 256.8D
inches: 1.63H x 3.34W x 10.11D

Weight: 1.23kg (2.7lbs)

Environmental

Temperature:

Operation: -40 to 65°C (-40 to 149°F)
..... (power derated up to 80°C/176°F)

Storage: -40 to 85°C (-40 to 185°F)

Humidity: 0 to 95% RH non-condensing

Elevation: -500 to 3000m (-1640 to 9840ft)

Heat dissipation: <308 BTU per hour

Agency Compliance

Safety: CSA C22.2 No 60950-1-03

CE marked

EMC: ETSI 300 386

Emissions: CFR47 (FCC) Part 15 Class B

ICES-03 Class B

EN55022 (CISPR 22) Class B

C-tick (Australia)

EN 61000-3-2

EN 61000-3-3

Immunity: EN 61000-4-2

EN 61000-4-3

EN 61000-4-4

EN 61000-4-5

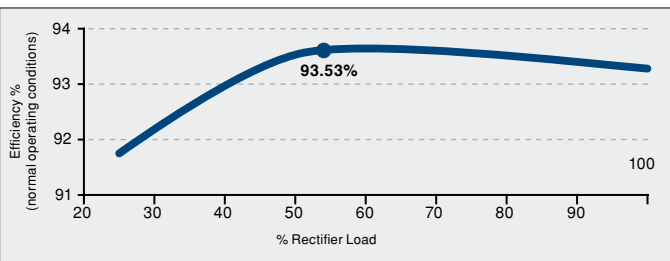
EN 61000-4-6 EN 61000-4-11

ANSI/IEEE C62.41 Cat B3

NEBS / Telcordia: GR-1089-CORE

GR-63-CORE

Cordex™ CXRF-HP 1.2kW Efficiency



Cordex™ 1.8kW

48Vdc Modular Switched Mode Rectifier

- Available in 37.5A @ 48Vdc
- High power density
- Universal, wide range AC input
- 91% efficiency and power factor correction
- Hot swappable, 2RU ultra compact design

P/N: 010-580-20

Electrical

Input voltage:	
Nominal:	208 to 277Vac
Operating:	176 to 312Vac
Extended:	176 to 90Vac (de-rated power)
Input frequency:	
	45 to 66Hz
Power factor:	
	>0.99 (50 to 100% load)
THD:	
	<5%
Efficiency:	
	>91%
Output voltage:	
	42 to 60Vdc
Output current:	
	37.5A @ 48Vdc (nominal I/p)
	24A @ 48Vdc (115 to 135Vac)
	(de-rated linearly to 18.75A @ 90Vac)
Output power:	
	1800W continuous @ nominal I/p
	1150W (115 to 135Vac)
	(de-rated linearly to 900W @ 90Vac)
Load regulation:	
	<±0.5% (static)
Line regulation:	
	<±0.1% (static)
Transient response:	
	±2% for 50 to 100% load step,
	2ms recovery time
Noise:	
Voice band:	<32dBrnC
Wide band:	<30mV RMS (10kHz to 10MHz)
	<150mV pk to pk (10kHz to 100MHz)
Psophometric:	
	<1mV
Acoustic:	
	<60dBa @ 1m (3ft)

Performance / Features

Indicators:	AC mains OK — green LED
	Module OK — green LED
	Module fail — red LED
Controls:	
	CAN interface to CXC
Adjustments:	
(via CXC controller)	Float voltage
	Equalize voltage
	High voltage alarm
	Low voltage alarm
	High voltage shutdown
	Current limit
	Slope
	Start delay timers
Protection:	Current limit/short circuit
	Start delay
	Input/output fuses
	Output high voltage shutdown
	Power limiting
	Thermal foldback/shutdown
	Input transient
	AC low line foldback/shutdown
	AC high voltage shutdown

Mechanical

Dimensions:	
mm:	84H x 100W x 235D
inches:	3.3H x 3.94W x 9.25D
Weight:	
	2.8kg (6.2lbs)



Cordex™ 48-1.8kW

Environmental

Temperature:	
Standard:	-40 to 65°C (-40 to 149°F)
Storage:	-40 to 85°C (-40 to 185°F)
Humidity:	
	0 to 95% RH non-condensing
Elevation:	
	-500 to 2800m (-1640 to 9186ft)
Heat dissipation:	
	<608 BTU per hour

Shelves

19/23" 4-module P/N: 030-749-20
23" 5-module P/N: 030-747-20

>19/23" shelf	
Dimensions:	
mm:	89H x 438W x 310D
inches:	3.5H x 17.2W x 12.2D
Weight:	
	8.5kg (19lbs)
Mounting:	
	19" flush or center mount
	23" center mount only
>23" shelf	
Dimensions:	
mm:	89H x 541W x 310D
inches:	3.5H x 21.3W x 12.2D
Weight:	
	10kg (22lbs)
Mounting:	
	23" flush or center mount
Connections:	
Input:	Terminal blocks
	Mini-fit connectors (23" only)
Output:	Bus adapters with 5/8" on 1" center holes
Chassis ground:	1/4" studs on 5/8" centers
CAN communication:	RJ12 offset

Agency Compliance

Safety:	CSA C22.2 No 60950-1-03
	UL 60950-1 1 st edition
	CE marked
	IEC/EN 60950-1
EMC:	
	ETSI 300 386
Emissions:	CFR47 (FCC) Part 15 Class B
	ICES-03 Class B
	EN55022 (CISPR 22) Class B
	C-Tick (Australia)
	EN 61000-3-2
	EN 61000-3-3
	EN 61000-4-2
	EN 61000-4-3
	EN 61000-4-4
	EN 61000-4-5
	EN 61000-4-6
Immunity:	EN 61000-4-11
	ANSI/IEEE C62.41 Cat B3

Cordex™ HP 2.0kW

48Vdc Modular Switched Mode Rectifier

cordex HP™
HIGH PERFORMANCE

NEW



Cordex™ HP 48-2.0kW

- 94% efficiency for reduced operating expenses and carbon footprint
- Available in 41.7A @ 48Vdc
- Universal, wide range AC input
- Hot swappable, 2RU ultra compact design
- Backwards compatible with Cordex 1.8kW shelves and power solutions enabling cost effective system upgrade

P/N: 010-622-20

Electrical

Input voltage:

Nominal: 187 to 277Vac
Operating: 187 to 312Vac
Extended: 176 to 90Vac (de-rated power)

Input frequency: 45 to 66Hz

Power factor: >0.99 (50 to 100% load)

THD: <5% (@ 208Vac)

Efficiency: >94.2%

Output voltage: 42 to 58Vdc

Output current: 41.7A @ 48Vdc (nominal I/p)
26A @ 48Vdc (@ 120Vac input)

Output power: 2000W continuous @ nominal I/p
1248W (@ 120Vac)

Load regulation: <±0.5% (static)

Line regulation: <±0.5% (static)

Transient response: ±2% for 40 to 90% load step

Noise:

Voice band: <38dBnC
Wide band: <30mV RMS (10kHz to 10MHz)
..... <150mV pk to pk (10kHz to 100MHz)

Psophometric: <2mV RMS

Acoustic: <60dBa @ 1m (3ft), 30°C

Performance / Features

Indicators: AC mains OK — green LED
..... Module OK — green LED
..... Module fail — red LED

Controls: CAN interface to CXC

Adjustments: Float voltage
(via CXC controller) Equalize voltage

High voltage alarm

Low voltage alarm

High voltage shutdown

Current limit

Slope

Start delay timers

Protection: Current limit/short circuit

Start delay

Input/output fuses

Output high voltage shutdown

Power limiting

Thermal foldback/shutdown

Input transient

AC low line foldback/shutdown

AC high voltage shutdown

Mechanical

Dimensions:

mm: 86H x 102W x 270D
inches: 3.4H x 4.0W x 10.6D

Weight: 2.3kg (5.1lbs)

Environmental

Temperature:

Standard: -40 to 55°C (-40 to 149°F)

Extended: -40 to 75°C (-40 to 167°F)

derated power (~1800W @ 65°C (149°F))

Storage: -40 to 85°C (-40 to 185°F)

Humidity: 0 to 95% RH non-condensing

Elevation: -60 to 2000m (-198 to 6600ft)

Heat dissipation: <549 BTU per hour

Shelves

19/23" 4-module P/N: 030-749-20

23" 5-module P/N: 030-747-20

➤ 19/23" shelf (4 modules)

Dimensions:

mm: 89H x 438W x 310D

inches: 3.5H x 17.2W x 12.2D

Weight: 8.5kg (19lbs)

Mounting: 19" flush or center mount

23" center mount only

➤ 23" shelf (5 modules)

Dimensions:

mm: 89H x 541W x 310D

inches: 3.5H x 21.3W x 12.2D

Weight: 10kg (22lbs)

Mounting: 23" flush or center mount

Connections:

Input: Terminal blocks

Mini-fit connectors (23" only)

Output: Bus adapters with ⅜" on 1" center holes

Chassis ground: ¼" studs on ⅝" centers

CAN communication: RJ12 offset

Agency Compliance

Safety: CSA C22.2 No 60950-1-03

UL 60950-1 1st edition

CE marked

IEC/EN 60950-1

EMC: ETSI 300 386

Emissions: CFR47 (FCC) Part 15 Class B

ICES-03 Class B

EN55022 (CISPR 22) Class B

C-Tick (Australia)

EN 61000-3-2

EN 61000-3-3

Immunity: EN 61000-4-2

EN 61000-4-3

EN 61000-4-4

EN 61000-4-5

EN 61000-4-6

EN 61000-4-11

ANSI/IEEE C62.41 Cat B3

Cordex™ 3.6kW

48Vdc Modular Switched Mode Rectifier

- Available in 75A @ 48Vdc
- High power density, over 21kW per 23" shelf
- Power limiting and wide range AC input
- High efficiency and power factor correction
- Hot swappable, 4RU ultra compact design



Cordex™ 48-3.6kW

P/N: 010-567-20

Electrical

➤ 3.6kW Rectifier Module(s)

Input voltage:

Nominal:208 to 277Vac
Operating:176 to 312Vac
Extended:176 to 90Vac (de-rated power)

Input frequency:45 to 66Hz

Power factor:>0.99 (50 to 100% load)

THD:<5%

Efficiency:>92%

Output voltage:42 to 60Vdc

Output power:3600W continuous/module

Float voltage:48 to 58Vdc

Output current:66A @ 54Vdc (75A max 48V)

Load regulation:<±0.5% (static)

Line regulation:<±0.1% (static)

Transient response:±2% for 50 to 100% load step,
2ms recovery time

Noise:

Voice band:<32dBnC

Wide band:<30mV RMS (10kHz to 10MHz)

.....<150mV pk to pk (10kHz to 100MHz)

Psophometric:<1mV

Acoustic:<60dBA @ 1m (3ft)

Performance / Features

Indicators:AC mains OK — green LED

Module OK — green LED

Module fail — red LED

Controls:CAN interface to CXC

Adjustments:Float voltage

(via CXC controller) Equalize voltage

High/low voltage alarm

High voltage shutdown

Current limit

Slope

Start delay

Protection:Current limit/short circuit

Start delay

Input/output fuses

Output high voltage shutdown

Power limiting

Thermal foldback/shutdown

Input transient

AC low line foldback shutdown

Mechanical

Dimensions:

mm:160H x 87W x 300D

inches:6.3H x 3.4W x 11.8D

Weight:4.6kg (10lbs)

Environmental

Temperature:

Standard:-40 to 65°C (-40 to 149°F)

Storage:-40 to 85°C (-40 to 185°F)

Humidity:0 to 95% RH non-condensing

Elevation:-500 to 4000m (-1640 to 13120ft)

Heat dissipation:<1176 BTU per hour

Agency Compliance

Safety:CSA C22.2 No 60950-1-03

UL 60950-1 1st edition

CE marked

IEC/EN 60950-1

EMC:ETSI 300 386

Emissions:CFR47 (FCC) Part 15 Class B

ICES-03 Class B

EN55022 (CISPR 22) Class B

C-Tick (Australia)

EN 61000-3-2

EN 61000-3-3

Immunity:EN 61000-4-2

EN 61000-4-3

EN 61000-4-4

EN 61000-4-5

EN 61000-4-6

EN 61000-4-11

ANSI/IEEE C62.41 Cat B3

NEBS:GR-1089 CORE

GR-63 CORE

24Vdc Modular Switched Mode Rectifier

- Available in 14A @ 24Vdc
- Universal 120/208 to 240Vac input
- High efficiency and power factor correction
- Convection cooled
- Hot swappable, 2RU ultra compact design



Cordex™ 12-250W

P/N 010-582-20

Electrical

Input voltage:	:.....90 to 320Vac
Input frequency:	:.....45 to 70Hz
Power factor:	:.....>99%
THD:	:.....<5%
Efficiency:	:.....>90%
Power output:	:.....400W (max)
Output voltage:	:.....20 to 29Vdc
Output current:	:.....14A (current limited)
Load regulation:	:.....Static < $\pm 0.5\%$ Dynamic < $\pm 2\%$ for 50 to 100% load step 2ms recovery time
Line regulation:	:.....Static < $\pm 0.1\%$ Dynamic < $\pm 1\%$ for any change within rated limits
Wide band noise:	:.....<30mVrms <150mVp-p
Psophometric noise:	:.....<1mV

Performance / Features

Indicators:	AC mains OK—green LED
	Module alarm—red LED
Cooling:	Natural convection
Adjustments:	Float and equalize voltage
(via CXCI controller)	Battery test voltage
	High and low voltage alarms
	High voltage shutdown
	Current limit
	Start delay time
	Slope %
Protection:	Current limit/short circuit
	Input/output fuses
	Output high voltage shutdown
	Output power limiting
	Thermal foldback/shutdown
	Input transient
	AC low line foldback/shutdown
	AC high voltage shutdown

Mechanical

Dimensions:

mm:.....88.4H x 71.6W x 242D
 inches:3.4H x 2.8W x 9.5D
Weight:.....1.4kg (3lbs)

Environmental

Temperature:

Operation:.....-40 to 50°C (-40 to 122°F)
(power de-rated up to 70°C/158°F)
Storage:.....-40 to 85°C (-40 to 185°F)
Humidity:.....0 to 95% RH non-condensing
Elevation:.....-500 to 3000m (-1640 to 9840ft)
Heat dissipation:.....<94 BTU per hour

Agency Compliance

Safety:.....CSA C22.2 No 60950-1-03
UL 60950-1 1st edition
CE marked
IEC/EN 60950-1

EMC:ETSI 300 386
Emissions:CFR47 (FCC) Part 15 Class B
ICES-03 Class B
EN55022 (CISPR 22) Class B
C-Tick (Australia)
EN 61000-3-2
EN 61000-3-3

Immunity:.....EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-11
ANSI/IEEE C62.41 Cat B3

Cordex™ 3.1kW

24Vdc Modular Switched Mode Rectifier

- Available in 130A @ 24Vdc
- High power density, over 21kW per 23" shelf
- Power limiting and wide range AC input
- High efficiency and power factor correction
- Hot swappable, 4RU ultra compact design

P/N: 010-572-20

Electrical

➤ 3.1kW Rectifier Module(s)

Input voltage:

Nominal: 208 to 277Vac
Operating: 176 to 312Vac
Extended: 176 to 90Vac (de-rated power)

Input frequency: 45 to 70Hz

Power factor: >0.99 (50 to 100% load)

THD: <5%

Efficiency: >90%

Output voltage: 21 to 29Vdc

Output power: 3100W continuous/module

Output current: 115A @ 27Vdc (130A max. 24V)

Load regulation: <±0.5% (static)

Line regulation: <±0.1% (static)

Transient response: ±2% for 50 to 100% load step,
2ms recovery time

Noise:

Voice band: <32dBrnC

Wide band: <30mV RMS (10kHz to 10MHz)
..... <150mV pk to pk (10kHz to 100MHz)

Psophometric: <1.0mV

Acoustic: <60dBa @ 1m (3ft)

Performance / Features

Indicators: AC mains OK—green LED

Module OK—green LED

Module fail—red LED

Controls: CAN interface to CXC

Adjustments: Float voltage

(via CXC controller) Equalize voltage
High/low voltage alarm
High voltage shutdown
Current limit
Slope
Start delay

Protection: Current limit/short circuit

Start delay

Input/output fuses

Output high voltage shutdown

Power limiting

Thermal foldback/shutdown

Input transient

AC low line foldback shutdown



Cordex™ 24-3.1kW

Mechanical

Dimensions:

mm: 160H x 87W x 300D

inches: 6.3H x 3.4W x 11.8D

Weight: 4.6kg (10lbs)

Environmental

Temperature:

Standard: -40 to 65°C (-40 to 149°F)

Storage: -40 to 85°C (-40 to 185°F)

Humidity: 0 to 95% RH non-condensing

Elevation: -500 to 4000m (-1640 to 13120ft)

Heat dissipation: <1176 per hour

Agency Compliance

Safety: CSA C22.2 No 60950-1-03

UL 60950-1 1st edition

CE marked

IEC/EN 60950-1

EMC: ETSI 300 386

Emissions: CFR47 (FCC) Part 15 Class B

ICES-03 Class B

EN55022 (CISPR 22) Class B

C-Tick (Australia)

EN 61000-3-2

EN 61000-3-3

Immunity: EN 61000-4-2

EN 61000-4-3

EN 61000-4-4

EN 61000-4-5

EN 61000-4-6

EN 61000-4-11

ANSI/IEEE C62.41 Cat B3

NEBS: GR-1089 CORE

GR-63 CORE

12Vdc Modular Switched Mode Rectifier



- Available in 20.8A @ 12Vdc
- Universal 120/208 to 240Vac input
- Power factor correction
- Convection cooled
- Hot swappable, 2RU ultra compact design

P/N: 010-587-20

Electrical

Input voltage:	.....90 to 320Vac
Input frequency:	.....45 to 70Hz
Power factor:	.....>99%
THD:	.....<5%
Efficiency:	.....>90%
Power output:	.....250W
Output voltage:	.....10.5 to 14.5Vdc
Output current:	.....18.5A @ 13.5Vdc (20A max)
Load regulation:	.....<$\pm 0.5\%$ (static)
Line regulation:	.....<$\pm 0.1\%$ (static)
Transient response:	.....$\pm 2\%$ for 50 to 100% load step 2ms recovery time
Wide band noise:	.....<30mVrms <150mVp-p
Psfophometric noise:	.....<1mV

Performance / Features

Indicators:	AC mains OK — green LED Module alarm — red LED
Cooling:	Natural convection
Adjustments: (via CXCI controller)	Float and equalize voltage Battery test voltage High and low voltage alarms High voltage shutdown Current limit Start delay time Slope %
Protection:	Current limit/short circuit Input/output fuses Output high voltage shutdown Output power limiting Thermal foldback/shutdown Input transient AC low line foldback/shutdown AC high voltage shutdown

Mechanical

Dimensions:
mm:.....88.4H x 71.6W x 242D
inches:3.4H x 2.8W x 9.5D
Weight:..... 1.4kg (3lbs)

Environmental

Temperature:

Operation:.....-40 to 50°C (-40 to 122°F)
(power de-rated up to 70°C/158°F)

Storage:.....-40 to 85°C (-40 to 185°F)

Humidity:.....0 to 95% RH non-condensing

Elevation:.....-500 to 3000m (-1640 to 9840ft)

Heat dissipation:.....<94 BTU per hour

Agency Compliance

Safety: CSA C22.2 No 60950-1-03
 UL 60950-1 1st edition
 CE marked
 IEC/EN 60950-1

EMC: ETSI 300 386

Emissions: CFR47 (FCC) Part 15 Class B
 ICES-03 Class B
 EN55022 (CISPR 22) Class B
 C-Tick (Australia)
 EN 61000-3-2
 EN 61000-3-3

Immunity: EN 61000-4-2
 EN 61000-4-3
 EN 61000-4-4
 EN 61000-4-5
 EN 61000-4-6
 EN 61000-4-11
 ANSI/IEEE C62.41 Cat B3

Cordex™ 1.1kW

125Vdc Modular Switched Mode Rectifier

- 8.8A output @ 125Vdc
- Power limiting and wide range AC input
- 93% efficiency with power factor correction
- Convection cooled
- Hot swappable, 4RU ultra compact design

P/N: 010-579-20

Electrical

Input voltage:

Nominal: 208 to 277Vac
Operating: 176 to 320Vac
Extended: 176 to 150Vac (de-rated to 75%)

Input frequency: 45 to 66Hz

Power output: 1100W continuous/module

Power factor: >0.99 (input current)

THD: <5%

Efficiency: >93%

Output voltage: 90 to 180Vdc

Output current: 8.8A @ 125Vdc (11A max)

Load regulation: Static $\pm 0.5\%$

Line regulation: Static $\pm 0.1\%$

Transient response: $\pm 2\%$ for 50 to 100% load step, 10ms recovery time

Wide band noise: <30mVrms

<150mVp-p

Insulation: 2.5kVac input-earth

3kVac input-output

2kVac output-earth

0.5kVac signals-earth

Performance / Features

Indicators: AC mains OK — green LED
Module OK — green LED
Module alarm — red LED

Cooling: Natural convection

Adjustments: Float and equalize voltage
(via CXC controller) Battery test voltage
High and low voltage alarms
High voltage shutdown
Current limit
Start delay time
Slope %

Protection: Current limit/short circuit
Input/output fuses
Output high voltage shutdown
Output power limiting
Thermal foldback/shutdown
Input transient
AC low line foldback/shutdown
AC high voltage shutdown
Earth leakage alarm

Mechanical

Dimensions:

mm: 177H x 71W x 250D

inches: 6.9H x 2.8W x 9.8D

Weight: 2.9kg (6.4lbs)



Cordex™ 125-1.1kW

Environmental

Temperature:

Operation: -40 to 50°C (-40 to 122°F)
(up to 70°C/158°F power de-rated)

Storage: -50 to 85°C (-58 to 185°F)

Humidity: 0 to 95% RH non-condensing

Elevation: -500 to 4000m (-1640 to 13120ft)

Heat dissipation: <282 BTU per hour (max)

Shelves

P/N: 030-740-20

➤ 19" shelf (6 module)

Dimensions:

mm: 177H x 444W x 303D

inches: 6.9H x 17.5W x 11.9D

Weight: 7.3kg (16lbs)

Mounting: Fits 19" rack flush mount

Fits 19" or 23" center mount

Connections:

Input: Terminal blocks for 3 feeds
4–6mm² (12–10AWG)

Output: ¼" studs on ½" centers

Chassis ground: ¼" stud

CAN communication: RJ 12 offset

Agency Compliance

Safety: CSA C22.2 No 60950-1-03
UL 60950-1 1st edition
CE marked
IEC/EN 60950-1

EMC: ETSI 300 386
Emissions: CFR47 (FCC) Part 15 Class A
ICES-03 Class A
EN55022 (CISPR 22) Class A
C-Tick (Australia)
EN 61000-3-2
EN 61000-3-3
Immunity: EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-11
ANSI/IEEE C62.41 Cat B3

Cordex™ 1.1kW

220Vdc Modular Switched Mode Rectifier

- 5A output @ 220Vdc
- Power limiting and wide range AC input
- 93% efficiency with power factor correction
- Convection cooled
- Hot swappable, 4RU ultra compact design

P/N: 010-569-20

Electrical

Input voltage:	
Nominal:	208 to 277Vac
Operating:	176 to 320Vac
Extended:	176 to 150Vac (de-rated to 75%)
Input frequency:	45 to 66Hz
Power output:	1100W continuous/module
Power factor:	>0.99 (input current)
THD:	<5%
Efficiency:	>93%
Output voltage:	180 to 320Vdc
Output current:	5A @ 220Vdc (5.5A max)
Load regulation:	Static $\pm 0.5\%$
Line regulation:	Static $\pm 0.1\%$
Transient response:	$\pm 2\%$ for 50 to 100% load step, 10ms recovery time
Wide band noise:	<30mVrms <150mVp-p
Insulation:	2.5kVac input-earth 3kVac input-output 2kVac output-earth 0.5kVac signals-earth

Performance / Features

Indicators:	AC mains OK — green LED Module OK — green LED Module alarm — red LED
Cooling:	Natural convection
Adjustments: (via CXC controller)	Float and equalize voltage Battery test voltage High and low voltage alarms High voltage shutdown Current limit Start delay time Slope %
Protection:	Current limit/short circuit Input/output fuses Output high voltage shutdown Output power limiting Thermal foldback/shutdown Input transient AC low line foldback/shutdown AC high voltage shutdown Earth leakage alarm

Mechanical

Dimensions:	
mm:	177H x 71W x 250D
inches:	6.9H x 2.8W x 9.8D
Weight:	2.9kg (6.4lbs)



Cordex™ 220-1.1kW

Environmental

Temperature:	
Operation:	-40 to 50°C (-40 to 122°F) (up to 70°C/158°F power de-rated)
Storage:	-50 to 85°C (-58 to 185°F)
Humidity:	0 to 95% RH non-condensing
Elevation:	-500 to 4000m (-1640 to 13120ft)
Heat dissipation:	<282 BTU per hour (max)

Shelves

P/N: 030-718-20

➤ 19" shelf (6 module)	
Dimensions:	
mm:	177H x 444W x 303D
inches:	6.9H x 17.5W x 11.9D
Weight:	7.3kg (16lbs)
Mounting:	Fits 19" rack flush mount Fits 19" or 23" center mount
Connections:	
Input:	Terminal blocks for 3 feeds 4–6mm ² (12–10AWG)
Output:	1/4" studs on 5/8" centers
Chassis ground:	1/4" stud
CAN communication:	RJ 12 offset

Agency Compliance

Safety:	CSA C22.2 No 60950-1-03 UL 60950-1 1 st edition CE marked IEC/EN 60950-1
EMC:	ETSI 300 386
Emissions:	CFR47 (FCC) Part 15 Class A ICES-03 Class A EN55022 (CISPR 22) Class A C-Tick (Australia) EN 61000-3-2 EN 61000-3-3 EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6 EN 61000-4-11 ANSI/IEEE C62.41 Cat B3
Immunity:	

Cordex™ 4.4kW

Modular Switched Mode Rectifier

- Available in 35A @ 125Vdc or 20A @ 220Vdc
- High power density, over 22kW per 19" shelf
- Power limiting and wide range AC input
- 92% efficiency and power factor correction
- Hot swappable, 4RU ultra compact design

125V P/N: 010-589-20, 220V P/N: 010-588-20

Electrical

Input voltage:

Nominal: 208 to 240Vac
Operating: 187 to 312Vac
Extended: 187 to 90Vac (de-rated)

Input frequency: 45 to 70Hz

Power: 4400W continuous/module

Power factor: >0.99 (50 to 100% load)

THD: <5%

Efficiency: >92%

Output voltage:

125V module: 90 to 160Vdc
220V module: 180 to 320Vdc

Output current:

125Vdc module: 35A @ 125Vdc (40A @ 110Vdc max)
220Vdc module: 20A @ 220Vdc

Load regulation: Static $\pm 0.5\%$

Line regulation: Static $\pm 0.1\%$

Transient response: $\pm 5\%$ for 40 to 90% load step, 30ms recovery time

Wide band noise: 220Vdc module: <30mVrms
..... <300mVp-p
125Vdc module: <90mVrms
..... <700mVp-p

Insulation: 2.5kVac input-earth
..... 3kVac input-output
..... 2kVac output-earth
..... 0.5kVac signals-earth

Acoustic: <60dBa @ 1m (3ft)

Performance / Features

Indicators: AC mains OK—green LED
..... Module OK—green LED
..... Module fail—red LED

Controls: CAN interface to CXC

Adjustments: Float voltage

(via CXC controller) Equalize voltage
High & low voltage alarms
High voltage shutdown
Current limit
Slope
Start delay

Protection: Current limit/short circuit
Start delay
Input/output fuses
Output high voltage shutdown
Power limiting
Thermal foldback/shutdown
Input transient
AC low line foldback shutdown

Mechanical

Dimensions:

mm: 160H x 87W x 300D
inches: 6.3H x 3.4W x 11.8D

Weight: 4.65kg (10.57lbs)



Cordex™ 4.4kW

Environmental

Temperature:

Standard: -40 to 50°C (-40 to 130°F)

Extended: -40 to 75°C (-40 to 167°F)

Storage: -40 to 85°C (-40 to 185°F)

Humidity: 0 to 95% RH non-condensing

Elevation: -500 to 2800m (-1640 to 9186ft)

Heat dissipation: <1080 BTU per hour

Shelves

125V 19" 5-module P/N: 030-769-20

220V 19" 5-module P/N: 030-768-20

Dimensions:

mm: 177H x 442W x 389D

inches: 6.9H x 17.4W x 15.3D

Weight: 8.5kg (19lbs)

Mounting: Fits 19" rack flush/center mount (5 modules)
..... Fits 23" rack center mount only

Connections:

Input: Box type terminal block
..... 6 to 16mm² (10 to 6AWG)

Output: Bus adapters with 5/8" studs on 1" centers

Chassis ground: Compression lug
..... 6 to 16mm² (10 to 6AWG)

CAN communication: RJ12 offset

Agency Compliance

Safety: CSA C22.2 No 60950-1-03
..... UL 60950-1 1st edition
..... CE marked
..... IEC/EN 60950-1

EMC:

Emissions: CFR47 (FCC) Part 15 Class A
..... ICES-03 Class A
..... EN55022 (CISPR 22) Class A
..... C-Tick (Australia)

Immunity: EN 61000-3-2
..... EN 61000-3-3
..... EN 61000-4-2
..... EN 61000-4-3
..... EN 61000-4-4
..... EN 61000-4-5
..... EN 61000-4-6
..... EN 61000-4-11
..... ANSI/IEEE C62.41 Cat B3



Converters

Alpha Cordex modular, hot swappable DC-DC converters are the ideal solution for providing dual voltage capability in new systems – or upgrades to existing DC plants for a variety of applications.

Modular 24V-48V and 48V-24V converters meet the needs of wireless carriers that are transitioning radio technologies. Alpha's DC power solutions include the ability to incorporate Cordex converters into the same system. For existing sites with established DC power plants, the Alpha converters can be configured into a stand-alone shelf for powering the electronic equipment.

Whether supporting legacy cellular equipment or enhancing a network with advanced radio overlays, Alpha Cordex converters provide flexibility that allow you to maintain a single voltage battery system.

CXDF 24-48/2kW

Cortex™ Series DC-DC Converters

- Support small to medium 48Vdc loads from legacy 24V power systems
- High power density modular design, up to 2kW output per module
- Advanced monitoring and control capability including remote accessibility
- Internal low voltage shutdown for cost effective integration into existing systems



CXDF 24-48/2kW Converter Module

P/N: 012-526-20

Electrical

Input voltage:21 to 30Vdc
Input current:Up to 94A @ 24V
Efficiency:>88%
Input noise:
Voice band:<32dBrnC
Wide band:<10mV RMS to 10MHz
 <150mVp-p to 100MHz
Output power:2000W max @ -54V
Output voltage:-54Vdc nominal
Output current:37A max
Regulation:-1% +/-0.1% load (static)
 +/- 0.1% line (static)
Output noise:
Voice band:<38dBrnC
Wide band:<10mV RMS to 10MHz
 <150mVp-p to 100MHz
Acoustic noise:<60dBa @ 1m (3ft)

Performance / Features

Indicators:Input ok LED (green)
 Output ok LED (green)
 Module fail LED (red)
Adjustments:Via CXC controller
Protection:Input fuse
 Input inrush current limit
 Output fuse
 Over temperature limiting
 Input high and low voltage shutdown
 Current limit/short circuit protection
Miscellaneous:Control and monitoring via CXC controller
 (requires v1.96 min)
 Low voltage cutoff (LVD)

Mechanical

Dimensions:
mm:84H x 100W x 235D
in:3.3H x 3.94W x 9.25D
Weight:2.8kg (6.2lbs)

Environmental

Temperature:-40 to 55°C (de-rated power up to 75°C)
Humidity:0 to 95% NC

Shelves

24-48V 5-Mod 23" shelf (single input) P/N: 030-900-20
24-48V 4-Mod 19" shelf (single input) P/N: 030-839-20

➤ Mechanical

24-48V 5-Mod 23" shelf dimensions:
mm:89H x 584W x 304D
in:3.5H x 23.0W x 12.0D
Weight:10.4kg (23.0lbs)

24-48V 4-Mod 19" shelf dimensions:
mm:89H x 438W x 310D
in:3.5H x 17.2W x 12.2D
Weight:8.5kg (19lbs)

➤ Performance / Features

CAN bus communication
Optional integrated CXCI controller
+/- Input busbar integration with standard 3.1kW systems (S-mod shelf)

Related Components

External Options:
567-808-19:Kydex cover, 23" CXDF shelf
567-809-19:Kydex cover, 19" CXDF shelf

Agency Compliance

Safety:CSA/UL C22.2 60950 (NRTL)
 CE IEC/EN 60950
 CE marked
EMI:Class A radiated
 Class A conducted
 EN 6100-4-2, -3, -4, -6
 GR-1089 (where applicable)
 GR-63



CXDF 24-48/2kW 23", 5-module shelf

CXDF 48-24/2kW

Cortex™ Series DC-DC Converters

- Support small to medium 24Vdc legacy loads from 48Vdc power systems
- High power density modular design, up to 2kW output per module
- Advanced monitoring and control capability including remote accessibility
- Internal low voltage shutdown for cost effective integration into existing systems

P/N: 012-527-20

Electrical

Input voltage:-42 to -60Vdc
Input current:.....<48A @ 48V (55A max)
Efficiency:.....>88% (50 to 100% load)
Input noise:
 Voice band:<32dBnC
 Wide band:<10mV RMS to 10MHz
 <150mVp-p to 100MHz
Output power:.....2000W max @ 27Vdc (1.8kW @ 24Vdc)
Output voltage:.....27Vdc nominal
Output current:.....74A max @ 27Vdc
Regulation:.....-1% +/-0.1% load (static)
 +/- 0.1% line (static)
Output noise:
 Voice band:<38dBnC
 Wide band:<20mV RMS to 10MHz
 <150mVp-p to 100MHz
Acoustic noise:.....<60dBa @ 1m (3ft)

Performance / Features

Indicators:Input ok LED (green)
 Output ok LED (green)
 Module fail LED (red)
Adjustments:Via CXC controller
Protection:.....Input fuse
 Input inrush current limit
 Output fuse
 Over temperature limiting
 Input high and low voltage shutdown
 Current limit/short circuit protection
Miscellaneous:.....Control and monitoring via CXC controller
 (requires v1.96 min)
 Low voltage cutoff (LVD)



CXDF 48-24/2kW Converter Module

Mechanical

Dimensions:
mm:.....84H x 100W x 235D
in:.....3.3H x 3.94W x 9.25D
Weight:.....2.8kg (6.2lbs)

Environmental

Temperature:.....-40 to 55°C (de-rated power up to 75°C)
Humidity:0 to 95% NC

Shelves

48-24V 4-Mod 19/23" shelf P/N: 030-840-20

➤ Mechanical

Dimensions:
mm:.....88.4H x 438W x 332D
in:.....3.48H x 17.2W x 13.1D
Weight:8.6kg (18.9lbs)

➤ Performance / Features

CAN bus communication to remote CXC controllers/peripherals
Optional integrated CXCI controller

Agency Compliance

Safety:CSA/UL C22.2 60950 (NRTL)
 CE IEC/EN 60950
 CE marked
EMI:Class A radiated
 Class A conducted
 EN 6100-4-2, -3, -4, -6
 GR-1089 (where applicable)
 GR-63



Inverters

Alpha's -48Vdc inverter modules and stand-alone inverters offer high reliability, high power efficiency and optimal power density. AIM2500, AIM1500 and INEX 1500 are hot swappable modules installed in AMPS80 HP, AMPS24 HP and INEX inverter systems, respectively, while INVERTER 2000 is a stand-alone inverter.

Alpha Inverter Module 2500

For installation in AMPS80 HP Systems



AIM 2500

- Revolutionary technology offers 94% efficiency and Telecom-grade reliability
- Hot swappable 2.5kVA/2kW AC power module allows optimal scalability and flexibility
- No single point of failure due to system static switch as each module has DSP controlled static switch functionality
- Up to 4 high power density modules per inverter shelf
- Up to 30 modules per 75kVA AMPS80 HP system

AIM 2500 P/N: 014-201-20

Electrical

AC Output:

Power rating:.....2500VA/2000W
Waveform:Pure sine wave
Efficiency:94% AC-to-AC mode
Power factor:0.8
Transfer time:Zero transfer time
Nominal voltage:120Vac
Voltage accuracy:±2%
Frequency:60Hz (same as input frequency)
Frequency accuracy:0.03%
THD (resistive load):<1.5%
Transient load
recovery time:0.4 ms
Soft start time:20s
Maximum crest factor
at nominal power:3.5
Short circuit
overload capacity:10 x In for 20msec (AC-to-AC mode)
Short term
overload capacity:150% for 5 seconds
Permanent
overload capacity:110%
MTBF>230,000hrs

AC Input:

Nominal AC voltage:120Vac
AC voltage range:90 – 140Vac
Input power factor:>99%
Synchronization range:57 – 63Hz

DC Input:

Nominal DC voltage:48Vdc
Maximum DC voltage range (max):40 – 60Vdc (user adjustable)
Voltage ripple:<2mV/<38 dbrnc

Mechanical

Dimensions:

mm:88.9H x 102W x 435D
inches:3.5H x 4W x 17.13D

Weight:5kg (11lbs)

Environmental

Temperature:

Operating:-20 to 40°C (-4 to 104°F)
Storage:-40 to 70°C (-40 to 158°F)

Relative humidity:Up to 95%, non-condensing

Operating altitude:Up to 1500m (4900ft) above sea level

Heat Dissipation:437BTU per hour in AC-to-AC mode;
.....758BTU per hour in DC-to-AC mode

Agency Compliance

Safety:UL 60950
Immunity:EN 61000-4
Emissions:EN 55022 (Class A)
RoHS:Compliant

Alpha Inverter Module 1500

For installation in AMPS24 HP Systems

NEW



AIM 1500

- Revolutionary technology offers 93% efficiency and Telecom-grade reliability
- Hot swappable 1.5kVA/1.2kW AC power module allows optimal scalability and flexibility
- No single point of failure due to system static switch as each module has DSP controlled static switch functionality
- Up to 4 high power density modules per inverter shelf
- Up to 16 modules per 24kVA AMPS24 HP system

AIM 2500 P/N: 0140004

Electrical

AC Output:

Power rating:..... 1500VA/1200W
Waveform: Pure sine wave
Efficiency:..... 93% AC-to-AC mode
Power factor: 0.8
Transfer time:..... Zero transfer time
Nominal voltage: 120Vac
Voltage accuracy: ±2%
Frequency: 60Hz (same as input frequency)
Frequency accuracy: 0.03%
THD (resistive load): <1.5%
Transient load
recovery time:..... 0.4 ms
Soft start time: 20s
Maximum crest factor
at nominal power: 3.5
Short circuit
overload capacity:..... 10 x In for 20msec (AC-to-AC mode)
Short term
overload capacity:..... 150% for 5 seconds
Permanent
overload capacity:..... 110%
MTBF..... >230,000hrs

AC Input:

Nominal AC voltage:..... 120Vac
AC voltage range:..... 90 – 140Vac
Input power factor:..... >99%
Synchronization range:..... 57 – 63Hz

DC Input:

Nominal DC voltage:..... 48Vdc
Maximum DC voltage range (max):..... 40 – 60Vdc (user adjustable)
Voltage ripple:..... <2mV/<38 dbrnc

Mechanical

Dimensions:

mm:..... 88.9H x 102W x 300D
inches: 3.5H x 4W x 12.5D

Weight:..... 2.4kg (5.3lbs)

Environmental

Temperature:

Operating: -20 to 50°C (-4 to 122°F)
Storage: -40 to 70°C (-40 to 158°F)
Relative humidity:..... Up to 95%, non-condensing
Operating altitude: Up to 1500m (4900ft) above sea level
Heat Dissipation: 286BTU per hour in AC-to-AC mode;
410BTU per hour in DC-to-AC mode

Agency Compliance

Safety:..... UL 60950
Immunity:..... EN 61000-4
Emissions:..... EN 55022 (Class A)
RoHS:..... Compliant

For installation in INEX Systems



- Pure sine wave
- Hot swappable replacement in shelf
- High efficiency >88%
- DSP design for higher system reliability
- Smart fan speed control
- N+1 redundancy system, load sharing difference <5%
- High power density
- Wide operation temperature range, -20 to 70°C (-4 to 158°F)

INEX 1500

120Vac, 1500VA P/N: 014-116-10

230Vac, 1500Va P/N: 014-117-10

Electrical

DC input:

Nominal voltage:48Vdc
Operating range:40.5Vdc ~ 58Vdc
Input protection:Reverse polarity protection
Psophometric
noise voltage: $\leq 1.0\text{mV ITU-T O.41 (16.66}\sim\text{6000Hz)}$

AC output:

Power rating: 1500VA/1200W
Waveform: Pure sine wave
Power factor: 0.8
Nominal output voltage: 110/115/120Vac
208/220/230/240Vac
Voltage variation: Max $\pm 2\%$
Output frequency: 50/60Hz
Crest factor: 3:1
THD: <3%, linear load
..... <5%, non-linear load
Efficiency: Min 88%
Isolation AC-enclosure:.. Basic isolation (Pri-Gnd) 2121Vdc/1min
Dynamic response: $\pm 10\%$
Over load protection: 1.5*Inom >20s
..... 1.25*Inom temperature controlled

Mechanical

Dimension:

mm:.....270D x 215W x 43.8H
inches:.....10.63D x 8.46W x 1.72H

Weight:3.0kg (6.61lbs)

Environmental

Operating temperature:-20 to 70°C (-4 to 158°F)

-5 to 58°C (23 to 122°F) with full performance

Storage temperature:.....-40 to 85°C (-40 to 185°F)

Humidity:90% RH non-condensing

Audible noise:55dB

Agency Compliance

Safety:.....EN 60950-1, UL 60950-1, IEC 60950-1,
CSA C22.2 No. 60950-1

EMC:.....EN 55022:1998

Certifications:.....UL, CE

RoHS:.....Compliant

INVERTER 2000

Stand-alone Telecom Inverter



Inverter 2000

- Powerful 2000VA/2000W stand-alone module
- High quality pure sine wave output
- Remarkable overload capability: 120% overload continuously, 200% overload for up to 5 seconds
- Stand out efficiency, up to 91%
- Built-in auto transfer switch (ATS) for increased reliability
- LCD display for real time status monitoring and setting module parameters

120Vac (NEMA outlets) P/N: 014-129-10
230Vac (IEC outlets) P/N: 014-130-10

Electrical

DC Input:

Nominal voltage:48Vdc
Operating range:40 to 58Vdc
Psophometric
noise voltage:.....≤1.0mV ITU-T O.41 (16.66~6000Hz)

AC Input:

Voltage range:110/115/120Vac: 89 to 138Vac
208/220/230/240Vac: 176 to 276Vac
Over voltage
threshold:138/276Vac
Under voltage
threshold:89/176Vac
Frequency range:50/60Hz, ±2.5%
Transfer time:.....Inverter to bypass: 8ms

AC Output:

Power capacity:.....2000VA/2000W
Waveform:Pure sine wave
Power factor:1.0
Nominal output
voltage:.....110/115/120Vac or 208/220/230/240Vac
Voltage regulation:Max ±2%
Output frequency:50/60Hz
Crest factor:3:1
THD:<3% for linear load, <5% for non-linear load
Efficiency:.....>90.5% @ full load and nominal DC input
>91.5% max
Overload protection:1.2 x Inom permanent overload
capacity @ 30°C
1.5 x Inom ≥10s
2.0 x Inom ≥5s

Mechanical

Dimensions:

mm:.....43.8H x 440W x 360D
inches:.....1.72H x 17.3W x 14.2D

Weight:7.1kg (15.7lbs)

Environmental

Temperature:

Operation:.....-20 to 50°C full performance,
operating -20 to 60°C

Storage:-30 to 80°C

Humidity:95% relative humidity (non-condensing)

Altitude:1500m (4920ft)

Heat dissipation:Forced cooling with smart control

Audible noise:55dB ETS 300 753, class 3.1

Communication Interface

Signals/Controls:

Control:Keypad to setting all output values
and parameters
Display:.....LCD and 3-LED's display alarms
and system parameters
General alarm signal:Dry relay contact
Remote On/Off:Remote On/Off switch
PC communications:USB port

Agency Compliance

EMC:EN300 386:2001. Class B compliance

Safety compliance:Comply with EN 60950-1/UL 60950-1

Certification:.....CE/UL/C-Tick

RoHS:.....Compliant

MTBF:.....>200,000 hrs as per Telcordia SR-232



FUSE



ALARM





Distribution

Alpha offers a wide variety of breaker and fuse panels for distributing power to critical loads. Panels are available in various sizes, output voltages and use industry-standard breakers and fuses.

Multiple loose panel options are available for either expanding existing site distribution requirements, or for developing custom power systems for your specific requirements. Panels are available with several options including front access, ground bars, integrated shunts and LVD's.

Alpha supplies a variety of universal distribution centers (UDC's) that accommodate system control, distribution and battery connections, all in a single rack mount unit. Further integration with a Cordex™ rectifier system creates a comprehensive power solution in a very compact package; easily configured to practically any power distribution requirement.

Distribution Panel Overview

DC Distribution Options

	P/N	Fuse position	Fuse type	Breaker position	Breaker type	Capacity	Mounting	Front access	RU	Additional options
Stand alone breaker / fuse panels	020-107-20	0		16/22	AM bolt-in	550A	19/23"	No	3	Gnd bar
	020-588-20	16*	TPS*	16	AM plug-in	400A	19/23"	Yes	5	Gnd bar, LVD
	020-589-20	20*	TPS*	20	AM plug-in	400A	23"	Yes	5	Gnd bar, LVD
	020-671-20	24*	TPS*	24	AM plug-in	600A	23"	No	3	
	020-675-20	18*	TPS*	18	AM plug-in	600A	19/23"	No	3	
	020-534-20	0		3	GJ bolt-in		19/23"	No	3	
	020-578-20	0		4	GJ bolt-in		23"	No	4	
	020-103-20	32	GMT	0		60A	19/23"	No	1	Gnd bar
	020-005-20	20	GMT	0		90A	19/23"	No	1	Gnd bar
	020-597-20	2	TPL	0		1200A	23"	No	4	Shunt
Universal Distribution Centers	020-702-20	18*	TPS*	18	AM plug-in	300A	19/23"	Yes	3	Controller I/O, LVD, Shunt, Batt breakers
	020-645-20	20-24*	TPS*	20-24	AM plug-in**	800A	23"	Yes	7	Controller, LVD, Shunt
		10	GMT							
	020-646-20	40-48*	TPS*	40-48	AM plug-in**	1000A	23"	Yes	9	Controller, LVD, Shunt
		10	GMT							
	020-635-20	80-96*	TPS*	80-96	AM plug-in**	2000A	23"	Yes	17	Controller, LVD, Shunt
		10	GMT							
Notes *TPS fuses with AM plug-in breaker cartridges may be used as alternate to breakers ** Compatible with multiple pole AM plug-in breakers (110 to 250A)										

Breaker Panels

Stand-Alone DC Distribution



Breaker panels

- AM bolt-in, AM plug-in and GJ breaker options
- 19" and 23" rack mount models
- 12, 24 or 48V configurations
- Rear access and front access options
- Designed for flexible and custom DC distribution

Breaker Panel Options							
P/N	020-107-20	020-588-20	020-589-20	020-671-20	020-675-20	020-534-20	020-578-20
Breakers	AM bolt-in	AM plug-in	AM plug-in	AM plug-in	AM plug-in	GJ	GJ
Positions	16/22	16	20	24	18	3	4
Capacity	550A	400A	400A	600A	600A		
Mounting	19/23"	19"	23"	23"	19"	19/23"	23"
RU	3	5	5	3	3	3	4

Fuse Panels

Stand-Alone DC Distribution



Fuse Panels

- GMT and TPL fuse panel options
- TPS fuse options using fuse mount breaker cartridges
- 19" and 23" rack mount models
- 12, 24 or 48V configurations
- Designed for flexible and custom DC distribution

Fuse Panel Options							
P/N	020-103-20	020-005-20	020-597-20	020-588-20	020-589-20	020-671-20	020-675-20
Breakers	GMT	GMT	TPL	TPS*	TPS*	TPS*	TPS*
Positions	32	20	2	16	20	24	18
Capacity	60A	90A	1200A	400A	400A	600A	600A
Mounting	19/23"	19/23"	23"	19"	23"	23"	19"
RU	1	1	5	5	5	3	3
*Requires AM plug-in breaker cartridge for TPS fuse mount (520-059-10)							



Vista Two Tier UDC

- Various modular distribution configurations
- Complete front access
- Integrated Cordex™ system controller
- Integrated shunt and LVD options
- AM plug-in breaker, GJ breaker and GMT fuse options

Vista UDC Options			
Model	Single tier	Two tier	Four tier
P/N	020-645-20	020-646-20	020-635-20
Breakers	AM plug-in	AM plug-in	AM plug-in
Positions	20-24	40-48	80-96
Capacity	600A	1200A	2000A
Mounting	23"	23"	23"
RU	7	9	17

Modular Distribution Tier Options	
Single voltage	24 position AM plug-in 20 position AM plug-in w/ 600A LVD 3 position GJ 3 position GJ w/ 600A LVD
Dual voltage	12x primary & 10x secondary (AM plug-in) 16x primary & 6x secondary (AM plug-in) 8x primary (w/ LVD) & 10x secondary (AM plug-in) 12x primary (w/ LVD) & 6x secondary (AM plug-in)

Note: Consult factory for NEBS L3 certified system solutions using Vista UDC's

Related Components

- Cordex™ controller CXCP: .See page 88
- AM plug-in breakers:.....See page 125
- GMT style fuses:See page 125



DCP03.300A Distribution Center

- Up to 18 breaker positions
- Optional battery breaker disconnects
- Shunt and LVD options
- Universal 19/23" rack mount
- Compact 3RU high design
- Integrated controller I/O termination

P/N: 020-702-20

Electrical

Voltage:24Vdc or 48Vdc (list option configurable)
Current:300A DC max

Mechanical

Dimensions (excludes mounting brackets):
 mm:.....133H x 432W x 318D
 in:.....5.23H x 17.25W x 12.5D
Mounting:19/23", flush/center mount
Weight:11.6kg (25.6lbs)

Connections:

Load breaker: 1/4"-20 studs on 5/8" centers
*18x sets w/L87, 14x sets w/ L88

Battery breaker: 1/4"-20 studs on 5/8" centers
*4x sets w/L88 only

Ground bar: 18x sets 1/4" holes on 5/8" centers

Rectifier input:

Hot:2x sets 3/8" holes on 1" centers
Return:2x sets 3/8" holes on 1" centers
Alarm:1.31 to 0.128mm² (#16 to #26AWG)
Communications:Terminal blocks: Internal I/O
DB (serial) connection(s): CXCI and CXCM2 I/O
RJ-12 Offset: CAN for optional ADIO
Access:Front access after installation with 1RU required
above panel for tooling

Environmental

Temperature:.....-40 to 65°C (-40 to 149°F)
 -40 to 55°C (-40 to 131°F) de-rated when L71
 (24V LVD) equipped

Humidity:0 to 95% RH non-condensing

Elevation:-500 to 4000m (-1640 to 13124ft)

Related Components

Distribution:

L87: 18x load positions (AM plug-in breaker)
L88: 14x load positions & 4x battery positions
(AM plug-in breaker)

System options:

L71: 24V LVD
 L72: 48V LVD
 L84: 400A shunt
 L74: CXCI I/O extension
 L75: CXCM2 I/O extension
 L79: 4R/8D ADIO
 L93: Top cover

External options:

614-840-13:	Bus bar for UDC & single 19/23" 2kW rectifier shelf (qty 2x req'd)
614-841-13:	Bus bar for UDC & two 19" 2kW rectifier shelves (qty 2x req'd)
037-202-20:	Kydex cover kit; for UDC & single 19/23" 2kW rectifier shelf
037-207-20:	Kydex cover kit; for UDC & two 19" 2kW rectifier shelves
567-815-19:	Kydex cover kit; for standalone UDC



DCP03 rear view

Circuit Breakers and Fuses

DC Distribution Options

Breakers

AM Series, Bolt-In Style Breakers		GJ Series, Bolt-In Style Breakers		AM Series, Plug-In Style Breakers	
P/N	Description	P/N	Description	P/N	Description
747-011-20	5 Amp w/ Jumper Kit	470-120-10	100 Amp	470-300-10	1 Amp, Mid-Trip
747-012-20	10 Amp w/ Jumper Kit	470-125-10	125 Amp	470-301-10	3 Amp, Mid-Trip
747-013-20	15 Amp w/ Jumper Kit	470-188-10	150 Amp	470-302-10	5 Amp, Mid-Trip
747-014-20	20 Amp w/ Jumper Kit	470-171-10	175 Amp	470-303-10	10 Amp, Mid-Trip
747-015-20	25 Amp w/ Jumper Kit	470-121-10	200 Amp	470-304-10	15 Amp, Mid-Trip
747-016-20	30 Amp w/ Jumper Kit	470-081-10	225 Amp	470-305-10	20 Amp, Mid-Trip
747-017-20	40 Amp w/ Jumper Kit	470-228-10	250 Amp	470-306-10	25 Amp, Mid-Trip
747-018-20	50 Amp w/ Jumper Kit	470-122-10	300 Amp (2-Pole)	470-307-10	30 Amp, Mid-Trip
747-019-20	60 Amp w/ Jumper Kit	470-126-10	400 Amp (2-Pole)	470-308-10	35 Amp, Mid-Trip
747-020-20	70 Amp w/ Jumper Kit	470-210-10	450 Amp (3-Pole)	470-309-10	40 Amp, Mid-Trip
747-021-20	80 Amp w/ Jumper Kit	470-123-10	500 Amp (3-Pole)	470-310-10	45 Amp, Mid-Trip
747-022-20	90 Amp w/ Jumper Kit	470-219-10	600 Amp (3-Pole)	470-311-10	50 Amp, Mid-Trip
747-023-20	100 Amp w/ Jumper Kit	470-208-10	700 Amp (3-Pole)	470-312-10	60 Amp, Mid-Trip
				470-346-10	60 Amp, Series-Trip
1RU Load Breakers for CXPS-HD Systems				470-370-10	65 Amp, Series-Trip
P/N	Description			470-313-10	70 Amp, Mid-Trip
4700054	3A Circuit breaker, 1RU			470-314-10	80 Amp, Mid-Trip
4700055	5A Circuit breaker, 1RU			470-315-10	90 Amp, Mid-Trip
4700056	10A Circuit breaker, 1RU			470-316-10	100 Amp, Mid-Trip
4700057	20A Circuit breaker, 1RU			470-347-10	100 Amp, Series-Trip
4700058	30A Circuit breaker, 1RU			747-220-20	110 Amp, Mid-Trip (2-Pole)
4700059	40A Circuit breaker, 1RU			747-147-20	125 Amp, Mid-Trip (2-Pole)
4700060	50A Circuit breaker, 1RU			747-148-20	150 Amp, Mid-Trip (2-Pole)
4700061	60A Circuit breaker, 1RU				
1RU Battery Breakers for CXPS-HD Systems					
P/N	Description				
4700100	60A Circuit breaker, 1RU				

Fuses

GMT Series Fuses		TPL Series Fuses		TPS Series Fuses	
P/N	Description	P/N	Description	P/N	Description
460-004-10	0.5 Amp	460-140-10	100 Amp	460-215-10	1 Amp
460-006-10	1 Amp	460-141-10	150 Amp	460-216-10	3 Amp
460-081-10	1.33 Amp	460-142-10	200 Amp	460-217-10	5 Amp
460-082-10	1.5 Amp	460-143-10	225 Amp	460-218-10	6 Amp
460-083-10	2 Amp	460-139-10	250 Amp	460-219-10	10 Amp
460-013-10	3 Amp	460-144-10	300 Amp	460-220-10	15 Amp
460-085-10	4 Amp	460-145-10	400 Amp	460-221-10	20 Amp
460-084-10	5 Amp	460-146-10	500 Amp	460-222-10	25 Amp
460-105-10	7.5 Amp	460-147-10	600 Amp	460-223-10	30 Amp
460-069-10	10 Amp	460-148-10	800 Amp	460-224-10	40 Amp
460-150-10	15 Amp			460-225-10	50 Amp
520-046-10	GMT Fuse Cover			460-226-10	60 Amp
				460-227-10	70 Amp
				460-228-10	80 Amp
				460-229-10	90 Amp
				460-230-10	100 Amp
				520-059-10	TPS Fuse Holder (AM plug-in breaker)



Bypass and Transfer Switches

A transfer switch allows safe switching from utility power to emergency power while maintaining isolation of each source from the other. Alpha offers a range of transfer and bypass switches as part of our total power solutions package. These switches allow for power to be seamlessly migrated between utility/line to battery backup or generator.

Alone or combined with an optional rack mount kit, the Universal Automatic Transfer Switch (UATS) and Universal Generator Transfer Switch (UGTS) can also be configured with a variety of output options such as surge arrestors, EMI filters and custom plates – contact your Alpha representative for details. Optional wall mount kits also available.

The Alpha 255A External Maintenance Bypass Switch is a manually operated wrap-around mechanical switch for use with a UPS System such as AMPS80 HP. It provides a simple and effective means for bypassing the UPS while maintaining continuity of power to critical AC loads.

255A Bypass Switch

Indoor External Maintenance Bypass Switch

NEW

- Simple, safe and reliable means for bypassing UPS while maintaining continuity of power to critical AC loads
- Phase detector with lock out prevents unauthorized operation
- Safe-to-switch (IN PHASE) lamp
- Electromechanical manual override feature for emergency situations
- Auxiliary contacts for remote monitoring
- UL 508 listed



255A Bypass Switch

Electrical

Voltage Rating :..... 120/ 208 and 120/240 Vac (nominal)
Current Rating:..... 255 A
Short Circuit
Current Rating:..... 5kA

Current vs. Temperature Rating

Current (A)	Ambient Temperature
255	40°C (104°F)
210	45°C (113°F)
170	50°C (122°F)

Cooling Not applicable; no heat generating components inside

Mechanical

Dimensions:

mm: 910H x 610W x 280D

inches: 36H x 24W x 11D

Weight: 79.5kg (175lbs)

Environmental

Temperature:

Operating: -20 to 40°C (-4 to 104°F)

Storage: -40 to 75°C (-40 to 167°F)

Operating altitude: Up to 3858m (12,000ft)

Storage altitude: Up to 4572m (15,000ft)

Agency Compliance

Safety: UL / cUL 508



Automatic Transfer Switch

UATS

- 120V/30A
- 230V/16A

Alpha's Universal Automatic Transfer Switch is designed as a three stage bypass switch that allows for the UPS to be bypassed and still maintain the ability to keep batteries fully charged.

It acts as a fail-safe device by switching the critical load to the utility line should a fault occur in the UPS. The UATS ensures that clean power is always provided to the critical load, ensuring that your mission-critical equipment always remains running in the event of an outage. This transfer switch also includes a standard manual bypass switch which eliminates costly equipment downtime while servicing the UPS or replacing the batteries.



Automatic Generator Transfer Switch

UGTS

- 120V/30A
- 230V/16A

Alpha's Universal Automatic Generator Transfer Switch automatically transfers the input to the UPS from the utility line to a portable AC generator.

The UGTS allows the generator to recharge the batteries and ensure your mission - critical equipment remains in operation during extended power outages. For manually connecting or disconnecting a generator, a standard switch is included.



Alpha Maintenance Bypass Switch

Alpha Maintenance Bypass Switch

- 120V
- 230V Option not available

Alpha's Maintenance Bypass Switch allows the user to manually bypass the UPS system to safely perform service or routine maintenance.

When working in conjunction with the Alpha U-ATS, the manual-only maintenance bypass switch can be installed into the traffic controller cabinet, allowing for the complete UPS system to be bypassed for safe emergency replacement.



Rack Mount Options

Other Mounting Options

- Wall mount kit – P/N: 740-756-21
- Rack mount kit – P/N: 593-364-P4

Can be configured with U-ATS, U-GTS, surge option and/or receptacle plate for heating mats.



Enclosures

The Alpha enclosure product line provides a full range of rugged cabinet solutions for any application, including secure indoor.

Designed and tested to meet the highest industry operating standards, Alpha outdoor enclosures are equipped with control systems that maintain temperatures well within the specified operating ranges of internally mounted equipment. Each enclosure maintains a clean and dry environment that uses both open and closed loop thermal management designs.

Alpha enclosures provide application flexibility with a variety of adjustable components including moveable equipment mounting racks, different types of mounting hardware, swing racks, slide out equipment rails, different styles of cable entry ports and many other options and features.

When an Alpha outdoor enclosure and power products are combined as a system, the result is an optimally designed, highly-reliable and efficient outdoor power plant that provides easy installation and long term operation in a single outdoor cabinet design.

Enclosure Selection

Considerations

➤ What are the requirements for the base enclosure?

Dimensions (in/mm):		Mounting:		Accessibility:		Cable entry/exit:			Security:				
Height	_____	Pad	<input type="checkbox"/>	Rack	<input type="checkbox"/>	Front	<input type="checkbox"/>	Rear	<input type="checkbox"/>	Top	<input type="checkbox"/>	Padlock-able	<input type="checkbox"/>
Width	_____	Pole	<input type="checkbox"/>	Pedestal	<input type="checkbox"/>	Rear	<input type="checkbox"/>	Bottom	<input type="checkbox"/>	Front	<input type="checkbox"/>	Special "keyed"	<input type="checkbox"/>
Depth	_____	Wall	<input type="checkbox"/>			Top	<input type="checkbox"/>	Sides	<input type="checkbox"/>			Other	_____

➤ What are the environmental conditions?

Temperature (°C/°F):		Wind Driven:		Seismic zone:					
Minimum	_____	Rain	<input type="checkbox"/>	Dust	<input type="checkbox"/>	1	<input type="checkbox"/>	3	<input type="checkbox"/>
Maximum	_____	Snow	<input type="checkbox"/>	Other	_____	2	<input type="checkbox"/>	4	<input type="checkbox"/>

➤ What is the electrical service available at the location?

AC Voltage:				Main breaker rating:							
120Vac	<input type="checkbox"/>	120/240Vac	<input type="checkbox"/>	277/480Vac	_____	15A	<input type="checkbox"/>	30A	<input type="checkbox"/>	100A	<input type="checkbox"/>
120/208Vac	<input type="checkbox"/>	347/600Vac	<input type="checkbox"/>	Other	_____	20A	<input type="checkbox"/>	50A	<input type="checkbox"/>	Other	_____

➤ What are the operating parameters of your equipment?

AC Voltage:		DC Voltage:		Total load current (A):		Mounting:	
24Vac	<input type="checkbox"/>	12Vdc	<input type="checkbox"/>	Minimum	_____	19"rack	<input type="checkbox"/>
120Vac	<input type="checkbox"/>	24Vdc	<input type="checkbox"/>	Maximum	_____	23"rack	<input type="checkbox"/>
208Vac	<input type="checkbox"/>	48Vdc	<input type="checkbox"/>			Other	_____
240Vac	<input type="checkbox"/>	125Vdc	<input type="checkbox"/>				
Other	_____	Other	_____				

Equipment space (RU):		Operating temperature range:		Equipment heat dissipation (Btu/hr or W):	
Item 1	_____	Min	_____	Max	_____
Item 2	_____	Min	_____	Max	_____
Item 3	_____	Min	_____	Max	_____

➤ Which climate control option is preferable with the enclosure?

Cooling:		Emergency Ventilation System (EVS)		Heating:			
Fan(s)	<input type="checkbox"/>	Heat exchanger	<input type="checkbox"/>	Recommended if A/C is selected	<input type="checkbox"/>	PTC fan heater(s)	<input type="checkbox"/>
Air conditioner	<input type="checkbox"/>	Other	_____			Other	_____

➤ What are the battery requirements?

Application:		Battery chemistry:		Discharge time:		Recharge time:	
Cycle	<input type="checkbox"/>	Lead-acid	<input type="checkbox"/>	Li-Ion	<input type="checkbox"/>	Hour(s)	_____
Float	<input type="checkbox"/>	Ni-Cad	<input type="checkbox"/>	Other	_____	Minute	_____

➤ How is the power distributed to the critical loads?

Fuse	<input type="checkbox"/>	(Specify size and quantity if known)	_____
Breaker	<input type="checkbox"/>	(Specify size and quantity if known)	_____

➤ Have you considered these system options?

Load center	<input type="checkbox"/>	Surge suppression	<input type="checkbox"/>	Fiber winding box	<input type="checkbox"/>
Generator inlet	<input type="checkbox"/>	Meter base	<input type="checkbox"/>	Convenience outlet(s)	<input type="checkbox"/>
Transfer switch	<input type="checkbox"/>	Battery heater mat	<input type="checkbox"/>	Specify other options required	_____

➤ Are there any requirements for agency compliance?

GR standard		NEBS		Safety compliance					
GR487	_____	GR1089	_____	Level 1	<input type="checkbox"/>	CSA/UL 60950	<input type="checkbox"/>	Other	_____
GR13	_____	Other	_____	Level 2	<input type="checkbox"/>	CE	<input type="checkbox"/>		
GR63	_____			Level 3	<input type="checkbox"/>				

MMOE - Telecom

Outdoor Enclosure



MMOE - Telecom

- Multi-Mount Outdoor Enclosure - Telecom
- Compact enclosure design provides ideal fit for locations where aesthetics and footprint are important
- Light-weight powder coated aluminum construction offers superior corrosion resistant properties
- Large sun shield reduces solar heat load inside cabinet
- 180° stainless steel piano-hinged door (with two locking open positions) make installation and maintenance easy and convenient
- Thermostat controlled filtered fan cooling and louvered vents ensure reliable operation in high temperature environments
- Various mounting options (including pole mount) make this highly versatile in space constrained mobile broadband applications

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:

mm:687H x 559W x 457D
inches:27H x 22W x 18D

Weight:27.2kg (60lbs)

Construction:High strength corrosion resistant aluminum

Finish:Power coated white color

Equipment space:5RU space with one battery shelf

Equipment rails:EIA standard 19"

Cable entrance:

Bottom of enclosure:1 x 3" diameter knock-out (2½" trade size)
4 x 1.125" diameter knock-out (¾" trade size)

Hardware

Hinge type:Stainless steel piano hinge

Door prop:Aluminum rod, 2 locking open positions

Door latch:Bellcore 216 compression lock with pad lock collar

HVAC

Cooling:Thermostat controlled 48Vdc fan, 100 cfm or better, ON at 49°C (120°F) Off at 32°C (89°F)

Ventilation:Door installed louvers

Environmental

Temperature:

Operating:-40 to 46°C
Storage:-40 to 85°C

Installation

Access:Front hinged door provides full front access

Maintenance

Door installed louvers:Equipped with splash baffle or washable filters

Enclosure Options

Mounting:Pole, host, wall, or pedestal (please specify if pole used is concrete at time of order)

System Specifications (as shown)

- Battery shelf with 4x AlphaCell™ 195GXL-FT batteries
- FXM1100 UPS
- Pedestal mount kit

➤ System Options

- Alpha universal automatic transfer switch
- Alpha universal generator transfer switch
- AlphaGuard battery balancer
- Battery heater mats
- Transient voltage surge suppression device

Agency Compliance

CSA/UL:C22.2 No.60950
Telcordia:GR-13-CORE
NEMA rating:3R

MMOE - Traffic

Outdoor Enclosure

- Multi-Mount Outdoor Enclosure - Traffic
- Designed for outdoor or secure indoor applications
- Traffic grade aluminum enclosure protects battery backup power systems from outdoor elements
- Various mounting options (including pole-mount) provide a flexible solution for space constrained traffic applications
- Large sun shield reduces solar heat load inside cabinet
- Thermostat controlled fan and louvered vents ensure reliable operation in high temperatures
- 180° stainless steel piano hinged door with two locking open positions makes installation and maintenance easy and convenient
- Three-point latching mechanism with Corbin Type 2 lock for maximum security



MMOE - Traffic
Shown with Alpha FXM 2000,
Alpha transfer switches and
AlphaCell™ batteries

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm:.....687H x 559W x 457D
inches:.....27H x 22W x 18D
Weight:.....27.2kg (60lbs)
Construction: High strength corrosion resistant 0.125" thick aluminum
Finish:.....Natural aluminum or painted gray
Equipment space:.....7RU space with one battery shelf
Equipment rails:.....EIA standard 19"
Cable entrance:
Bottom of enclosure: 1 x 3" diameter knock-out (2½" trade size)
4 x 1.125" diameter knock-out (¾" trade size)

Hardware

Hinge type:.....Stainless steel piano hinge
Door prop:.....Aluminum rod, 2 locking open positions
Door latch:.....3 point latch with integrated Corbin Type 2 lock

HVAC

Cooling:.....Thermostat controlled 48Vdc fan, 100 cfm or better, ON at 49°C (120°F) Off at 32°C (89°F)
Ventilation:.....Door installed louvers

Environmental

Temperature:
Operating:.....-40 to 46°C
Storage:.....-40 to 85°C

Installation

Access:.....Front hinged door provides full front access

Maintenance

Door installed louver:.....Equipped with washable filter

Enclosure Options

Mounting:.....Pole, host, wall, or pedestal (please specify if pole used is concrete at time of order)

System Specifications (as shown)

- Battery shelf with 4x AlphaCell™ 85GXL batteries
- FXM2000 UPS
- Pedestal mount kit
- Universal automatic transfer switch

➤ System Options

- Universal generator transfer switch
- AlphaGuard battery balancer
- Battery heater mats
- Transient voltage surge suppression device

Agency Compliance

NEMA rating:.....3R

AOES6

Outdoor Enclosure

- Alpha Outdoor Enclosure Side Mount 6
- Designed for outdoor or secure indoor applications
- Traffic grade aluminum enclosure protects battery backup power systems from outdoor elements
- Various mounting options (including pole-mount) provide a flexible solution for traffic applications
- Large sun shield reduces solar heat load inside the cabinet
- Thermostat controlled fan and louvered vents ensure reliable operation in high temperatures
- 180° stainless steel piano hinged door with two locking open positions makes internal component installation and maintenance easy and convenient
- Three-point latching mechanism with Corbin Type 2 lock (or optional Best lock) for maximum security

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:

mm:.....1220H x 419W x 419D

inches:.....48H x 16.5W x 16.5D

Weight:.....34kg (75lbs)

Construction:.....High strength corrosion resistant aluminum

Finish:.....Natural aluminum

Equipment space:.....8RU space (without generator inlet) with two
(2) battery shelf

Equipment rails:.....EIA standard 19"

Cable entrance:

Bottom of enclosure:1 x 76mm (3") diameter knock-out

Hardware

Hinge type:.....Stainless steel piano hinge

Door prop:.....Aluminum rod, 2 locking open positions

Handle:.....Stainless steel handle with padlock fitting for
extended life and improved look

Door latch:.....3 point latch with integrated Corbin Type 2 lock
(or optional Best lock) for maximum security

HVAC

Cooling:.....Thermostat controlled 48Vdc fan, 100 cfm or
better, ON at 49°C (120°F) Off at 32°C (89°F)

Ventilation:.....Door installed louvers

Environmental

Temperature:

Operating:.....-40 to 46°C

Storage:.....-40 to 85°C



AOES6 (shown with Alpha FXM 1100, transfer switches and AlphaCell batteries)

Installation

Access:.....Removable bottom shelf for easy wiring access

Maintenance

Door installed louver:.....Equipped with washable filter

Other:.....Bug screen protected top vent

Enclosure Options

Mounting:.....Side mount (standard) - designed to mount to
the side of most traffic enclosure cabinets
Ground mount kit (optional)
Pole mount kit (optional)

System Specifications (as shown)

- 2 Battery shelf with 4x AlphaCell 220GXL batteries
- FXM1100 UPS
- Universal automatic transfer switch
- Universal generator transfer switch

➤ System Options

- Generator support: locking generator access door and L5-30 F1 plug
- AlphaGuard™ battery balancer
- Battery heater mats
- "On Battery" indicator light
- Door activated interior light
- Tilt switch
- Tamper switch

Agency Compliance

CSA/UL, CE:.....UL50E/C22.2 No.94

NEMA rating:.....3R

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Enclosures

Te25

20" General Purpose Enclosure

- Multipurpose indoor/outdoor enclosure designed for small power (AC or DC) applications requiring batteries, power equipment or both
- Various mounting options provide a flexible solution for space constrained or remote applications
- Thermostat controlled filtered fan cooling and louvered vents ensure reliable operation in high temperature environments
- Durable aluminum construction provides excellent corrosion resistance
- AC and DC power connections (pre-wired at factory) reduce field installation time



Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm:.....516H x 544W x 518D
inches:.....20.3H x 21.4W x 20.4D
Weight:.....29kg (65lbs)
Construction:.....High strength corrosion resistant aluminum
Finish:.....Powdercoat
Equipment space:.....11RU (without batteries)
Cable entrance:.....Knockouts located on the bottom and rear of enclosure
Equipment rails:.....19"

Hardware

Hinge type:.....2 position lift off hinge
Door latch:.....Padlockable ¼ turn latch
Battery trays (qty.):.....1

HVAC

Cooling:.....Thermostat controlled filtered fan cooling
Ventilation:.....Door installed louvers

Environmental

Temperature:
Operating:.....-40°C to 46°C
Storage:.....-40°C to 85°C

Installation

Access:.....Rear louver can be removed for equipment installation

Maintenance

Door installed louvers:.....Equipped with washable/replaceable filter

Enclosure Options

Mounting:.....Wall, pole, pedestal or rack

System Specifications (as shown)



- 48Vdc Cordex rectifier shelf comes with DC distribution
- 4 x 91Ahr batteries
- External 8 position AC load centre with surge arrestor
- Dual filtered fan cooling
- Alarm terminal block
- Ground bar

System Options

- AC load centre
- AC surge arrestor
- Combination meter base
- Main breaker disconnect box
- Battery heater mat

Agency Compliance

CSA/UL:.....C22.2 No. 60950
NEMA rating:.....Type 3R (CSAC22.2 No 94-M91)

AOES10

Outdoor Enclosure

- Alpha Outdoor Enclosure Side Mount 10
- Designed to Caltrans specification for systems requiring Caltrans approved product
- Additional shelf allows for customer furnished equipment inside the enclosure
- Large battery space allows for up to four BCI Group 31 batteries for the longest runtime in a Caltrans enclosure
- Large sun shield, thermostatically controlled fan and louvered vents ensure reliable operation in high temperatures
- 180° stainless steel piano hinged door with two open positions makes installation and maintenance easy and convenient
- Three-point latching mechanism with integrated Corbin Type 2 lock for maximum security
- Designed for outdoor or secure indoor applications

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:

mm: 1422H x 724W x 334D

inches: 56H x 28W x 13.2D

Weight: 52.16kg (115lbs) no options

Construction: High strength corrosion resistant 0.125" thick aluminum

Finish: Natural aluminum

Equipment space: 6RU

Hardware

Hinge type: Stainless steel piano hinge

Door prop: Aluminum rod, 2 Lock-out positions

Handle: Stainless steel handle for extended life and improved look

Door latch: 3 point latch with integrated Corbin Type 2 lock or optional best lock for maximum security

Equipment shelves: 4 equipment shelves

HVAC

Cooling: Thermostat controlled 48Vdc fan, 100 cfm or greater, ON at 49°C (120°F) Off at 32°C (89°F)

Ventilation: Door installed louvers

Environmental

Temperature:

Operating: -40 to 46°C

Storage: -40 to 85°C



AOES10

Installation

Access: Removable bottom shelf for easy wiring access

Maintenance

Door installed louver: Equipped with washable filter

Other: Bug screen protected top vent

Enclosure Options

Mounting: Side mount (standard) - designed to mount to the side of most traffic enclosure cabinets
Stand alone

System Specifications

- 4x Alphacell 220GXL batteries
- FXM2000 UPS
- Universal automatic transfer switch

➤ System Options

- Generator support: locking generator access door and L5-30 F1 plug with manual switch
- Universal automatic transfer switch
- Universal generator transfer switch
- AlphaGuard™ battery balancer
- Battery heater mats
- Transient voltage surge suppression device
- "On Battery" indicator light
- Door activated interior light
- Tilt switch
- Tamper switch
- Ground mount kit
- Best lock
- Natural aluminum or powder coat finish

Agency Compliance

NEMA rating: 3R

Z Series

Outdoor Enclosure



- Extreme conditions enclosure
- Meets Telcordia Seismic Zone-4 standard
- NEMA 3R outdoor rated enclosure
- Simple, flexible options for pole, wall, ground or pedestal installations
- Designed for outdoor or secure indoor applications
- Wide temperature range -40 to 46°C

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Enclosures

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:

mm:.....956H x 788W x 407D
inches:.....37H x 31W x 16D

Weight:.....368kg (812lbs)

Note: Weight depends on internal battery selection

Construction:.....High strength corrosion resistant aluminum
Finish:.....Powdercoat

Hardware

Handle:.....Lockable enclosure
Battery trays (qty.):.....2 (8 batteries)

Enclosure Options

Mounting:Multiple mounting configurations

System Specifications

➤ System Options

- Input/output surge protection
- Intelligent back/boost operation for greater protection
- Hot swappable UPS and batteries
- Noise suppression, FCC Class B.

Agency Compliance

CSA/UL, CE:NRTL/CSA/CE
Telcordia:.....Telcordia zone 4 approved with
battery retention bar
Telcordia salt fog tested, 14 day operational
Telcordia approved door restraint

P Series

Outdoor Enclosure

- Designed for outdoor or secure indoor applications
- Universal Mount enclosure
- Aluminum welded construction
- Pole mounting brackets included
- Removable, lockable doors and easy open lids
- Durable, powder coat finish
- Slide trays for batteries



P Series

Consult your Alpha representative for P/N configurations

Mechanical

➤ P4

Dimensions:

mm: 629H x 768W x 406D
inches: 24.75H x 30.25W x 16.0D

Weight: 26kg (57lbs)

➤ P6

Dimensions:

mm: 933H x 615W x 355D
inches: 36.75H x 24.25W x 14.0D

Weight: 31kg (68lbs)

➤ P8

Dimensions:

mm: 937H x 768W x 406D
inches: 36.88H x 30.25W x 16.0D

Weight: 55kg (121lbs)

Construction: High strength corrosion resistant aluminum

Finish: Powdercoat

Hardware

Battery trays (qty.):

P4: 1 (4 batteries)

P6: 2 (6 batteries)

P8: 2 (8 batteries wider enclosure)

Door/lid: Completely removable

Miscellaneous: Door prop rod

120V 20A or 240V 15A breaker

Duplex quad

Remove indicator light

Enclosure Options

Mounting: Universal mounting

Pole mount bracket included

System Specifications

➤ General Specifications

Output Voltage Range: Duplex/quad output

➤ System Options

- Battery heater mats
- Storm hood
- Enclosure cooling fan
- Internal service entrance
- Factory installed breaker box



P4



P6



P8

Te25xh

36" General Purpose Enclosure

- Multipurpose indoor/outdoor enclosure designed for medium power (AC or DC) applications requiring batteries, power equipment or both
- Various mounting options provide a flexible solution for space constrained or remote applications
- Thermostat controlled filtered fan cooling and louvered vents ensure reliable operation in high temperature environments
- Durable aluminum construction provides excellent corrosion resistance
- AC and DC power connections pre-wired at factory reduce field installation time



Te25xh

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm:.....914H x 544W x 518D
inches:.....36H x 21.4W x 20.4D
Weight:.....41kg (90lbs)
Construction:.....High strength corrosion resistant aluminum
Finish:.....Powdercoat
Equipment space:.....19RU (without batteries)
Cable entrance:.....Knockouts located in bottom and back of enclosure
Rear side - 1@1" K.O.
1@¾" K.O.
1@½" K.O.
Equipment rails:.....19"

Hardware

Hinge type:.....3 position lift off hinge
Handle:.....Padlockable
Door latch:.....3 point latch
Equipment shelves:.....Optional
Battery trays (qty.):.....2 (Note: Equipment space reduced to 5RU with 8 x 91Ah batteries)

HVAC

Cooling:.....Air conditioner w/heater/heat exchanger/
thermostat controlled filtered fan cooling
Ventilation:.....Door installed louvers

Environmental

Temperature:
Operating:.....-40°C to 46°C
Storage:.....-40°C to 85°C

Installation

Access:.....Rear louver can be removed for equipment installation

Maintenance

Door installed louver:.....Equipped with washable/replacable filter

Enclosure Options

Mounting:.....Wall, pole, pedestal or rack

System Specifications (as shown)



Te17
(shown configured to customer specification)

- 48Vdc Cordex rectifier shelf c/w DC distribution
- External 8 position AC distribution with 30A generator connector
- 8 position GMT fuse panel
- Dual filtered fan cooling
- Alarm terminal block
- Ground bar

System options

- Combination meter base
- Main breaker disconnect
- Battery heater mat
- Heat exchanger 50W/°C
- Air Conditioner
- AC load centre
- AC surge protector

Agency Compliance

CSA/UL:.....C22.2 No. 60950
NEMA rating:.....Type 3R (CSAC22.2 No 94-M91)

FBE2322

Flexible Backhaul Enclosure

NEW

- Provides 15RU for 19" horizontal mounted equipment or 10RU for 23" vertical mounted equipment
- Front and side door access with removable lid
- Durable welded aluminum construction
- Wall, H-Frame, pole or ground mount options
- Multiple thermal management options



Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm:.....752H x 686W x 610D
inches:.....30H x 27W x 24D
Weight:.....29.5kg (65lbs)
Construction:.....High strength corrosion resistant aluminum
Finish:.....Powdercoat
Equipment space:.....15RU (19") horizontal or 10RU (23") vertical
Cable entrance:.....Knockouts located on the rear and bottom of enclosure
Equipment rails:.....19" for horizontal mount or 23" for vertical mount

Hardware

Hinge type:.....Reversible 2 position lift-off hinge
Handle:.....Padlockable
Door latch:.....½ turn padlock
Battery trays (qty):.....1

HVAC

Cooling:.....Air conditioner with heater/heat exchanger/variable speed-controlled fan(s)
Ventilation:.....Door installed louvers

Environmental

Temperature
Operating:.....-40 to 46°C
Storage:.....-40 to 85°C

Installation

Access:.....Front hinged door, left and right lift off doors, removable lid

Maintenance

Door installed louvers:.....Equipped with washable/replaceable filter on systems with fan cool option

Enclosure Options

Mounting:.....Wall, H-frame, pole or ground

System Specifications (as shown)

- 48Vdc Cordex rectifier shelf c/w DC distribution
- External 8 position AC distribution with 30A generator connector
- Air conditioner
- Alarm terminal block
- Ground bar

➤ System Options

- Heat exchanger
- Variable speed-controlled fan(s)
- Load center
- Surge protector
- Main breaker disconnect box
- Battery heater mat

Agency Compliance

CSA/UL:.....60950-22 ITE electrical enclosure
NEMA rating:.....Type 3R

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Enclosures

Te17

44" General Purpose Enclosure

- Outdoor single compartment enclosure designed to hold batteries, power equipment or both
- 30" x 28" footprint allows for easy transport through doorways and stairwells
- Multiple access points from the outside provide greater flexibility to customer installed equipment
- Air conditioner unit with built-in heater ensures reliable operation of devices under cold and hot conditions
- Durable aluminum construction provides excellent corrosion resistance
- 14" riser with removable lift-off panels provide greater protection against water ingress and functions as a cable storage compartment



Te17

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions (including riser):
mm:..... 1473H x 762W x 711D
inches:..... 58H x 30W x 28D
Weight:..... 204kg (450lbs)
Construction:..... High strength corrosion resistant aluminum
Finish:..... Powdercoat
Equipment space:..... 23RU
Cable entrance:..... Knockouts located in side and bottom of enclosure
Equipment rails:..... 23"

Hardware

Hinge type:..... Stainless steel piano hinge
Handle:..... Padlockable
Door latch:..... 3-point latch
Equipment shelves:..... Optional
Battery trays (Qty):..... Optional

HVAC

Cooling:..... 4000 BTU air conditioner

Environmental

Temperature:
Operating:..... -40 to 46°C
Storage:..... -40 to 85°C

Installation

Access:..... Removable rear panel and front hinged door provide full enclosure access

Maintenance

Front access after installation

Enclosure Options

Mounting:..... Pad or platform mount

System Specifications (as shown)

- 24Vdc Cordex rectifier shelf c/w DC distribution
- Internal 8 position AC panel
- Air conditioner and heater
- EVS (Emergency ventilation system)
- Customer specific equipment layout
- Alarm terminal block
- Ground bar

➤ General Specifications

Input voltage range N/A:.... 120/240Vac
Voltage:..... 24Vdc
Current:..... 64A (n+1)

➤ System options

Consult factory for custom system solutions

Agency Compliance

CSA/UL:..... C22.2 No. 60950
NEMA rating:..... Type 3R



Te45

72" Single Compartment Power Enclosure

- 39RU single compartment enclosure offering full height equipment installation flexibility
- Adjustable front to back rails provide for mid or flush mount equipment installation
- Multiple knockouts provide cable interface locations for installation flush or remote installation in enclosure lineups
- Pad-lockable door and durable powder coated aluminum construction allow for secure outdoor or indoor applications
- Heating cooling and ventilation options maintain equipment operating temperatures for various loads in all climate conditions



Te45

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:

mm: 1829 x 762W x 762D
inches: 72H x 30W x 30D

Weight: 250kg (550lbs)

Construction: High strength corrosion resistant aluminum

Finish: Powdercoat

Equipment space: 39RU

Cable entrance: Knockouts on sides and bottom

Equipment rails: 23"

Hardware

Hinge type: 4 position lift off hinges

Handle: Padlockable

Door latch: 3 point latch

Battery trays (qty.): Configuration dependent - 8RU per front terminal battery shelf

HVAC

Cooling: 4000 BTU air conditioner

Heating: 500W

EVS: DC fan powered EVS
(Emergency Ventilation system) option

Audible noise: <65dba

Environmental

Temperature:

Operating: -40 to 46°C

Storage: -40 to 85°C

Installation

Access: Removable rear panels and front hinged door provide full enclosure access

Maintenance

Front access after installation

Enclosure Options

Mounting: Pad or platform mount

System Specifications (as shown)

- 48Vdc Cordex 1.8kW rectifiers
- AC panel c/w generator panel and ATS (automatic transfer switch)
- Air conditioner w/heater
- EVS (Emergency ventilation system)
- Alarm terminal block
- Ground bar

➤ General Specifications

Input voltage range N/A: ... 120/240Vac

➤ System options

Consult factory for custom system solutions

Agency Compliance

CSA/UL: C22.2 No. 60951

Telcordia: GR-487 compliance - contact factory for specific compliances

NEMA rating: Type 3R (CSAC22.2 No 94-M91)



Te45 Battery

72" Front Terminal Battery Enclosure

- 4 battery trays designed for up to 8 strings of front terminal batteries @ 24Vdc and 4 strings @ -48Vdc. Up to 190Ahr size batteries
- Multiple knockouts provide cable interface locations for installation flush or remote installation in enclosure lineups
- Pad-lockable door and durable powder coated aluminum construction allow for secure outdoor or indoor applications
- The bolt together and sealed design provides structural integrity that will withstand seismic events and harsh weather conditions
- Built in cooling and heating system ensure longer battery life



Te45 Battery

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm:..... 1829H x 762W x 762D
inches:..... 72H x 30W x 30D
Weight:..... 273kg (600lbs)
Construction:..... High strength corrosion resistant aluminum
Finish:..... Powdercoat
Equipment space:..... 39RU
Cable entrance:..... Knockouts on sides and bottom
Equipment rails:..... 23"

Hardware

Hinge type:..... 4 position lift off hinges
Handle:..... Padlockable
Door latch:..... 3 point latch
Battery trays (qty.):..... 4 Front terminal battery shelves

HVAC

Cooling:..... 4000 BTU air conditioner
Heating:..... 500W
EVS:..... DC fan powered EVS
(Emergency Ventilation system) option
Audible noise:..... <65dba

Environmental

Temperature:
Operating:..... -40 to 46°C
Storage:..... -40 to 85°C

Installation

Access:..... Removable rear panels and front hinged door provide full enclosure access

Maintenance

Front access after installation

Enclosure Options

Mounting: Pad or platform mount

System Specifications (as shown)

- 4 battery shelves for GNB 150Ahr or larger front terminal batteries
- Air conditioner w/heater
- EVS (Emergency ventilation system)
- Alarm terminal block
- Ground bar

➤ General Specifications

Input voltage range N/A: ... 120/240Vac

➤ System options

Consult factory for custom system solutions.

Agency Compliance

CSA/UL:..... C22.2 No. 60952
Telcordia:..... GR-487 compliance - contact factory for specific compliances
NEMA rating:..... Type 3R (CSAC22.2 No 94-M91)



Te45v2

Outdoor Enclosure

NEW

- Dual compartment system provides operational cost savings using a heat exchanger to cool equipment in the sealed upper compartment and ambient cooling for batteries in the vented lower compartment
- 13RU of rack space in the top compartment provides room for rectifiers, distribution, main radio units, surge protection and other 23" rack mount equipment
- 72" tall, 30" wide and 30" deep provides a small overall footprint that can easily be used in new site builds or existing equipment lineups
- Compliant with GR-487, the enclosure is designed for high reliability and long operating life in extreme environments
- 3 battery trays provide room for 6 strings of 24Vdc or 3 strings of -48Vdc batteries each rated at 150Ahrs or more



Te45v2

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:

mm: 1829H x 762W x 762D
inches: 72H x 30W x 30D

Weight

(no batteries): 236kg (520lbs)

Mounting: Pad or platform

Cooling: Heat exchanger for power compartment
Forced air ambient for battery compartment

Enclosure: Aluminum, 5052-H32

Equipment rack units: 23", 11RU (UC)

Electrical

Input voltage: 120/240Vac, 60Hz single phase
120Vac for auxiliary equipment
120/240Vac for rectifiers

Output voltage: 48Vdc or 24Vdc

Output power: 9.0kW (5x Cordex 48V rectifiers;
Alpha #010-580-20) (as shown)

Recommended feeder breakers:

Per rectifier shelf:

2 AC feeds: 1 feed (3 rectifiers) 2-pole,
50A (120/240Vac single phase)
1 feed (2 rectifiers) 2-pole,
30A (120/240Vac single phase)

GFCI outlets: 1 pole, 15A, 120V

Environmental

Operating temperature: -40 to +46°C (-40 to 115°F)

Storage temperature: -40 to +85°C (-40 to +185°F)

Humidity: 0 to 95% non-condensing

Elevation: 3600 m, see operating temperature
(12,000 feet)

Weather tightness: NEMA Type 3R

Other Information

Alarm:

Connection: Terminal block
Description: High/low temperature
Intrusion, fan fail, AC fail etc.

Chassis ground: Multiple connection
Buss bar located in cabinet

Security: Pad-lockable doors with socket pin-head key

Agency Compliance

CSA: C22.2 No 60950-01-03

UL: Std. No 60950-01

CABINET: NEMA Type 3R (CSA C22.2 No 94-M91)

SEISMIC: Compliant to Zone 4 requirements

GR487: Compliant to GR487



Te47

Outdoor Enclosure

NEW

- Multi-purpose outdoor enclosure designed for mobile broadband applications
- Thermostat controlled filtered fan cooling and louvered vents ensure reliable operation in high temperature environments
- Multiple access points from the outside provides greater flexibility to customer installed equipment
- Superior thermal insulation material (R6) improves energy efficiency of the inside walls of the enclosure
- External AC disconnect hatch allows the user to interrupt power without opening the front door
- Designed and tested to Zone 4 seismic requirements



Te47

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Enclosures

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm:..... 1524H x 737W x 635D
inches:..... 60H x 29W x 25D
Weight:..... 82kg (181lbs)
Construction:..... High strength corrosion resistant aluminum
Finish:..... Powdercoat
Equipment rails:..... 23"
Equipment space:..... 30RU
Cable entrance:
Bottom of enclosure: 2 x 2.5" diameter knock-out (2" trade size)
Rear of enclosure 2 x 2.5" diameter knock-out (2" trade size)

Hardware

Hinge type:..... 3 position lift-off hinge
Door prop: Wind-Stop with automatic lock
Door latch:..... 3 point latch with padlockable L-handle

HVAC

Cooling:..... Thermostat controlled filtered fan cooling
Ventilation: Door installed louvers

Environmental

Temperature:
Operating: -40 to 46°C
Storage: -40 to 85°C

Installation

Access:..... Full front access as well as side door access on both left and right side of enclosure. Each side access measures: 29.25"H x 9.75"W

Maintenance

Door installed louvers: Equipped with washable/replaceable filter on front & rear

Enclosure options

Mounting: Pole or ground

System Specifications

- **System options**
- TVSS
 - Load center
 - AC disconnect hatch
 - Heater

Agency compliance

NEMA rating:..... 3R
CSA: C22.2 No. 60950-01-03
Seismic:..... Designed & tested to seismic Zone 4 requirements

Te40 Battery

84" Front Terminal Battery Enclosure

- 5 battery trays designed for up to 10 strings of front terminal batteries @ 24Vdc or 5 strings @ -48Vdc. Up to 190Ahr size batteries
- Multiple knockouts provide cable interface locations for flush or remote installation in enclosure lineup
- Pad-lockable door and durable powder coated aluminum construction provide secure outdoor or indoor applications
- The bolt together and sealed design provides structural integrity that will withstand seismic events and harsh weather conditions
- Built in cooling and heating system ensure long battery life



Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:

mm:.....2134H x 762W x 762D

inches:.....84H x 30W x 30D

Weight:.....Up to 300kg (660lbs)

Construction:.....High strength corrosion resistant aluminum

Finish:.....Powdercoat

Equipment space:.....44RU

Cable entrance:.....Knockouts on sides and bottom

Equipment rails:.....23"

Hardware

Hinge type:.....5 position lift off hinges

Handle:.....Padlockable

Door latch:.....3 point latch

Battery trays (qty.):.....5 Front terminal battery shelves

HVAC

Cooling:.....4000 BTU air conditioner

Heating:.....500W

Audible noise:.....<65dbA

Environmental

Temperature:

Operating:.....-40 to 46°C

Storage:.....-40 to 85°C

Installation

Access:.....Removable rear panels and front hinged door provide full enclosure access

Maintenance

Front access after installation

Enclosure Options

Mounting:Pad or platform mount

System Specifications (as shown)

- 5 battery shelves for GNB 150Ahr or larger front terminal batteries
- Air conditioner w/ heater
- Alarm terminal block
- Ground bar

➤General Specifications

Input voltage range N/A: ... 120/240Vac

➤System options

Consult factory for custom system solutions

Agency Compliance

CSA/UL:.....C22.2 No. 60954

Telcordia:.....GR-487 compliance - contact factory for specific compliances

NEMA rating:.....Type 3R (CSAC22.2 No 94-M91)



Te41 Power

84" Dual Compartment Power Enclosure

- Dual compartment system reduces the total cost of operation using ambient cooling for rectifiers. Air conditioning is only used for the battery compartment
- Bolt together and sealed construction provides a robust design that meets GR-487 requirements including seismic, wind driven rain and salt fog compliance
- A 30" x 30" (762mm x 72mm) footprint allows for easy new installations and replacement upgrades
- Internal power capacities of up to 39.6kW @-48Vdc and 34.1kW at 24Vdc provide sufficient power for high density and multiple platform enclosure line-ups
- The bolt together and sealed design provides structural integrity that will withstand seismic events and harsh weather conditions for a wide variety of equipment configurations



Te41 Power

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm:.....2134H x 762W x 762D
inches:.....84H x 30W x 30D
Weight:.....Up to 340kg (750lbs) no batteries
Construction:.....High strength corrosion resistant aluminum
Finish:.....Powdercoat
Equipment space:.....Upper compartment 19RU
Lower compartment 26RU
Cable entrance:.....Knockouts on sides and bottom and rear of enclosure
Equipment rails:.....23"

Hardware

Hinge type:.....5 position lift off hinges
Handle:.....Padlockable
Door latch:.....2 point latch upper and lower compartments
Battery trays (qty.):.....Configuration dependent - 8RU per front terminal battery shelf

HVAC

Cooling:.....Upper compartment filtered fan cooled.
4000 BTU air conditioner lower compartment
Heating:.....500W
Audible noise:.....<65dbA

Environmental

Temperature:
Operating:.....-40 to 46°C
Storage:.....-40 to 85°C

Installation

Access:.....Removable rear panels and front hinged door provide full enclosure access

Maintenance

Front access after installation

Enclosure Options

Mounting:.....Pad or platform mount

System Specifications (as shown)

- 48Vdc Cordex 3.6kW rectifiers (3.1kW Cordex system optional)
- Qty 48 DC breaker positions
- LVD or BLVD options
- AC panel c/w generator panel and ATS (automatic transfer switch)
- Air conditioner w/ heater
- Fan/filter ambient cooled upper compartment
- Customer specific equipment layout
- Alarm terminal block
- Ground bar

➤General Specifications

Input voltage range N/A: ... 120/240Vac

➤System options

Consult factory for custom system solutions

Agency Compliance

CSA/UL:.....C22.2 No. 60953
Telcordia:.....GR-487 compliance - contact factory for specific compliances
NEMA rating:.....Type 3R (CSAC22.2 No 94-M91)

Te43

84" single Compartment Enclosure

NEW

- 45RU single compartment enclosure offering full rack height equipment installation flexibility
- Adjustable front to back rails provide for mid or flush mount equipment installation
- Multiple knockouts provide cable interface locations for flush or remote installation in enclosure lineups
- Pad-lockable door and durable powder coated aluminum construction allow for secure outdoor or indoor applications
- Heating cooling and ventilation options maintain equipment operating temperatures for various loads in all climate conditions



Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:

mm:.....2134H x 762W x 762D

inches:.....84H x 30W x 30D

Weight:.....300kg (660lbs)

Construction:.....High strength corrosion resistant aluminum

Finish:.....Powdercoat

Equipment space:.....44RU

Cable entrance:.....Knockouts on sides and bottom

Equipment rails:.....23"

Hardware

Hinge type:.....5 position lift off hinges

Handle:.....Padlockable

Door latch:.....3 point latch

Battery trays (qty.):.....5 Front terminal battery shelves

HVAC

Cooling:.....4000 BTU air conditioner

Heating:.....500W

Audible noise:.....<65dba

Environmental

Temperature:

Operating:.....-40 to 46°C

Storage:.....-40 to 85°C

Installation

Access:.....Removable rear panels and front hinged door provide full enclosure access

Maintenance

Front access after installation

Enclosure Options

Mounting:.....Pad or platform mount

System Specifications (as shown)

- Air conditioner w/ heater
- Alarm terminal block
- Ground bar

➤General Specifications

Input voltage range N/A:....120/240Vac

➤System options

Consult factory for custom system solutions

Agency Compliance

CSA/UL:.....C22.2 No. 60954

Telcordia:.....GR-487 compliance - contact factory for specific compliances

NEMA rating:.....Type 3R (CSAC22.2 No 94-M91)



CXPS-48-500-IWM

- Wall-mountable indoor enclosure provides a flexible solution for space constrained applications
- Light weight powder coated aluminum enclosure is easy to install and offers superior corrosion properties
- Cordex-based DC power system offer modularity and scalability in power up to 500W
- Battery shelf can accommodate up to two 48Vdc strings of batteries
- Low maintenance and high efficiency reduces overall cost of ownership for the user

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm:.....356H x 615W x 381D
inches:.....14H x 24.2W x 15D
Weight:.....18.2kg (40lbs)
Construction:.....High strength corrosion resistant aluminum
Finish:.....Powdercoat
Equipment rails:.....19"
Equipment space:.....2RU for Cordex 650W shelf
Cable entrance:
Top of enclosure:.....1 x 3" diameter knock-out; 4 x 3/4" knock-out
Bottom of enclosure.....1 x 3" diameter knock-out; 4 x 3/4" knock-out
Sides of enclosure.....2 x 3" diameter knock-out; 4 x 3/4" knock-out

Hardware

Door latch:.....Removable front door
Door lock:.....Panel fastener

HVAC

Cooling:.....Passive
Ventilation:.....Louvers installed on side of enclosure

Environmental

Temperature:
Operating:.....0 to 40°C

Installation

Access:.....Full front access

Maintenance

No filters used
Bug screen protected on vent openings

Enclosure Options

Mounting:.....Wall mount only

System Specifications

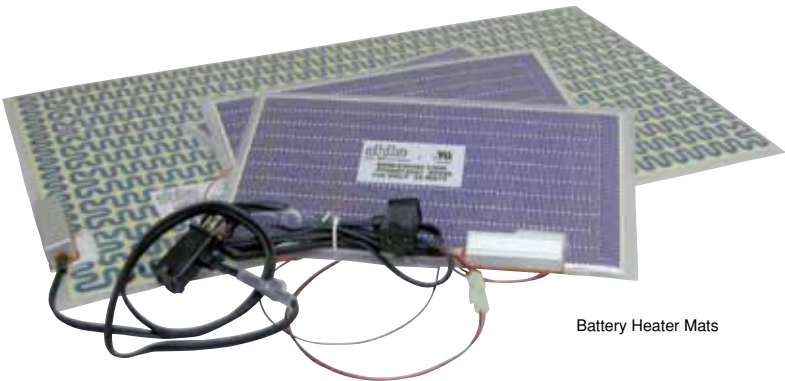
- 48Vdc Cordex rectifier shelf with DC distribution
- Maximum available power is 500W
- Customer interface to all alarms available on the front

Agency compliance

NEMA rating:.....3R
CSA:.....C22.2 No. 60950-01-03

Battery Heater Mats

Extend Battery Runtime in Cold Weather

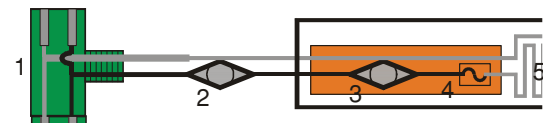


Battery Heater Mats

- Durable polyester construction
- Sealed on-mat electronics for maximum protection
- On-mat thermal switch and thermal fuse for redundant safety
- Insulated design directs heat to the batteries not the enclosure for a 30% reduction in power consumption
- Piggyback plug standard on 120V models

All Mats

Line Cord Thermostat	
Turn on Temp:	5 deg C
Turn off Temp:	15 deg C
Mat Mounted Thermostat	
Over Temp Off:	50 deg C
Turn Back on:	40 deg C
Thermal Fuse Rating:	85 deg C
Optional Line Cord Thermostat	
Turn on Temp:	0 deg C
Turn off Temp:	10 deg C



The main power connector (1) on the heater mat is plugged into an AC source. In low temperature conditions the main control thermistor (2) will allow power to flow to the heater mat coil (5). The thermistor is mounted on the power cord so that it reacts to the enclosure temperatures and not the mat surface temperature. A secondary thermistor (3) is mounted on the mat with significantly higher temperature settings than the main thermistor (2). This thermistor keeps the mat from overheating during extended run periods. A thermal fuse (4) is a final fail safe device. The power connector (1) has an AC receptacle so that additional mats can be plugged in. Its parallel wiring keeps the failure of the first mat from affecting the operation of others in the string.

Battery heater mats are an integral component in outdoor power solutions and need to be carefully integrated with the other system elements to ensure effective operations.

Please contact your Alpha representative to determine the proper battery heater mat required for your outdoor power system.

ALPHAcell

PREMIUM GEL 220 GOLD-HP



Date:

VOC:

Mhos:

WARNING: DO NOT USE EXISTING HARDWARE.
Proper Hardware Provided.
Hardware size: 1/2"-20 UNC x 1/2" max length

NO SE USE CON EL VEHICULO EXISTENTE.
El herraje apropiado se provee con la batería.
Tamaño del herraje: 1/2"-20 UNC x 1/2" Máximo de largo

ATTENTION:
Material should be used.
Tamaño del herraje: 1/2"-20 UNC x 1/2" Máximo de largo

WARNING:
Do not use existing hardware.
Proper hardware is provided.

Terminal Torque: 110 in-lbs (12.4 Nm)
Fast Charge Voltage: 13.5V @ 25°C
12VOLT - 220 Ampere Hours (25°C @ 1.75VPC @ 25°C)

Ventilate well when
in an enclosed space
and when charging.



⚠ DANGER/POISON



SHIELD EYES EXPLOSIVE GASES
CAN CAUSE BLINDNESS OR INJURY



NO SPARKS, FLAMES, OR SMOKING



SULFURIC ACID CAN CAUSE
BLINDNESS OR SEVERE BURNS



FLUSH EYES IMMEDIATELY WITH WATER
GET MEDICAL HELP FAST. KEEP OUT OF REACH OF CHILDREN

CALIF. PROPOSITION 65
WARNING:
Battery posts, terminals
and related accessories
contain lead and lead
compounds, chemicals
known to the state of
Calif. to cause cancer and
reproductive harm. Wash
hands after handling.

0909

ALPHAcell

PREMIUM GEL 195 GXL



Mhos:

ATTENTION:

Storage maximum: 110 in-lbs (12.4 Nm)
Voltage charge support: 13.5V @ 25°C
12VOLT - 195 Ampere Hours (25°C @ 1.75VPC @ 25°C)

WARNING:

Do not use existing hardware.
Proper hardware is provided.



Batteries

Alpha offers a comprehensive line of AlphaCell™ batteries in a number of formats specifically designed for demanding indoor and outdoor Telecom, Cable, Traffic, Security and Renewable Energy applications. In addition to the AlphaCell™ Gel battery line are AGM and specialty batteries that support multiple applications while offering extended runtime and warranty options. In particular, excellent heat displacement characteristics have shown Alpha's Gel cell batteries to exhibit superior working life and reliability to competing technologies. AlphaCell™ GXL batteries come with a full replacement non-prorated warranty and provide years of expected life and trouble free performance.

Choosing Alpha battery technology means 100% out-of-box capacity and reliable performance in harsh operating conditions, longer service life and reduced maintenance. In addition to our battery offerings, Alpha has a full range of accessories to complement your battery installation or testing needs.

Battery Selection Considerations

Alpha offers batteries for virtually every backup power application. However, not all batteries are listed in the catalog. To help us propose the optimal battery solution for your specific application, please review the following questions prior to contacting your Alpha representative.

›What is the nature of the application?

Cycle – batteries will be drained and recharged frequently.

Float – batteries will only be drained and recharged when the primary power source fails.

What is the battery backup time requirement?

›What are the environmental conditions?

Will the batteries be installed in a controlled, non-controlled, or partially controlled environment?

Minimum/maximum ambient temperatures surrounding the batteries?

Humidity/Precipitation: Will the batteries be exposed to snow, rain, etc?

Is there adequate ventilation?

›Where will the batteries be installed (i.e. what country, city/town)?

Our battery warranties vary by country of installation; contact Alpha for details.

What is the expected frequency of utility power failures, e.g. once a year, once a month, etc.?

How long does the average utility power failure last?

Is there any government legislation stipulating backup power requirements?

›What is the DC voltage requirement?

12, 24, 36, or 48Vdc? Other?

›Are there any space restrictions?

Depending on type of battery, how many, and where the batteries & backup equipment will be installed.

How convenient is battery replacement? Consider total cost of ownership.

›Is there an existing battery string?

When replacing batteries on the same string, ensure date codes, voltage and conductance are matched.

AlphaGuard™ is highly recommended to spread the charge voltage equally across all batteries in the string, which optimizes battery life and runtime.

›Are any accessories required?

E.g. AlphaGuard™ Battery Charge Management System, Battery Heater Mats, Battery Testing Equipment, Battery Spacers, etc. Note: Battery heater mats are specific to the enclosure and application.

›What warranty/service needs are required?

Is extended warranty required? Special servicing needs?

Note: Replaced batteries require environmentally safe disposal.

AlphaCell™ 195 GXL-FT

Gel Front Terminal Batteries

- True gel technology and high performance separator for extended battery cycle life
- Front access design with protective covers for ease of installation and maintenance
- Ideal for demanding outdoor telecom, Wi-Fi and broadband applications



AlphaCell™ 195 GXL-FT

Nominal Specifications

Model		195 GXL-FT P/N: 1810029
Service life		Extended
Sealed VRLA		Valve regulated lead acid
Heat resistant		Extreme
Hydrogen emission		Low
Terminals		16mm insert M6 thread
Typical runtime		195 mins
Cells per unit		6
Voltage per unit		12.8V
Conductance value		1200
Max. discharge current		400A
Short circuit current		3000A
10 Second volts @ 100A		10.8
Impedance @ 60Hz (Ohms)		0.0041
Capacity at 20hrs (to 1.75VPC)		110Ah
Mechanical		
Dimensions w/ terminals*	mm	285H x 110W x 395D
	inches	11.22H x 4.33W x 15.55D
Weight		34.52kg (76.29lbs)
Environmental		
Discharge		-40 to 71°C (-40 to 160°F)
Charge (with temp compensation)		-20 to 50°C (-4 to 122°F)
Float charging voltage (Vdc)		Float 2.27 to 2.30VPC @ 25°C cycling 2.35VPC @ 25°C
AC ripple charger		0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4% P-P

*Dimensions at top of battery. For information on the warranties please contact your sales rep.

Current Discharge Ratings Table in Amps (End Voltage 1.75VPC)

Hours	1	2	3	4	6	8	10	12	20	24	48	72	100
195 GXL-FT	71.1	38.0	26.8	21.1	15.2	12.0	9.92	8.48	5.50	4.60	2.31	1.56	1.13

AlphaCell™ 3.5 and 4.0HP

Pure Lead Top Terminal Batteries



AlphaCell™ 4.0 HP

- Pure lead technology provides up to 20% increased life expectancy
- 3 to 5 times longer shelf life versus standard VRLA batteries
- Up to 50% increased runtime in cold climates
- Non-spillable UN2800 rating for ease of transportation
- Higher runtime allows string count reduction
- 5-year full, hassle-free warranty

Nominal Specifications		
Model	3.5HP	4.0HP
P/N	1810077	1810078
Warranty*	5-year full replacement	
Service life	Extended	
Battery type	Pure lead AGM	
Heat resistant	Extreme	
Hydrogen emission	Low	
Capacity at 20hrs (to 1.75VPC)	104Ah	114Ah
Typical runtime (minutes)**	210	240
BCI group size	31	
Terminals	Threaded insert 1/4 - 20 UNC*	
Cells per unit	6	
Voltage per unit	12.8	
Conductance value	1700	2100
Max. discharge current (A)	800	900
Short circuit current (A)	2800	3200
10 second volts @ 100A	11.7	11.8
Impedance @ 60Hz (Ohms)	2.7	2.2

Mechanical			
Height w/terminals	mm	223.5H x 337.8W x 172.7D	223.5H x 337.8W x 172.7D
	inches	8.5H x 13.4W x 6.8D	8.5H x 13.4W x 6.8D
Weight		30.8kg (68lbs)	35.6kg (74lbs)
Environmental			
Discharge		-40 to 60°C	-40 to 60°C
		-40 to 140°F	-40 to 140°F
Charge (with temperature compensation)		-40 to 60°C	-40 to 60°C
		-9.4 to 140°F	-9.4 to 140°F
Float charging voltage		13.5 to 13.8Vdc	13.5 to 13.8Vdc
AC ripple charger		0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4%V pk to pk	

AlphaCell HP current discharge ratings in Amps (end voltage 1.75VPC @ 25°C/77°F)

Hours		1	2	3	4	8	10	20
3.5HP	End voltage 1.75VPC:	70.2	40.3	28.6	22.3	12.1	9.9	5.2
	End voltage 1.70VPC:	72.0	41.1	29.2	22.7	12.3	10.0	5.3
4.0HP	End voltage 1.75VPC:	81.9	45.8	32.2	25.0	13.1	10.6	5.7
	End voltage 1.70VPC:	83.7	46.7	32.8	25.4	13.3	10.7	5.8

AlphaCell HP Amp hour ratings in Amps (end voltage 1.75VPC @ 25°C/77°F)

Hours		1	2	3	4	8	10	20
3.5HP	End voltage 1.75VPC:	70.2	80.6	85.8	89.2	96.8	99	104
	End voltage 1.70VPC:	72.0	82.2	87.6	90.8	98.4	100	106
4.0HP	End voltage 1.75VPC:	81.9	91.6	96.6	100	104.8	106	114
	End voltage 1.70VPC:	83.7	93.3	98.3	101.5	106.3	107	115.8

* Warranty varies by country and region. Warranty valid only when used with Alpha approved power supplies, chargers and enclosures. Consult your salesperson for details.

** Runtimes calculated using a 25A DC constant current load to 1.75Vdc @ 25 °C

AlphaCell™ GXL

Gel Top Terminal Batteries



AlphaCell™ 195 GXL

- High-performance silver alloy for maximum life expectancy
- Longer runtime for demanding outdoor environments
- 100% runtime capacity out-of-box – No cycling required
- Maintenance-free threaded inserts – No periodic retorquing
- Available with 4 and 5 year full warranties
- Wide operating temperature range

Nominal Specifications for Gold-HP				
Model	220 GXL	195GXL	165GXL	85GXL-HP
P/N	181-231-10	181-230-10	1810015	181-213-10
Warranty*	4 to 5 years full replacement			
Service life	Extended			
Battery type	True gel cell and silver alloy grid battery technologies			
Heat resistant	Extreme			
Hydrogen emission	Low			
Capacity at 20hrs (to 1.75VPC)	109Ah	100Ah	86Ah	50Ah
Typical runtime (minutes)**	221	196	165	85
BCI group size	31	31	27	22
Terminals	Threaded insert 1/4 to 20 UNC*			
Cells per unit	6	6	6	6
Voltage per unit	12.8V	12.8V	12.8V	12.8V
Conductance value	1175	1100	1000	600
Max. discharge current	900A	900A	800A	600A
Short circuit current	2800A	2600A	2500A	2200A
10 second volts @ 100A	11.4	11.3	11.2	10.8
Impedance @ 60Hz (Ohms)	0.005	0.005	0.0055	0.0065

Mechanical					
Dimensions (Height includes terminals)	mm	215.4H x 340.09W x 172.7D	223.5H x 337.8W x 172.7D	223.5H x 337.8W x 172.7D	
	inches	8.48H x 13.42W x 6.80D	8.5H x 13.4W x 6.8D	8.5H x 13.4W x 6.8D	
Weight		33.2kg (73lbs)	30.5kg (67lbs)	30.5kg (67lbs)	
Environmental (All Models)					
Discharge		-40 to 71°C			
		-40 to 160°F			
Charge (with temperature compensation)		-23 to 60°C			
		-9.4 to 140°F			
Float charging voltage		13.5 to 13.8Vdc			
AC ripple charger		0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4%V pk to pk			

AlphaCell HP current discharge ratings in Amps (end voltage 1.75VPC @ 25°C/77°F)

Hours	1	2	3	4	8	10	20
220GXL	66.1	39.6	28.5	22.4	12.3	10.0	5.4
195GXL	61.2	35.2	25.2	19.7	10.8	8.9	5
165GXL	55.9	32.8	23.5	18.4	10.0	8.2	4.3
85GXL	33.2	18.8	13.3	10.4	5.7	4.6	2.5

AlphaCell HP Amp hour ratings in Amps (end voltage 1.75VPC @ 25°C/77°F)

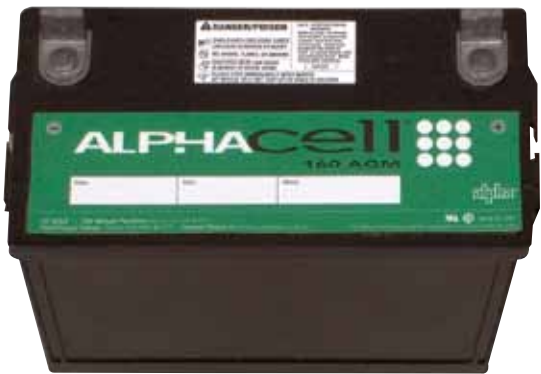
Hours	1	2	3	4	8	10	20
220GXL	66.2	79.2	85.5	89.6	98.4	100	109
195GXL	61.2	70.4	75.6	78.8	86.4	89	100
165GXL	55.9	65.6	70.5	73.6	80.0	82	86
85GXL	33.2	37.6	39.9	41.6	45.6	46	50

* Warranty varies by country and region. Warranty valid only when used with Alpha approved power supplies, chargers and enclosures. Consult your salesperson for details.

AlphaCell™ AGM

Top and Front Terminal Batteries

- Designed for indoor and outdoor standby applications
- 100% out-of-box runtime capacity
- Maintenance-free threaded inserts
- 100% replacement warranty
- Convenient carrying handle standard on all models



AlphaCell™ AGM

Nominal Specifications for 160 AGM (Top Terminal)

P/N: 1810017		
Sealed VRLA		Valve Regulated Lead Acid
Typical runtime (minutes) ¹		160
Cells per unit		6
Voltage per unit		12.8V
Conductance value		1300
Max. discharge current		800A
Short circuit current		3300A
10 Second volts @ 100A		11.6
Ohms impedance 60Hz		0.004
Capacity at 20hrs (to 1.75VPC)		77Ah
BCI group size		27
Mechanical		
Dimensions w/terminals	mm	229.8H x 317.8W x 173.4D
	inches	9.05H x 12.57W x 6.83D
Weight		28kg (62lbs)
Environmental		
Discharge		-40 to 71°C (-40 to 160°F)
Charge (with temp compensation)		-23 to 60°C (-9.4 to 140°F)
Float charging voltage		13.5 to 13.8Vdc
AC ripple charger		0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4% P-P

1.Runtimes calculated using a 25A DC constant current load with voltage discharge to 1.75V/cell @ 25°C.

Nominal Specifications for AlphaCell™ 225 AGM-FT

P/N: 1810031		
Service life		Extended
Sealed VRLA		Valve Regulated Lead acid
Heat resistant		High
Hydrogen emission		Low
Terminals		16mm Insert M6 thread
Typical runtime		225 mins
Cells per unit		6
Voltage per unit		12.8V
Conductance value		1400
Max. discharge current		400A
Short circuit current		3100A
10 Second volts @ 100A		11.2
Impedance @ 60Hz (Ohms)		0.0045
Capacity at 20hrs (to 1.75VPC)		114Ah
Mechanical		
Dimensions w/terminals*	mm	285H x 110W x 395D
	inches	11.22H x 4.33W x 15.55D
Weight		34kg (75.14lbs)
Environmental		
Discharge		-40 to 71°C (-40 to 160°F)
Charge (with temp compensation)		-20 to 50°C (-4 to 122°F)
Float charging voltage (Vdc)		Float 2.27 to 2.30VPC @ 25°C cycling 2.35VPC @ 25°C
AC ripple charger		0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4% P-P

*Dimensions at top of battery. For information on the warranties please contact your sales rep.

Current Discharge Ratings Table in Amps (end Voltage 1.75VPC)

Hours	1	2	3	4	6	8	10	12	20	24	48	72	100
160AGM	61.20	33.90	23.10	17.60	11.98	9.20	7.38	3.84	3.84	3.20	1.60	1.07	0.77
225AGM-FT	81.00	43.10	30.30	23.70	16.70	12.90	10.40	8.90	5.70	4.80	2.43	1.62	1.18

AlphaCell™ Telecom and UPS

Front Terminal Batteries

- AlphaCell™ 160 BT and 180 BT for a wide range of telecom and broadband applications
- AlphaCell™ 700HR for high rate UPS applications
- Front access threaded copper alloy inserts for reduced maintenance and increased safety
- Front terminal design maximizes energy density in cabinet or rack applications
- Thermally welded case-to-cover bond to ensure a leak-proof seal
- Removable handles for ease of installation



AlphaCell™ Telecom and UPS

Nominal Specifications

Model		160BT	180BT	700HR
P/N		1810118	1810119	1810120
Warranty		4 years full, 6 years pro-rated		3 years full
Battery type		Long duration Telecom AGM		High rate UPS AGM
Capacity in Ah @ 25°C (77°F)		157.3Ah @ 8hr rate (to 1.75VPC)	181.2Ah @ 8hr rate (to 1.75VPC)	206Ah @ 20hr rate (to 1.67VPC)
Terminals		Threaded copper alloy insert terminal to accept 1/4-20 UNC bolt		
Terminal hardware initial torque		110 in-lbs (12.4 N-m)		
Maximum discharge current (A)		800		
Short circuit current (A)		4700	4500	4500
Impedance @ 60Hz (Ohms)		0.0031 Ohms	0.0037 Ohms	1836 Mhos (Midtronics)
Dimensions	mm	559D x 126W x 283H	463D x 176W x 257H	559D x 124W x 318H
	inches	22.01D x 4.95W x 11.14H	18.2D x 6.94W x 10.1H	22D x 4.9W x 12.5H
Weight		53kg (115lb)	55kg (121lb)	60.3kg (133lb)
Mechanical				
Dimensions (Height includes terminals)	mm	283.96H x 125.73W x 559.05D	320.04H x 125.73W x 559.05D	320.04H x 125.73W x 559.05D
	inches	11.14H x 22.01W x 4.95D	12.6H x 22.01W x 4.95D	12.6H x 22.01W x 4.95D
Weight		52.2kg (115lbs)	59.4kg (131lbs)	60kg (131lbs)
Environmental (All Models)				
Operating Temperature Range with temperature compensation		-40 to 71°C Discharge: -40°C (-40°F) to + 71°C (160°F) Charge: -23°C (-10°F) to 60°C (+140°F)		
Nominal Operating Temperature Range		23°C (+74°F) to 27°C (+80°F)		
Recommended Maximum Charging Current Limit		C/5 amperes @ 20 Hr rate		
Float charging voltage		13.5 to 13.8 Vdc average per 12V unit @ 25°C (77°F)		
Maximum AC Ripple (Charger):		0.5% RMS or 1.5% P-P of float charge voltage recommended for best results. Max voltage allowed = 1.4% RMS (4% P-P) Max current allowed = C/20		
Self Discharge		Battery can be stored up to 6 months at 25°C (77°F) before a freshening charge is required. Batteries stored at temperatures greater than 25°C (77°F) will require recharge sooner than batteries stored at lower temperatures.		
Equalize charge and cycle service voltage		14.40 to 14.80 Vdc average per 12V unit @ 25°C (77°F)		

UPS Batteries

7 to 34AH



UPS batteries

- High rate and general purpose VRLA Batteries
- 12V batteries with capacities from 7Ah to 34Ah at 20 hrs
- Optimized grid for high power density
- Upright, side or end mounting
- Thermally welded case to cover bond eliminates leakage
- Optional flame retardant ABS casing to UL94-VO
- 100% replacement warranty

Consult your Alpha representative for P/N configurations

Electrical

Type:..... Valve regulated lead acid
Range of capacity:..... 7 to 34Ah
Recommended float voltage:..... 13.5VPC @ 20°C (68°F)
Terminal type:..... Threaded copper insert
Optional:..... UL 94 VO flame retardants casing

Enviromental

Operating temperature
nominal:.....25°C (77°F) note: can operate at higher
temperature up to 74°C (165°F) but degrades
life of battery

Operating temperature
range
(Extended temperature
batteries)
Discharge:-20°C to 50°C (-4°F to 122°F)
Charge:-20°C to 50°C (-4°F to 122°F)
Storage:-20°C to 50°C (-4°F to 122°F)

For information on warranties please contact your sales rep.



Alpha is continuously exploring new, innovative specialty energy storage technologies that help our customers lower their Total Cost of Ownership (TCO).

Our range of Nickel Cadmium (NiCad) and Lithium Ion (Li-ion) batteries are designed for safety, high reliability, high power density and long design life. NiCad batteries offer a versatile and reliable power source in the most extreme conditions.

Li-ion solutions offer optimum power density and low self-discharge rates and are available in a wide range of electrochemical technologies.

Comparison of Li-ion Battery Chemistries					
Li-ion Battery Chemistry	Lithium Cobalt Dioxide (LiCoO ₂ or LCO)	Lithium Nickel Cobalt Aluminum Oxide (LiNiCoAlO ₂)	Lithium Nickel Manganese Cobalt Oxide (LiNiMnCoO ₂ or NMC)	Lithium Manganese Oxide (LiMn ₂ O ₄ or LMO)	Lithium Iron Phosphate (LiFePO ₄ or LFP)
Energy Wh/kg or L	Good	Good	Good	Average	Average
Power	Good	Excellent	Good	Good	Good
Low Temperature	Good	Good	Good	Excellent	Average
Calendar life	Average	Excellent	Good	Poor	Poor > 45°C
Cycle life	Average	Excellent	Good	Excellent	Excellent
Safety (cathode only)	Poor	Poor	Poor	Average	Excellent
Safety (cathode & anode)	Poorer	Poorer	Poorer	Average	Good
Cost/ kWh	Higher	High	High	Lowest	High



PowerAgent

- Intelligent site controller monitors up to 6 strings of 40 batteries (240 total batteries)
- Low power consumption minimizes runtime impact
- Monitors 2V or 12 V cells (with appropriate sensor)
- Monitors string and cell voltage, admittance, individual cell temperature, ripple current and float current for a comprehensive, real-time picture of the state of health of your battery bank

Electrical

Site Controller Unit:
Sensors:20-60Vdc
Power consumption:.....5W @ 20-60Vdc plus 5W
(if 12V source used at max load)

Sensors:
Power requirements:2 volt: 1.65-3.0Vdc
12 volt: 8.0-16Vdc
Power consumption:.....2 volt: <15ma nominal, 2/5A during
admittance test
12 volt: <15ma nominal, 5/7A during
admittance test

Rim Modules:
AC line measurement:90 to 140Vac, RMS, Sine, 50/60Hz

Mechanical

Sensors (2Volt)
Battery Interface
Battery positive: Ring terminal with 12" wire
Battery negative: Bracket or ring terminal with 12" wire

Rim Modules:
Dimensions:
mm:.....68.6W x 81.3H x 25D
inches:.....2.7W x 3.2W x 1D
Weight:0.11kg (0.25lbs)

Environmental

Site Controller Unit:
Operation:.....-45 to +65°C

Sensors:
Operating range:2 volt: -40 to +80°C
12 volt: -40 to +80°C

Heat dissipation:<94 BTU per hour

Communications

Site Controller Unit:.....SNMP via TCP/IP
USB (X4)

Sensors:
Communications
Interface2 volt: Optically isolated RJ-45 (1200 volts)
12 volt: Optically isolated RJ-45 (1200 volts)



What Pieces Make Up The System?

The PowerAgent BMS has three components:

Sensors: A sensor is attached to the terminal posts of each monitored battery. The sensors measure the battery's admittance (internal resistance), voltage, and post temperature

A Site Controller: The site controller communicates with each of the sensors and collects the most recent measurement data. It checks each measurement against locally stored alarm thresholds and alerts the user's monitoring software if an abnormality occurs. The site controller is fully Ethernet TCP/IP compatible, and has a built-in web server and SNMP interface.

Monitoring Software: The PowerAgent BMS system, with its native standards-based SNMP interface, is the only battery monitoring system that gives the user 'freedom of choice' to select the optimum software for the application.

Software options include:

- No software – The site controller's internal web interface provides information for all components connected to the Site Controller.
- Lookout™ Software provides a global view of multiple installations with the ability to "drill in" to details. Lookout™ is provided at no charge.
- Continuity SBL enterprise-class battery system monitoring and analysis package provides predictive trending information and can manage thousands of battery sites.
- Any software that supports an SNMP interface.



AlphaGuard™ Battery Charge Management System

AlphaGuard™ Battery Charge Management System

- AG-CMT-3 AlphaGuard™ Charge Management SC, 36V String – including Battery interface cable
- AG-CMT-4 AlphaGuard™ Charge Management SC, 48V String – including Battery interface cable

The AlphaGuard is a battery charge management system that monitors and protects your batteries for runtime optimization and longer battery life. CSA and UL approved, AlphaGuard allows you to replace single batteries rather than the whole string. It spreads charge voltage equally across batteries to maximize battery life and compensates for battery differences as they age.

Also available: AlphaGuard Potted Version for Below Grade Applications.

The potted version is ideal for applications where batteries are installed underground or subject to damp conditions or possible immersion.

Note: For some applications, Alpha offers an extended battery warranty when AlphaGuard is used.

Contact your Alpha representative for complete details.



AlphaGuard™ Potted Version



Celltron Essential Battery Testing Equipment

Battery Testing Equipment

Alpha's battery testing equipment provides accurate information about the status of installed standby batteries allowing you to budget for early detection of failed or degraded batteries and for replacements with confidence.

A fast, reliable and affordable testing process.

Conductance testing, coupled with a simple utility load test, arms the operator with the quality of data necessary to know the status of installed standby batteries, allowing for detection and replacement before failure occurs and puts backup during an outage at risk.



Battery Spacer Clip

Battery Spacer Clip

- Designed for use with most group 27 (165GXL) or 31 (3.5HP, 4.0HP, 195GXL, 220GXL) VRLA batteries
- Easy to install - clips to the top of the battery
- Increases battery life expectancy by providing critical battery spacing required for proper ventilation
- Accurately positions and secures the Remote Temperature Sensor (RTS)
- Strongly recommended for hot climates
- Designed to last over 30 years or lifetime of the equipment



Generators

Alpha's line of DC generators are designed to allow for minimal battery backup installation while still providing extended runtime to critical loads. Every generator system incorporates efficient, effective and reliable power technology, including: natural gas or propane powered engine generators, exclusive audible noise baffling, remote status monitoring features and multiple built-in safeguards to protect the system, operators and the public.

The AlphaGen™ curbside DC generator system is specifically designed for outside plant communication networks requiring -48Vdc power. It offers quiet operation, small size and low profile for easy installation in populated areas and is one example of several capable generator models in the AlphaGen™ family.

AlphaGen™ Portable

3.0kW Portable 36/48Vdc Generator System



AlphaGen™ Portable

- DC technology requires no UATS (Universal Automatic Transfer Switch)
- No need to disconnect or reconnect power supply to utility power
- Selectable output for 36 or 48Vdc operation up to 3000W
- Quiet operation only 58dBA @ 7m (22ft)
- Completely enclosed, water resistant for safe operation in the field
- Oversized metal gas tank with level gauge for extended runtimes of up to 20hrs

P/N: 013-018-10-010

Performance / Features

Engine: Honda GX 200 6.5hp, air-cooled, OHV, single cylinder, manual recoil starting, manual choke

Rated power: 2800W continuous, 3000W max

Alternator: Permanent magnet, brushless, bearingless

Dual range selector:

36V: 39.5Vdc nominal at generator output connector

48V: 52.5Vdc nominal at generator output connector

Output regulation: 1Vdc

Control features: Automatic voltage regulation

Electronic governor

Over current protection

Analog voltmeter with back light

Cable interface: Anderson type SBE-80 connector

Fuel tank: 3.4 gallon metal tank with level gauge

Runtime:

@ 25% load: 20hrs

@ 80% load: 10hrs

@ 100% load: 7.2hrs

Audible noise: Approx. 58dBA @ 7m under full load

Frame: Fully enclosed

Mechanical

Dimensions:

mm: 569H x 480W x 655D

inches: 22.4H x 18.9W x 25.8D

Dry weight: Less than 53.5kg (118lbs)

Agency Compliance

CSA C22.2 No. 100-95, 107.1-01, 107.2-M89, 0.4 FCC part 15B Class A

Required Accessories

Output interface cable:Available in 10', 30' or 50' lengths
 Battery interface cable:Choose ring lug, heavy-duty alligator clamp, or Y-adaptor*

*Connects the power supply's battery input directly to the generator



30' Output interface
 10' P/N 877-567-10-022
 50' P/N 877-567-10-021



Ring lug battery interface



Alligator clamp battery interface
 P/N 874-946-20



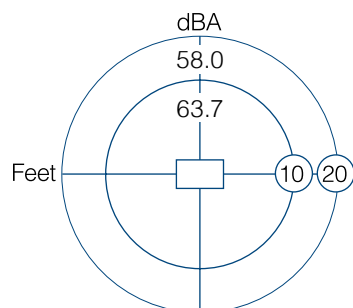
Y-Adaptor battery
 P/N 874-946-22

Optional accessories:

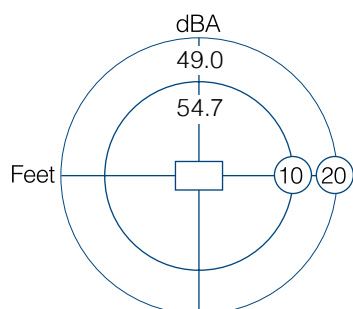
DCX-PG-WK:Portable generator wheel kit
 AG-PG-TOOL:Punch tool kit for enclosures
 AG-PG-UK:Enclosure upgrade kit
 DCX-PG-HANDLE:Locking handle
 AG-CAB-KITCable bag with cable and key lanyard

3.0kW Portable Generator Sound Levels

Ambient background noise level at 45dBA
 All readings are 8 point averages



Generator at 100% rated load



Generator at 100% rated load (typical)



AlphaGen front view



AlphaGen portable trailer



AlphaGen with wheel kit



- 3.5, 5.0 and 7.5kW options in either 36Vdc or 48Vdc configurations
- Cost effective extended runtime solution for Telecom powering applications
- Quiet operation, small size and low profile allow for easier installation in populated areas
- Eliminates large quantities of batteries otherwise required for extended runtime
- Designed for stand-alone or collocated povernode applications
- Built-in safeguards to protect the system, operators and the public
- Safe unattended operation designed to UL2200, NFPA 37, 54, 58 and 70 standards

Consult your Alpha representative for P/N configurations

Performance / Features

Gas inlet pressure:	0.5 to 2 PSI inlet pressure (see note 1)
Ign charger voltage:	13.5Vdc
Ign charger current:	6A max
Remote interface length:	75ft max
	Distance depends upon proper installation, de-rating and wire gauge (see note 2)
Fuel system, controls & monitoring:	The controls and fuel system meet applicable sections of NFPA 37, 54 and 58 for automatic unattended operation of remotely located generators. Full system control and status monitoring included.
Sensors:	Gas hazard Pad shear Water intrusion Tamper

➤ Safety shutdowns

All models:	Low oil pressure Over temp Low fuel pressure shutdown (propane only) Water intrusion Pad shear Gas hazard (propane or natural gas) Over speed Over crank
Optional feature:	Cold start kit: Provides additional starting capability at temperatures below 17.7°C (0°F).

Agency Compliance

UL1778
UL2200
NFPA 37/54/58/70
CSA C22.2 No.107.1
EMC/FCC Part 15 Class A

Note: Contact Alpha Technologies for the following:
1. Low pressure
2. Remote interface length distance

Nominal Specifications

Model:		3.5kW			5.0kW			7.5kW	
DC output voltage		39.0V ±0.5V @ no load 36V configuration			39.0V ±0.5V @ no load 36V configuration			52.0V ±0.5V @ no load 48V configuration	
		52.0V ±0.5V @ no load 48V configuration			52.0V ±0.5V @ no load 48V configuration			104.0V ±0.5V @ no load 96V configuration	
DC output load regulation		0.5V			0.5V			0.5V	
Output current		39.0V @ 90A max			39.0V @ 128A max			52.0V @ 144A max	
		52.0V @ 67A max			52.0V @ 96A max			104V @ 72A max	
Engine		398CC, Air cooled, Single OHV			398CC, Air cooled, Single OHV			624CC, Air cooled, Twin OHV	
		10.5hp (using natural gas fuel)			10.5hp (using natural gas fuel)			15hp (using natural gas fuel)	
RPM: (variable speed)		2800 to 3600RPM			2800 to 3600RPM			2800 to 3600RPM	
Acoustical noise									
dBA 10' @ 100% rated load		68.7Ave			68.5Ave			70.3Ave	
dBA 20' @ 100% rated load		63.0Ave			62.5Ave			64.3Ave	
dBA 10' @ 70% rated load		68.3Ave			66.9Ave			66.4Ave	
dBA 20' @ 70% rated load		62.6Ave			60.9Ave			60.4Ave	
Dimensions		CE-3x	CE-9x	PN-4xL	CE-3x	CE-9x	PN-4xL	PN-6x	with optional pedestal
Height	cm	111.2	132.1	81.3	111.2	132.1	81.3	99	144
	in	44	52	32	44	52	32	39	57
Width	cm	66	132.1	81.3	66	132.1	81.3	100	
	in	26	52	32	26	52	32	39.25	
Depth	cm	61	61	76.2	61	61	76	61	
	in	24	24	30	24	24	30	24	
Weight	kg	174	187	177	174	187	177	174	168
	lbs	383	413	390	383	413	390	338	370
APU fuel consumption									
Natural gas: 1000 BTU/Ft.³		60ft³/hr			80ft³/hr			156ft³/hr	
Propane gas: 2520 BTU/Ft.³		0.82gal/hr			1.10gal/hr			1.48gal/hr	
		30ft³/hr			40ft³/hr			54ft³/hr	
		3.46lbs/hr			4.62lbs/hr			6.24lbs/hr	
Exterior surface temperature		65°C max (149°F) (meets requirements of UL/CSA)			65°C max (149°F) (meets requirements of UL/CSA)			65°C max (149°F) (meets requirements of UL/CSA)	



CE-3x2
3.5 or 5kW



CE-9x2
3.5 or 5kW



CE-3/9G propane
storage for generator
(For 3.5 and 5.0kW)



PN-4xL
3.5 or 5kW



PN-6x
7.5kW
(PN-6x is not compatible with CE-3/9G)

➤Alpha Energy

Alpha Energy is an engineering and project development group that provides innovative power conversion solutions integrating solar, wind and alternative resources to provide reliable electric power for the most demanding applications.

➤Outback Power

OutBack Power is the leading designer and manufacturer of advanced power electronics for renewable energy, back-up power and mobile applications, with an emphasis on product performance. OutBack has established itself as the supplier of choice in harsh environmental conditions, and applications where product reliability is paramount.

Sinewave/Inverter Chargers



Radian Series

Radian Series Inverter/Charger

- > 8000 Watts of continuous power
- > UPS mode capabilities
- > Unsurpassed surge capability
- > 120/240Vac split-phase voltage
- > Simplified parallel design allows easy installation of systems from 8 to 80kW
- > Quick and easy installation

The Radian Series GS8048 provides a comprehensive answer for grid-interactive and stand-alone power systems.



FX Sealed

FX Inverter/Charger

- > Sinewave output
- > High 93% operating efficiency
- > Intelligent battery charging
- > Modular system architecture
- > Field serviceable

The FX Series offers an industry leading sealed inverter that has been proven to serve in the most extreme environments, while the VFX is suitable for more protected installations. And unlike typical grid-tied inverters, the GFX continues to function during a grid outage.



FLEXmax 80







FLEXmax 60

FLEXmax Charge Controllers

- > Increased PV array output by up to 30%
- > Advanced continuous maximum power point tracking
- > Full power output in ambient temperature up to 40°C / 104°F
- > Battery voltages from 12 to 60Vdc
- > Built-in 128 days of data logging

OutBack charge controllers allow you to maximize your systems potential and can increase your renewable energy yield by up to 30%.

Systems

 <p>FLEXpower ONE</p> <p>FLEXpower TWO</p>	<p>FLEXpower Inverter Systems</p> <ul style="list-style-type: none">> Fully integrated, true sinewave, reliable power system> Includes Inverter/Charger (1 or 2), AC and DC wiring boxes, a MATE3 and HUB> Compact design> Easy-to-install mounting bracket> Fully pre-wired and factory-tested system
 <p>FLEXware 250</p> <p>FLEXware 1000</p>	<p>FLEXware Integration Hardware</p> <ul style="list-style-type: none">> Balance-of-system enclosure for OutBack inverters> Reduced time of installation> Compact design with powdercoat finish> Protects system AC and DC breakers, Input-Output Bypass and wire connections> System sold as components (standard) or pre-wired (optional)
 <p>PV Upgradable UPS</p>	<p>Photovoltaic Upgradable UPS</p> <ul style="list-style-type: none">> Fully-integrated turn-key system including the FLEXpower ONE and EnergyCell RE front terminal batteries> Modular, expandable design> Fully enclosed for ease of maintenance and protection> Small footprint> Flexible 200Ah to 1000Ah power range> Custom configured application specific
 <p>PVPS</p>	<p>Photovoltaic Power System</p> <ul style="list-style-type: none">> Hybrid DC powering system> Solar harvested system efficiency of 97%> Integrated PV and advanced charge control technology> Scalable from 4.23kW to 25.38kW





Services and Support

Effective power systems require first class support. Alpha provides a full range of service and support solutions designed to keep power infrastructure running.

At Alpha, we understand that our products are often just one or more parts of a complete power solution. That's why Alpha service goes beyond just Alpha equipment to providing support solutions that meet the ultimate need of our customers: continuous, reliable power.

Whether it's an item sent in for repair, a technical support phone call or an on site preventative maintenance visit; Alpha technicians stand behind every Alpha product. Have your equipment repaired right at the factory, or in one of our many service centers. Take advantage of our service plans that provide a complete on site maintenance solution for one low annual fee. Or call us to have new batteries installed, the old ones recycled and perform a complete preventative maintenance routine for your power system.

Alpha has standard service and support solutions designed to meet the needs of our clients. At Alpha, we understand that many power systems are unique situations that have unique needs. Our services can be tailored to provide the service that's right for you.

If you want to know more just call us, 24/7, at:

USA and Canada: 1-888-462-7487

International: 1-604-436-5547

Alpha Service Plans				
	Factory Warranty	Warranty plus Extended Warranty	Basic On Site	Reliability On Site
Comprehensive coverage of equipment and batteries	✓	✓	✓	✓
Telephone technical support	✓	✓	✓	✓
Advance replacement	O	✓	✓	✓
Freight to customer	✓	✓	✓	✓
On-site start up business day		O	✓	✓
On-site corrective maintenance business day		O	✓	✓
Next business day response			✓	✓
Equipment preventative maintenance				✓
Battery preventative maintenance				✓

Legend: ✓ = Included O = Optional

Alpha Services on Demand	
Service	Description
Repair/exchange	Repair or exchange of delivered unit for a flat fee
Advance replacement	Immediate shipment of replacement unit with credit issued for return unit when received
Replacement battery bundle	Set of replacement batteries including delivery
On site replace and PM	On site replacement of all batteries including delivery, recycling, installation and preventative maintenance on equipment and battery cabinet

»Service Depot Locations

Western Canada
7700 Riverfront Gate
Burnaby, BC, V5J 5M4

Eastern Canada
Suite 4 – 6740 Davand Drive
Mississauga, ON, L5T 2K9

Northeast United States
5055 Central Highway
Pennsauken, NJ 08109

Southeast United States
1075 Satellite Blvd. NW, Suite 400
Suwanee, GA 30024

Midwest United States
10393 Brockwood Road
Dallas, TX 75238

Southwest United States
1725 West Williams Drive
Building D, Suite 37
Phoenix, AZ 85027

Northwest United States
3116 Mercer Ave
Bellingham, WA 98226

To arrange service call 1-888-462-7487 • Email: support@alpha.ca



» Technical Support

Alpha provides Technical Support services 24 hours per day, 7 days per week. If you reach voice mail, relax. Someone will get back to you within 30 minutes. That's our commitment to quality service. So go ahead, call us at the number below. Don't worry. You do not have to have your credit card ready.

Free 24-hour telephone technical support

- » Alpha's technical support center provides expert technical support 24 hours-a-day, 7 days-a-week.
- » All calls receive a response within 30 minutes.
- » Toll-free in the USA and Canada: 1-888-462-7487
- » International: +1-604-436-5547
- » E-mail: support@alpha.ca

» Installation and Commissioning

Get off to the right start. Many problems can be avoided if a system is correctly installed and fully tested at the beginning. Commissioning costs are waived when the customer upgrades their warranty to an on site Basic or Reliability service plan. We want our systems to perform their best right out of the gate. Let Alpha take the responsibility. We're used to it.

» Maintenance and repair

Things go wrong. Batteries wear out. Components fail. Environmental damage occurs. While Alpha products adhere to the highest quality standards in the industry, maintenance and repair of power equipment that is in regular use is an unavoidable fact. Do it yourself, send it to us, or call us out to help. Alpha is available to provide service the way you need it. Alpha service plans and Extended Warranties help organizations plan for and minimize costs, but it is always best to avoid failures before they happen. Our Reliability Plan does just that with regularly scheduled Preventative Maintenance visits to stop troubles before they happen. That is the goal after all: continuous reliable power.

» Training

Alpha provides a range of training solutions to meet client needs. Our course on Telecom DC Power is an industry standard. A wide range of courses are available covering various aspects of power systems installation, maintenance and management. Training courses are available at our Vancouver, Canada facility where students can enjoy the features of a wonderful location when they are not in the classroom.

Alpha also provides training programs on-site. Like all Alpha services, these programs can be customized to meet your needs. Please enquire.

» Software, manuals, product registration and specifications

A wide range of documentation is available on our website to help you get the most from Alpha products. Visit us online at www.alpha.ca. While you are there don't forget to register your product with us. That way we will be able to provide you with relevant information concerning your product, even a reminder when you should change your batteries. Don't worry. We won't bombard you with email.



To see a list of currently scheduled courses please visit us online at www.alpha.ca/training

› Training Courses

Course 1

Telecom DC Power and Cordex Advanced Power System Training

This course is recommended for anyone who is designing, engineering, installing or maintaining DC power plants for the telecommunications industry. The course is applicable to all telecom DC power plants but provides specific training on the Alpha Cordex DC power systems.

What is covered:		Duration: 2-3 days
DC Power system theory	Safety	Remote access, Ethernet, POTS and SNMP
DC System sizing	Controller programming	Maintenance and troubleshooting techniques
Site engineering	Installation and commissioning	30% Hands on training
Checking alarm set-points	SNMP and MODBUS	

Course 2

Power Systems for Cable Applications

This course is recommended for anyone who is designing, engineering, installing and maintaining power systems used in Cable TV headend or outside plant applications. DC power plant, AC UPS and Network powering topologies will be reviewed

What is covered:		Duration: 1 day
AC/DC Power system theory	AC/DC System sizing	Outside plant network powering topologies
Site engineering	Installation and commissioning	Maintenance and troubleshooting techniques
Safety	Checking alarm set-points	

Course 3

Cordex Power Systems - Advanced

This course is recommended for anyone who is designing, engineering, installing or maintaining Alpha Cordex DC power systems. The course is focused on Cordex Power Systems and controller programming.

What is covered:		Duration: 1 day
Installation and commissioning	Detailed controller programming	Remote access, Ethernet, POTS and SNMP
Safety	Checking alarm set-points	Maintenance and troubleshooting techniques

Course 4

Cordex Power Systems - Basic

This course is recommended for anyone who is installing or maintaining Alpha Cordex DC power systems. The course is focused on the Cordex controller programming.

What is covered:		Duration: 1/2 day
Installation and commissioning	Basic controller programming	Maintenance and troubleshooting techniques
Safety	Checking alarm set-points	

Course 5

Telecom DC Power

This course is recommended for anyone who is designing, engineering, installing or maintaining DC power plants for the telecommunications industry. The course is applicable in all telecom DC power plants.


What is covered:		Duration: 1 day
DC Power system theory	Installation and commissioning	Maintenance and troubleshooting techniques
DC System sizing	Site engineering	Checking alarm set-points
Safety		

For further details, visit www.alpha.ca/training or contact us at **1-888-462-7487** or training@alpha.ca

cordex
CXRF 48-1.8kW

AC 
DC 
ALM 

cordex
CXRF 48-1.8kW

AC 
DC 
ALM 

cordex
CXRF 48-1.8kW

AC 
DC 
ALM 

AC 
DC 
ALM 



Your Power Solutions Partner

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Alpha Technologies Ltd.

member of The  Group™

Due to continuing product development, Alpha Technologies reserves the right to change specifications without notice.
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