Alpha Power Solutions

TOTAL POWER SOLUTIONS BY ALPHA TECHNOLOGIES LTD.

member of The Group™

Power


alpha
TECHNOLOGIES
7700 Riverfront Gate

Alpha Technologies Ltd.

Company Overview

With almost 4 decades of industry leadership in POWER, Alpha Technologies has established itself as the preeminent total power solutions provider and one stop source for AC, DC, hybrid and renewable powering solutions for the Telecom, CATV, Traffic, ITS, Industrial and Alternative Energy industries. Alpha's products are the trusted power behind large switching and data centers, mobile cell sites, broadband networks, traffic and security systems, DAS networks, and many more.

Our intimate knowledge of our customers allows us to understand powering problems better than other providers of power, and to quickly design/deliver solutions specifically tailored to solve your powering challenges. With multiple options for standardized and custom system design, Alpha has the ability to provide the ideal solution for virtually any application.

The Alpha Group

The Alpha Group represents an alliance of 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 Cable TV, Telecom, Commercial, Industrial and Distributed Generation for a worldwide customer base. In addition to these core specialties, Alpha Group 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., Alpha Technologies S.A., OutBack Power Technologies Inc., Alpha Technologies Europe Ltd., Alpha Technologies GmbH, Alpha Innovations Brasil, Alphatec Ltd., Alphatec Baltic, Alpha Tek ooo, Alpha Mexico Network Power and Alpha Technologies Turkey Enerji Ltd. Sti.


TECHNOLO

Market Overview

In the Telecom sector, Alpha's DC solutions have long been the standard of performance and efficiency, built on superior communications and control functionality inherent in our Cordex™ family of controllers. Much of Alpha's ongoing research and development activity focuses on continually evolving the next generation of our DC power; driving OPEX savings down by way of greater efficiency, power density and reliability. In addition to our leadership in Central Office and Cell Site power, Alpha is also on the forefront of developing powering solutions for DAS, Small Cells and Line Power - a rapidly emerging alternative to using local power as a means of powering Fiber to the Home, DAS and DSLAMs. In the emerging Traffic market, Alpha is the leader in providing back up power and power conditioning for traffic lights, controllers,highway signage and Intelligent Transportation Systems (ITS). 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 20,000 intersections.

In the Alternative Energy sector, renewable energy solutions are rapidly gaining favor due to their versatility; improving economics and positive impact on the environment.

Lastly, from critical enterprise systems to Smart Grid to Security, Alpha offers the right mix of power systems and enclosures to ensure the reliability and continuity of private and industrial networks. Alpha has supplied the backup power for some of the largest networks, protecting borders, utility grids and long haul fiber networks.

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

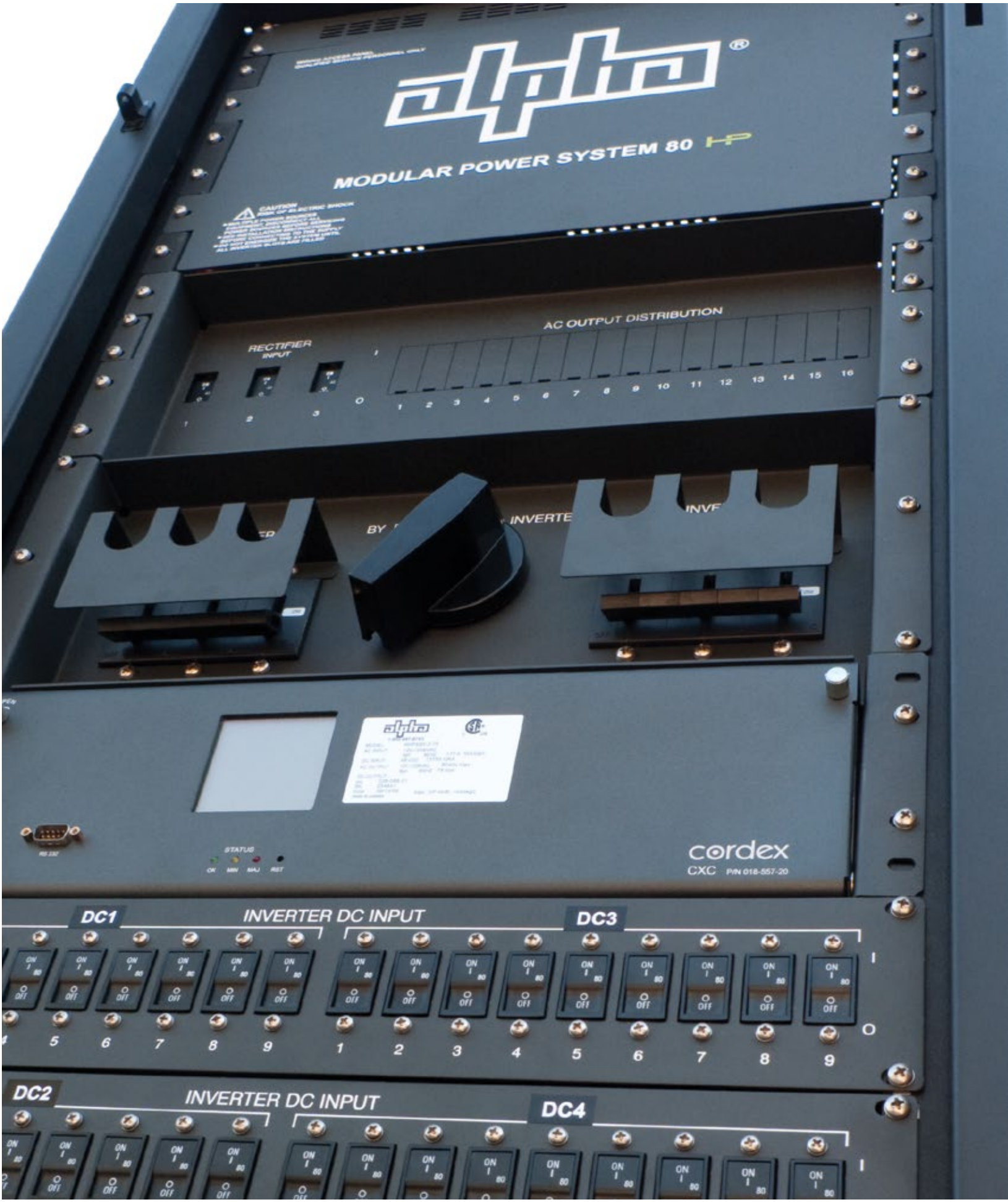

alpha
MODULAR POWER SYSTEM 80 HP
RECTIFIER INPUT
AC OUTPUT DISTRIBUTION
STATUS
cordex
CXC
DC1
INVERTER DC INPUT
DC3
DC2
INVERTER DC INPUT
DC4

Table of Contents

Standard Solutions....7

DC Power Solutions

Cordex Power Systems Matrix....9
Cordex PSU....10
Cordex 300W 48Vdc HP....11
Cordex 650W 48Vdc....12
Cordex 400W 24Vdc....13
Cordex 250W 12Vdc....14
Cordex 1kW 48Vdc....15
Cordex HP 1.2kW 48Vdc HP....16
Cordex HP 1.2kW 48Vdc Front Access HP....17
CXPS-E101 HP....18
CXPS-E103 HP....19
CXPS 48-1.2-225 HP....20
CXPS 48-1.8-i HP....21
CXPS 380-48i HP NEW....22
CXPS-M 1200 & 1200/600 HP....23
CXPS-HX 48-2500 HP NEW....24
CXPS-D 48-5000 HP NEW....25
CXPS-C 48-10000 HP NEW....26
Cordex 3.3kW System....27
CXPS 24→48-i & CXPS 48→24-i....28

Indoor Seismic Racks

Battery Rack NEW....30
Seismic Rack NEW....31

Line Powering Solutions

Cordex HP LPS36 HP....33
LPS04 NEW....34
LPR 48-150 NEW....35
CSM46....36
CSM56....37
SR-12190 & SR-48190 NEW....38
AlphaCap 665....39
eLimiter+ NEW....40

Inverter Solutions

AMPS Topology....42
AMPS 80HP HP....44
AMPS 24HP HP....46
INEX System....48
Media System NEW....50

UPS Solutions for Outdoor & Harsh Environments

UPS Selection Considerations....52
FXM 350....53
FXM 650....54
FXM 1100....55
FXM 2000....56
Micro Secure 100....57
Micro 350....58
Micro 1000....59
Micro 300-12....60

Indoor UPS Solutions

Sentra 750-3000....62
Sentra XL 1000-3000....64
Continuity 1000-3000....66
Continuity 6000-10000....68

Fiber Network Powering Solutions

FTTx Architecture Overview....71
FlexNet MPS 48-7....72
FlexNet FMPS....73
FlexNet ELPM-300....74
FlexNet ELPM-300 in Alpha Enclosures....75
FlexPoint AX Series....76
FlexPoint 1208-F, 1215, 1232, 1250 NEW....78

Controllers & Communications....81

Cordex™ Controller Features....82

Controllers

Cordex™ CXCI+....84
Cordex™ CXCM1+ NEW....85
Cordex CXCR/CXCP....86
Cordex CXCR 125/220V....87
Cordex Controller Series Guide....88

Peripherals

Cordex 8R/8D ADIO....89
SD08 Battery....90

Communications

Ethernet/SNMP Devices....91

Power Modules....93

Rectifiers

Cordex HP 300W 48Vdc HP....94
Cordex 650W 48Vdc....95
Cordex 1kW 48Vdc....96
Cordex HP 1.2kW 48Vdc HP....97
Cordex HP 2.0kW 48Vdc HP....98
Cordex HP 2.4kW 48Vdc HP NEW....99
Cordex HP 4.0kW 48Vdc HP....100
Cordex HP 12kW 48Vdc HP....101
Cordex 400W 24Vdc....102
Cordex 3.1kW 24Vdc....103
Cordex 250W 12Vdc....104
Cordex 1.1kW 125Vdc....105
Cordex 1.1kW 220Vdc....106
Cordex 4.4kW 125/220Vdc....107

Converters

CXDF 24-48/2kW & CXDF 48-24/2kW....109
CXDF 380-48/2kW NEW....110

Inverters

Alpha Inverter Module 2500....112
Alpha Inverter Module 1500....113
INEX 1500....114
INVERTER 2000....115

Distribution....117

BDFB 8x800A NEW....118
CXDS-M Micro & CXDS-M Mini NEW....119
CXDS-M 1200 & CXDS-M 600/600....120
CXDM-25-1RU NEW....121
DCP03 Distribution Center....122
Circuit Breakers....123
Fuses....124

Transfer Switches....125

255A External Bypass Switch....126
Alpha Transfer Switches....127

Enclosures....129

Enclosure Selection Considerations....130
TE13-2821....131
TE20-2120....132
TE22-2210....133
TE27-2218 Telecom....134
TE27-2218 Traffic....135
TE36-2120....136
TE40-2425....137
SE41-2722 NEW....138
SE48-1616....139
TE60-3030....140
TE72-3030 Single Compartment....141
TE72-3030 Dual Compartment....142
TE84-3030....143

Indoor Enclosures

CXPS-48-500-IWM....144

Accessories

Battery Heater Mats....145

Shelters....151

Mobile Shelters....148
Stationary Shelters....149

Batteries....151

Battery Selection Considerations....152
Advanced Battery Technologies....152
AlphaCell GXL....153
AlphaCell Gold HP HP....154
AlphaCell AGM....155
AlphaCell XTV NEW....156
AlphaCell 3.5 & 4.0 HP....157
AlphaCell FT....158
AlphaCell BT....159
AlphaCell HR....160
AlphaCell RE....161
AlphaCell RE FT....162
UPS Batteries....163
PowerAgent....164
Battery Accessories....166

Generators....167

AlphaGen™ Portable....168
DCX 2000 & ACX 2000i Portable Generator NEW....169
AlphaGen™....170

Renewable Energy....171

Services & Support....175

Training....177

Contact Us....180

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


cordexHP™
HIGH PERFORMANCE
CXRF 48-1.2kW

Standard Solutions

Alpha has close to 40 years of experience providing a full suite of AC and DC power solutions for both indoor and outdoor applications. Alpha's products are the power behind large switching centers and data centers, mobile cell sites, cable tv networks, and traffic and security systems. We complement our power equipment and systems with a broad array of ruggedized, thermally managed cabinets and enclosures for deployment in harsh environments. Our line of Cordex controllers provides sophisticated, easy-to-use control, monitoring and management of our power systems. With multiple options for standardized and custom system integration, Alpha has the ability to provide the ideal solution for virtually any power and site installation scenario.

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

cordex HP™
HIGH PERFORMANCE

Cordex HP represents Alpha's 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 HP products successfully deployed in the market now and a variety of new products in the development pipeline, the HP branded products illustrate Alpha'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. Our solutions range 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 leading-edge, high efficiency power conversion technology and Cordex controllers are the essential building blocks of our DC power solutions. But our power systems are further distinguished by a variety of distribution options and craft-friendly cable management that enable them to serve a broad variety of applications.

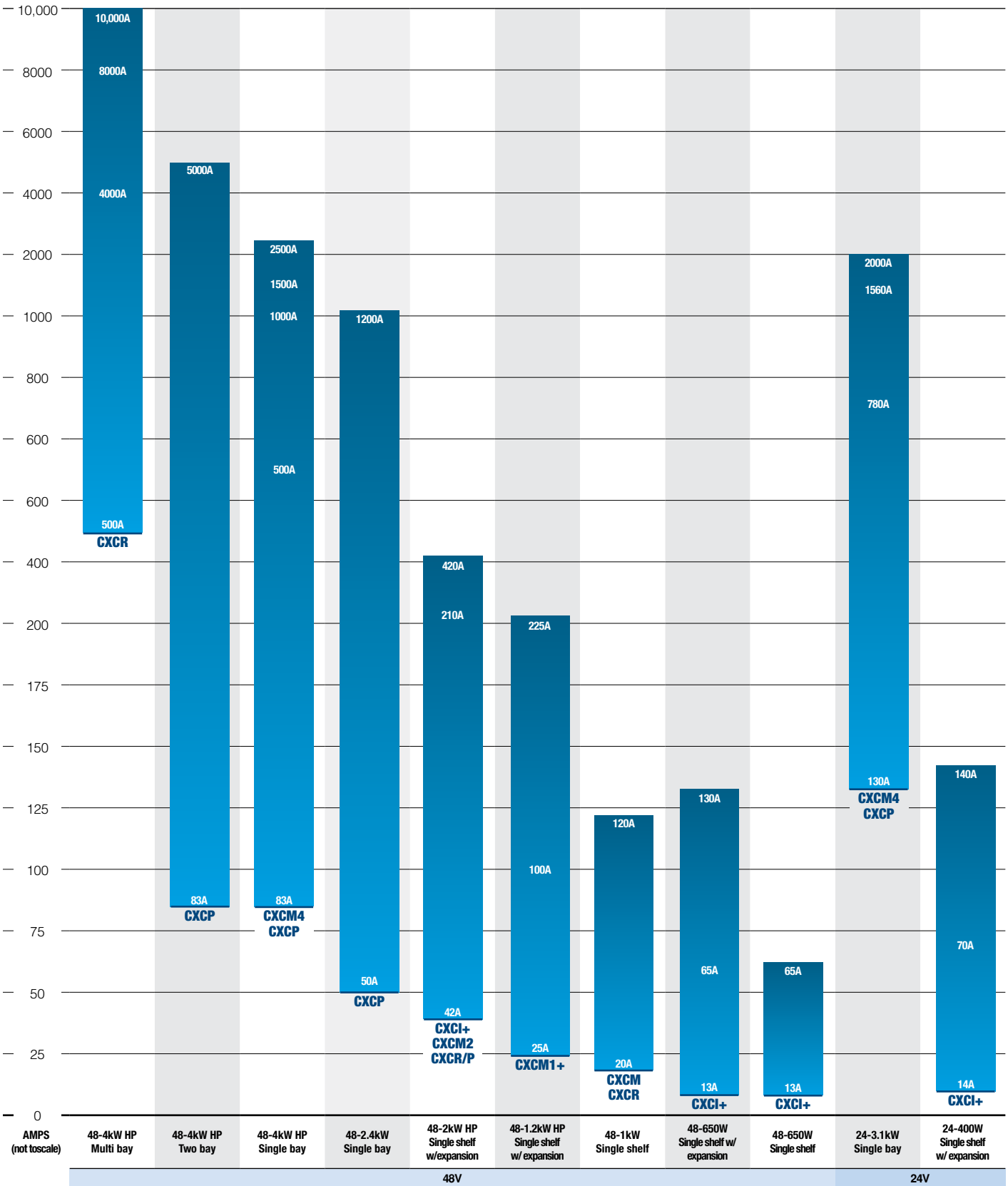
Alpha's shelf systems provide a complete power solution in a rack mount package. Each system incorporates a Cordex™ controller, rectifiers and distribution options in a compact shelf design. Distribution can be located inside the shelf for applications with a few loads, or adjoined in integrated panels 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 market needs. Capitalizing on our experience in multiple markets plus our technical and application know-how, Alpha is ready to earn your business with customized solutions that meet your unique requirements.

Cordex™ Power Systems

DC Power Systems Compatibility Matrix



Cordex™ PSU

Web Enabled, DIN Rail/Wall Mount 24V/400W or 48V/650W Power Supply

- Clean and reliable DC power supply for critical loads available in two options: 24V/400W or 48V/650W
- Internet ready and remotely accessible for complete and cost effective system and site monitoring
- Advanced battery charging, monitoring and testing to ensure sufficient reserve power availability
- Configurable platform with I/O's for site monitoring, user-definable alarms, data logging and control
- Extended temperature range for installation in harsh outdoor environments
- Wide AC input operating range for world wide installation requirements

24V-400W model P/N: 0100011-002
48V-650W model P/N: 0100012-002

Electrical

Model	48V/650W	24V/400W
Input voltage:		
Operating:	176 to 320Vac	90 to 320Vac
Extended:	90 to 176Vac (de-rated power)	
Input frequency:	45 to 70Hz	45 to 70Hz
Current:	5.0A max	4.9A max
Power:	650W	400W
Power factor:	>0.99%	>0.99%
THD:	<5%	<5%
Efficiency:	>90%	>88%
Output voltage:	42 to 58Vdc	20 to 29Vdc
Output current:	13.5A max	14A max
Load regulation:	Static <±0.5%	Static <±0.5%
	Dynamic <±1% for 40 to 90% load step	Dynamic <±5% for 40 to 90% load step
	2ms recovery time	2ms recovery time
Line regulation:	Static <±0.1%	Static <±0.1%
	Dynamic ±1% for any change within rated	
Noise:		
Voice band:	<32dBrnC	
Wide band:	<10mV RMS (to 10MHz)	
	<150mV pk to pk (to 100MHz)	<100mV
Psophometric:	<1mV RMS	

Mechanical

Dimensions:
mm:.....117H x 281Wx 101D
inches:.....4.6H x 11.1W x 3.98D
Weight:.....3kg (6.6lbs)
Mounting:.....Panel
DIN rail (standard TS-35/7.5 or 15 Mounting Rail)
Connections:
AC, Load & Battery:.....Screw terminal 4mm² (#12AWG)
Alarms & I/O's:.....Screw terminals 2.5mm² to (#14AWG)

Environmental

Temperature:
Operation:.....-40 to 50˚C (-40 to 122˚F)
Extended:.....-40 to 70˚C (-40 to 158˚F), derated power
Storage:.....-40 to 85˚C (-40 to 185˚F)
Humidity:.....0 to 95% RH non-condensing
Altitude:.....-500 to 3000m (-1640 to 9840ft)
Heat Dissipation:.....<110 BTU per hour

Performance / Features

User Interface:
GUI:.....Embedded web based GUI accessed via Ethernet using internet browser
LED:.....AC mains OK — (Green)
Minor alarm — (Yellow)
Major alarm — (Red)
Distribution:.....10A Battery Shunt
20A Low Voltage Disconnect LVBD
(may be disabled with jumpers)
Cooling:.....Natural Convection
Communication Ports:
CAN:.....Smart Peripherals
Ethernet:.....10/100 Base-T for TCIP/SNMP/Email features
System I/O:
Alarm relays:.....3
Temperature inputs:.....2
Digital inputs:.....2
Voltage input:.....1

Agency Compliance

Safety:.....CSA C22.2 No 60950-1-03
CE Marked
EMC:.....ETSI 300 386-2
Emissions:.....CFR47 (FCC) Part 15 Class B
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 CatB3

Cordex HP™ 300W

48Vdc Modular Integrated Rectifier Shelf System

- High performance delivering up to 18.75A
- 95% efficiency for increased OPEX savings and reduced carbon footprint
- Compact size yields more space for revenue generating equipment
- Wide range AC input for worldwide installation requirements
- Dual front and back DC outputs allow maximum flexibility
- Wide temperature operating range for installation in harsh outdoor and indoor environments

Cordex HP 48-300W Rectifier Shelves

19in 1RU Shelf System with controller and distribution
P/N: **0300072**
Rectifiers: ..... 3 x CXRF HP 48 300W
Controller: MCU0348
Distribution: ..... Integrated (4) GMT fuse, battery LVD

Mechanical

19" Shelf
Dimensions:
mm: ..... 43H (1U) x 440W x 250D
inches: ..... 1.75H x 17.3W x 9.45D
Weight: 2kg (4.4lbs)

Performance / Features

Communication ports (Require Comp@s embedded card):
CAN: ..... Smart peripherals
Ethernet: ..... 10/100 Base-T for TCIP/SNMP features
USB: ..... Interface to computer for field testing and configuration

Environmental

Temperature:
Standard: ..... -40 to 70°C (-4 to 158°F)
Storage: ..... -40 to 85°C (-40 to 185°F)
Humidity:
Operating: ..... 20 to 80% RH non-condensing
Storage: ..... 10 to 95% RH non-condensing
Elevation: ..... Up to 3000m (9842ft)
Cooling: ..... Fan cooled (front to rear)

Related Components

Supervisory:
7400325: ..... Comp@s communication card
Accessories:
0100010-001: ..... Blank plate for rectifier slot
8700551: ..... AC line cord

Cordex HP 300W 48Vdc rectifier: See page 94

Agency Compliance

Safety: EN60950
CE marked
Environment: ..... IEC 60068-2-27
ETSI EN 300 019-1-3 class 3.4
EMC: ..... ETSI EN 300386
NEBS: GR-1089-CORE
GR-63-CORE

*Consult factory for certification status

Cordex™ 2.6kW Shelf Power System

Cordex™ 650W

48Vdc Modular Rectifier Shelf Systems

- 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

Mechanical

19" Shelf
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

Performance / Features

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 95
Cordex™ controller CXCI+: See page 84
AM plug-in breakers: See page 123
GMT style fuses: See page 124

Cordex™ 1.6kW Shelf Power System

Cordex™ 400W

24Vdc Modular Rectifier Shelf Systems

- 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

Mechanical

19/23" Shelf
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

Performance / Features

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 102
Cordex™ controller CXCI+: See page 84
AM plug-in breakers: See page 123

Cordex™ 1kW Shelf Power System

Cordex™ 250W

12Vdc Modular Rectifier Shelf Systems

- 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

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

Mechanical

19" Shelf
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

Performance / Features

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 104
Cordex™ controller CXCI+: See page 84
AM plug-in breakers: See page 123

Cordex™ 4kW Shelf Power System

Cordex™ 1kW

48Vdc Modular Rectifier Shelf Systems

- 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**
Rectifiers: ..... 4 x CXRC 48-1kW
Controller: ..... 1 x CXCM
Distribution: ..... Integrated plug-in breakers and GMT fuse option

Mechanical

19" & 19/23" Shelf
Dimensions:
mm: ..... 177H x 444W x 302D
inches: ..... 6.9H x 17.5W x 11.9D
Weight: 7.5kg (16.5lbs)

23" Shelf
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

Performance / Features

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

Related Components

Cordex™1kW 48Vdc rectifier: See page 96
Cordex™ CXCM1+: See page 85
AM plug-in breakers: See page 123
GMT style fuses: See page 124

Cordex HP 1.2kW Shelf System with Bulk out

Cordex™ HP 1.2kW

48Vdc Modular 1RU Rectifier Shelf Systems

- 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

Mechanical

19/23" Shelf
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

Performance / Features

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

Environmental

Temperature:
Standard: ..... -40 to 65°C (-40 to 149°F)
Extended: ..... -40 to 75°C (-40 to 167°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)

Related Components

877-690-19: ..... 5-15P (120V) line cord, 2.5m
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 97
Cordex™ controller CXCM1+: See page 85
GMT style fuses: See page 124

Cordex™ HP 1.2kW Front Access System

Cordex™ HP 1.2kW

48Vdc Front Access Rectifier Shelf 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 75°C (-40 to 167°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.

Agency Compliance

Safety:.....CSA C22.2 No 60950-1-03
CE:.....EN60950
NEBS:.....GR-1089-CORE
GR-63-CORE

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 97
Cordex™ controller CXCM1+: See page 85
GMT style fuses: See page 124

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HIGH PERFORMANCE

CXPS-E101

Standard 48Vdc Power System

- Integrated 48V system packages in 100A or 225A configurations
- Ultra compact, high density design utilizing standard plug-in 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

100A System Configuration P/N: 0540569-001
225A System Configuration P/N: 0540570-001

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:
- CXPS-E101 100A
  Capacity System**:** ..... 100A max @ 48Vdc (nominal I/P)
  50A max @ 48Vdc (115Vac input)
- CXPS-E101 225A
  Capacity System**:** ..... 225A max @ 48Vdc (nominal I/P)
  112.5A max @ 48Vdc (115Vac input)
- Rectifier: ..... 25A max @ 48Vdc (nominal I/P)
  12.5A max @ 48Vdc (115Vac)
  (subject to de-rating below 110Vac)

Power:
- CXPS-E101 100A
  Capacity System**:** ..... 4800W max @ 48Vdc (nominal input)
  2400W max @ 48Vdc (115Vac input)
- CXPS-E101 225A
  Capacity System**:** ..... 10800W max @ 48Vdc (nominal input)
  5400W max @ 48Vdc (115Vac input)
- Rectifier: ..... 1200W max @ nominal I/P
  600W @ 115Vac
  (subject to de-rating below 110Vac)

Features

CXPS-E101 100A: ..... Up to 4x 48V-1.2kW rectifier positions
CXPS-E101 225A: ..... Up to 9x 48V-1.2kW rectifier positions
Distribution: ..... 10x load breaker positions
(AM breaker, mid-trip plug-in style)
2x battery breaker positions
(AM breaker, series-trip plug-in style)
225A Low voltage disconnect
200A Battery shunt
Controller: ..... CXCM1+ Modular controller (included)

Mechanical

CXPS-E101 100A Capacity System Dimensions:
mm: ..... 90H x 438W x 381D
inches: ..... 3.5H x 17.24W x 15D
Weight:
System: 18.3kg (40.4lbs)
Rectifier: ..... 1.2kg (2.7lbs) each
CXPS-E101 225A Capacity System Dimensions:
mm: ..... 133H x 438W x 381D
inches: ..... 5.25H x 17.24W x 15D
Weight:
System: 21.3kg (47lbs)
Rectifier: ..... 1.2kg (2.7lbs) each
Mounting: ..... 19/23" universal mount (center or flush)
Connnections:
Load breaker: ..... 10x sets, ¼"-20 studs on ⅝" centers
Battery breaker: ..... 2x sets, ¼"-20 studs on ⅝" centers
Return bar: ..... 12x sets, 10-32 studs on ⅝" 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 (-1640ft to 9186ft; to 13124ft with temperature de-rated to 104°F) with de-rated output

Related Components

010-619-20-041 ..... Cordex CXRF 48-1.2kW Rectifier Module
01800303 ..... 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, ¼" lug
747-095-20-075 ..... Temperature sensor assembly 12 ft, ⅜" lug
747-622-20-000: ..... Blank Plate

AM plug-in breakers: See page 123

CXPS-E103

Standard 48Vdc Power System

- Integrated 48V, 166A system package
- Ultra compact, high density (HD) design utilizing standard plug-in circuit brakes
- 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: 0540571

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:..... >94% (50-100% load @ nominal voltage)
Power factor:..... >.99

Output:
Current:
• System: ..... 166A max @ 48Vdc (nominal I/P)
104A max @ 48Vdc (120Vac)
• Rectifier: ..... 41.7A max @ 48Vdc (nominal I/P)
26A max @ 48Vdc (120Vac)
(de-rated linearly to 18.7A @ 90Vac)
Power:
• System: ..... 8000W max @ nominal I/P
5000W @ 120Vac
• Rectifier: ..... 2000W max @ nominal I/P
1250W @ 120Vac
(subject to de-rating below 120Vac)

Features

Rectifier: ..... Up to 4x 48V-2.0kW rectifier positions
Distribution: 10x load breaker positions
(AM breaker, mid-trip plug-in style)
2x battery breaker positions
(AM breaker, series-trip plug-in style)
225A Low voltage disconnect
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: ..... 2.8kg (6.2lbs) each

Mounting:..... 19/23" universal mount (center)

Connnections:
Load breaker: ..... 10x sets, ¼"-20 studs on ⅝" centers
Battery breaker:..... 2x sets, ¼"-20 studs on ⅝" centers
Return bar:..... 12x sets, 10-32 studs on ⅝" centers
Alarm: ..... Screw terminal 1.31mm² to 0.128mm²
(#16 to #26 AWG)
Access:..... Front access for operation and maintenance

Environmental

Temperature:..... -40 to 55°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 (-1640ft to 9186ft; to 13124ft with temperature de-rated to 104°F) with de-rated output

Related Components

010-622-20..... Cordex CXRF 48-2.0kW Rectifier Module
7400232-001..... Cordex CXCM1
747-095-20-072 ..... Temperature sensor assembly 12ft, ¼" lug
747-095-20-075 ..... Temperature sensor assembly 12ft, ⅜" lug

AM plug-in breakers: See page 123

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HIGH PERFORMANCE

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

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

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, ¼"-20 studs on ⅝" centers
Battery breaker:..... 4x sets, ¼"-20 studs on ⅝" centers
Return bar:.....18x sets, ¼" holes on ⅝" 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)
Humidity: .....0 to 95% RH non-condensing
Elevation:
-500 to 2800m; to 4000m with temperature de-rated to 40°C (-1640ft to 9186ft; to 13124ft 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 Imc cord, flying leads, 3.5m
747-622-20-000: .....Blank plate
470-347-10: .....100A battery breaker
747-503-20-000: .....150A battery breaker
747-504-20-000: .....250A battery breaker

Cordex HP™1.2kW 48Vdc rectifier: See page 97
Cordex™ controller CXCM1+: See page 85
AM plug-in breakers: See page 123

CXPS 48-1.8-i

Standard 48Vdc Power System

- Integrated 48V, 167A 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
- Flexible ordering options including configurations with racks and battery trays

P/N: 053-990-20

Electrical

Input:
- Voltage: ..... 187 to 277Vac (nominal)
  187 to 312Vac (operating)
  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, ¼"-20 studs on ⅝" centers
- Battery breaker: ..... 4x sets, ¼"-20 studs on ⅝" centers
- Return bar: ..... 18x sets, ¼" holes on ⅝" centers
- Rectifier input: ..... HOT: 2x sets, ⅜" holes on 1" centers
  RTN: 2x sets, ⅜" 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
- 747-503-20-000: ..... 150A battery breaker
- 747-504-20-000: ..... 250A battery breaker

Cordex HP™ 2kW 48Vdc rectifier: See page 98
Cordex™ controller CXCI+: See page 85
AM plug-in breakers: See page 123

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HIGH PERFORMANCE

CXPS 380→48i

380-48Vdc-8kW DC-DC Converter System

- Modular DC-DC converter system that produces a 48Vdc output from a 380Vdc source
- 150A power system with front access distribution
- High temperature rated, fan-cooled design

P/N: 0540398-001

Electrical

Input:
Voltage: .....380Vdc (nominal)
260 to 400Vdc (operating)
Current:.....5.6A @ 380Vdc (8.2A max @ 260Vdc)
Efficiency:.....>94.3 @ 40-80% load

Output:
Current:
System: .....167A max @ nominal I/P
Converter: .....41.7A @ 48Vdc (nominal I/P)
Power:
System: .....8000W max @ nominal I/P
Converter: .....2000W max @ nominal I/P

Performance / Features

Converters:.....Up to 4x converter 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

Weight:
System:.....19kg (42lbs)
Converter:.....2.3kg (5.1lbs) each
Mounting:.....19/23" universal mount (center or flush)

Connnections:
Load breaker: .....14x sets, ¼"-20 studs on ⅝" centers
Return bar:.....18x sets, ¼" holes on ⅝" centers
Input connectors: .....4x Anderson Saf-D grid receptacle
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

Cordex HP™ 380-48 2kW converter: See page 98
Cordex™ controller CXCI+: See page 84
AM plug-in breakers: See page 123

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HIGH PERFORMANCE

CXPS-M 1200 & CXPS-M 1200/600

Modular Mid Capacity Power System


CXPS-M 1200

- -48V power solution for cell site, CO, MSC, Data Center and Cable Headend facilities
- Each 1200A bay combines rectifiers, battery termination and distribution simplifying installation
- Dual voltage options using high efficiency DC to DC converters for legacy cell site application
- 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

Consult your Alpha representative for P/N configurations

Electrical

Rectifier shelf AC input:..... Individual 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
Output:
Primary voltage: ..... +24V or -48V
Secondary voltage: ..... -48V, +24V, -24V or +12V
Max. power:..... 57.6kW
Max. bus capacity:..... 1,200A (primary), 600A (secondary)

Distribution and Termination

Modular distribution consists of up to 4 distribution modules (23" rack) or 2 distribution modules (19" rack). Each module contains 2 banks of 12 plug-in bullet positions or 2 banks of 3 positions TPL fuses or 1 bank of 12 plug-in bullet positions/1 bank of 3 positions TPL fuses combination.

Module Ratings (Continuous):
Plug in bullet positions: ..600A per bank
TPL fuse (LC*): .....600A per fuse
TPL fuse (HC*):.....600A per fuse
Note: TPL is available in 23" only.
Fuses:
GMT: .....10 positions, up to 10A (max.)
TPL(LC*): .....6 positions, 61 to 800A (max.)
TPL(HC*): .....24 positions, 61 to 800A (max.)
TLS/TPS plug-in bullet: 96 positions up to 100A (max.)
Breakers:
AM plug-in bullet: .....96 positions up to 100A per pole (max.)
Output termination:
GMT Fuse: .....0.34 to 2.5mm² (14 to 22AWG)
TPL fuse:.....2 hole ⅜" dia. on 1" centers
• HC* .....Up to 6 fuse positions; dual cable landing 2x 750MCM
• LC* .....Up to 24 fuse positions; single cable landing 1x 350MCM
TLS/TPS/AM breaker:.....1 pole and 2 pole are ¼" dia. on ⅝" centers
3 pole are ⅜" dia. on 1" centers
Internal Ground bar:.....¼" dia. on ⅝" centers
*LC - Low capacity termination
**HC - High capacity termination

External Ground bar (optional):
• 72 sets ¼" dia. on ⅝" centers
• 24 sets ⅜" dia. on 1" centers or ½" on 1¾" centers

Battery: 3 sets ⅜" dia. on 1" centers per polarity

Optional battery expansion termination:
• 6 sets ⅜" dia. on 1" centers per polarity or ½" on 1¾" centers per polarity

Mechanical

Mounting:.....Standard center mount 23" relay rack
Standard center mount 19" relay rack

Dimensions:	23"	19"
mm	2133H x 660W x 482D	2133H x 550W x 482D
inches	84H x 26W x 19D	84H x 22W x 19D
Weight:		
System	227kg (500lbs) approx	
Rectifier	8.5kg (19lbs) each	

Environmental

Temperature:.....0 to 40°C (32 to 122°F)
Humidity: .....0 to 95% RH non-condensing
Elevation:.....-500 to 2800m (-1640 to 9186ft)

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)
Low Voltage Disconnect (Option):.....48Vdc/600A for each TPL fuse or each group of 12 Plug-in bullet positions
Alarm Connections: .....0.34 to 2.5mm² (14 to 22AWG)

Agency Compliance

Safety:.....CSA C22.2 No. 60950-1-03
NEBS:.....Level 3 compliant

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HIGH PERFORMANCE

CXPS-HX 48-2500

48V High Capacity Distributed Power System

- -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 efficiency modular rectifiers reduce operating costs
- Flexible low voltage load disconnect, circuit breaker, TPS and TPL fuse options

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)
Max. output power: 120kW One bay system
240kW Two bay system
Max. bus capacity: 3000A One bay system
6000A Two bay system

Distribution and Termination

System distribution section consists of up to 3 distribution tiers.

Fuses:
TPL fuses: 61-800A
4 fuse holders per panel
Max 3 fuse panels per bay
TPS/TLS fuses: Up to 125A
18 fuse holders per panel
Max 6 fuse panels per bay

Breakers:
Bolt-in breakers:
- 1 pole up to 250A
- 3 pole 450 to 600A
- 5 pole 850 to 1000A
- 12 breaker poles per panel
- 2 pole 275 to 400A
- 4 pole 650 to 800A
- 6 pole 1050 to 1200A
- Max 3 fuse panels per bay

Plug-in bullet breakers:
- 1 pole up to 125A
- 3 pole 201 to 250A
- Max 6 panels per bay
- 2 pole 126 to 200A
- 18 breaker poles per panel

Output termination:
TPL fuse: 2 hole, ⅜" dia. on 1" center & ½" dia. on 1¾" center
TLS/TPS/AM breaker: 1 pole, 2 hole, ¼" dia. on ⅝" center
2 and 3 pole, 2 hole, ⅜" dia. on 1" center
Internal ground bar: 2 hole, ¼" dia. on ⅝" center, ⅜" dia. on 1" center & ½" dia. on 1¾" center (optional)
Battery: 2 hole, 6 sets ⅜" dia. on 1" center & ½" dia. on 1¾" center

Mechanical

Mounting: Standard 23" relay rack (flush rack mount) in box bay
Dimensions:
cm: 213H x 71W x 71D
inches: 84H x 28W x 28D

Environmental

Temperature: 0 to 40°C (32 to 104°F)
Humidity: 0 to 95% RH non-condensing
Elevation: -500 to 2800m (-1640 to 9186ft)

Related Components

Cordex HP 48-4kW rectifier
See datasheet #0480003-00 for more detailed information.
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)
Load disconnect: Fuse/CB panel mounted option
TPL + bolt-in panel 2000A rated
Bullet breaker panel 600A rated
Alarm:
Connections: 0.34 to 2.5mm² (14 to 22AWG)
Smart peripheral modules:
Shunt mulitplexer: 16 shunts per module (up to 2 modules per bay)
Remote hot bar:
Mounting: 2" Auxiliary framing (customer supplied)
Termination: 124 sets of 2 hole ½" dia. on 1¾" centers or ⅜" dia. on 1" centers
Unit Capacity: 5,000A per bar
Ultimate Capacity: 2 bar limit (10,000A)

Remote return bar:
Mounting: 2" Auxiliary framing (customer supplied)
Termination: 124 sets of 2 hole ½" dia. on 1¾" centers or ⅜" dia. on 1" centers
Unit Capacity: 2,500A per bar
Ultimate Capacity: 4 bar limit (10,000A)

Agency Compliance

Safety: CAN/CSA C22.2 No. 60950-1-07+
AMD 1:2011
ANSI/UL 60950-1:2011
NEBS: Level 3 certification (Pending)

cordex HP
HIGH PERFORMANCE

CXPS-D 48/2500

Modular High Capacity Distributed Power System

- -48V distributed power solution for CO's (DPCO), MSC's, Data Center and Cable Headend facilities
- 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

Consult your Alpha representative for P/N configurations

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 or 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 ⅜" 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 ¼" dia. on ⅝" centers
3 pole are ⅜" dia. on 1" centers
Internal Ground bar:.....¼" dia. on ⅝" centers
External Ground bar:.....⅜" dia. on 1" centers (optional)
Battery: .....4 sets ½" dia. on 1¾" centers per polarity or
⅜" dia. on 1" centers

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 40°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.

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

010-623-20-040:.....Cordex HP 4kW 48Vdc rectifier
037-053-20-000:.....External ground bar kit (one per bay)
520-059-10: .....Plug In Bullet TPS/TLS Fuse Holder 1-125A

AM plug-in breakers: See page 123

cordex HP™
HIGH PERFORMANCE

CXPS-C 48-10000

48V High Capacity Centralized Power System

- 48V 10,000A centralized power solution for MSC, CO, Data Center and Cable Headend facilities
- High efficiency Cordex modular rectifiers reduce operating costs
- Flexible circuit breaker, TPS and TPL fuse options designed to feed equipment or remote BDFBs
- Compact footprint dramatically reduces floor space requirements
- Internal Bay-to-Bay copper busswork and easy access to connections simplify installation and serviceability
- Expandable power and distribution bays allow for easy and cost effective modular growth

Consult your Alpha representative for P/N configurations

Electrical

Rectifier shelf AC input: ..... 3 Phase, 208 to 240Vac (w/o neutral), 8 x 100A feeds per rectifier bay
3 Phase, 360 to 480Vac (with neutral), 8x 50A feeds per rectifier bay
Rectifier voltage: ..... 208 to 277Vac
Bus capacity: 4,000A, 8,000A, 12,000A
Rectifier bay capacity: ..... 2,000A or 4,000A
Distribution bay capacity: 6,000A
Max. rectifier capacity: 10,000A

Distribution Bay

Each distribution bay may be equipped with a variety of different fuse/CB panels.

TPL fuses:
- 61-800A
- 4 fuse holders per panel
- 6 fuse panels per bay

TPS/TLS fuses:
- Up to 125A
- 18 fuse holders per panel
- 12 fuse panels per bay

Bolt-in breakers:
- 1 pole up to 250A
- 3 pole 450 to 600A
- 5 pole 850 to 1000A
- 12 breaker poles per panel
- 2 pole 275 to 400A
- 4 pole 650 to 800A
- 6 pole 1050 to 1200A
- 6 fuse panels per bay

Plug-in bullet breakers:
- 1 pole up to 125A
- 3 pole 200 to 250A
- 12 panels per bay
- 2 pole 125 to 200A
- 18 breaker poles per panel

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:
Rectifier bay: ..... Approx. 272kg (600lbs) per bay (no rectifiers)
Distribution bay: ..... Approx. 454kg (1000lbs) per bay

Environmental

Temperature: ..... 0 to 60°C (32 to 122°F)
Humidity: ..... 0 to 95% RH non-condensing
Elevation: ..... -500 to 2800m (-1640 to 9186ft)

Performance / Features

System level alarms/controls
Alarms/control parameters are user-programmable through built-in digital supervisory unit. See Cordex datasheet 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: ..... Fuse/CB panel mounted option
Alarm:
Connections: ..... 0.34 to 2.5mm² (14 to 22AWG)

Related Components

Smart peripheral modules:
Shunt mulitplexer: ..... 16 shunts per module
Remote return bar:
Mounting: ..... 2" Auxiliary framing (customer supplied)
Termination: ..... 124 sets of 2 hole ½" dia. on 1¾" centers or ⅜" dia. on 1" centers
Unit capacity: ..... 4,000A per bar
Ultimate capacity: ..... 3 bar limit (12,000A)

Agency Compliance

Safety: ..... CSA C22.2 No. 609050-1-03
NEBS: ..... Level 3 compliant

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 web 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 BUS 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 form C contacts
Input: ..... 4 digital inputs
GFD: ..... Ground fault detect
SNMP: ..... SNMP agent provides real time system status to the network management software
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:
mm: ..... 309H x 434W x 302D
inches: ..... 12.2H x 17.1W x 11.9D
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 & CXPS 48→24-i

DC-DC Converter System

- Integrated 8kW capacity converter system with front access distribution
- Support for small to medium 48Vdc loads from a legacy 24V power system or 24Vdc loads from 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

CXPS 24→48-i P/N: 053-997-20
CXPS 48→24-i P/N: 0530039-001

Electrical

CXPS 24→48-i

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

CXPS 48→24-i

Input:
Voltage: ..... -42 to -60Vdc
Current:
- System: ..... Feed A: <96A @ -48V input (110A max)
  Feed B: <96A @ -48V input (110A max)
- Converter: ..... <48A @ -48V input (55A max)

Efficiency: ..... >88% (50-100% load @ nominal voltage)

Output:
Current:
- System: ..... 296A max @ 27Vdc
- Converter module: ..... 74A max @ 27Vdc

Power:
- System: ..... 8000W max @ 27Vdc output
- Converter module: ..... 2000W max @ 27Vdc output

Performance / Features

CXPS 24→48-i Configurations:
053-997-20-000: ..... Base system with 19/23" universal mounting

CXPS 48→24-i Configurations:
0530039-001: ..... Base system with 19/23" universal mounting

Converter: ..... Up to 4x CXDF 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
(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, ¼"-20 studs on ⅝" centers
Return bar: ..... 18x sets, ¼" holes on ⅝" 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 65°C (-40 to 149°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 109
Cordex CXDF 48-24/2kW: See page 109
Cordex controller CXCI+: See page 84
AM plug-in breakers (load): See page 123

Indoor Seismic Racks

Alpha's new line of indoor, two-post seismic racks are Zone 4 rated and independently certified for NEBS Level 3. They can hold up to 3000 pounds of equipment in a small footprint, making them ideal for use in telecommunication shelters, cabinets and Central Office applications.

The Alpha battery rack is the most robust Zone 4 rack in the industry, accommodating up to 3000 pounds in a single two-post relay rack footprint. The ability to hold twelve 24V strings of batteries dramatically reduces Capex by minimizing the number of racks required. The racks also simplify installation and maintenance. The battery trays are pre-wired, which shortens the initial installation time. And easy removal of the battery tray front guard facilitates quick battery change outs.

The bolt-together design of the seismic rack is offered in a variety of heights and widths, allowing it to be used for a wide range of customer applications. And the bolt-together approach enables the rack to be flat packed, which significantly simplifies shipping and storage costs and logistics. For Zone 4 applications, the Alpha battery rack is the perfect fit for use in power systems and battery cabinets.

Battery Rack

3000lb Seismic Battery Rack System

- Zone 4 rated seismic battery rack system
- NEBS L3 Certification up to 3000lbs
- Total system capacity of 1000A
- Small standard two-post power system footprint
- Pre-wired and ready to install
- Easy removal of front guard facilitates efficient battery change out
- Vertical bus bars provide a neat and clean finish (avoiding tie wraps)
- Built-in 1200A shunt enables users to read total battery current

Electrical

System Capacity: ..... 1000A max. per bay
System Voltage: ..... 48V (or) 24V
Overcurrent Protection: Options for 100A, 125A, 150A, 200A and 250A breakers

Mechanical

Mounting: ..... Standard 23" relay rack mounting options
23" Dimensions:
mm: ..... 2133H x 713W x 561D
inches: ..... 84H x 28.1W x 22.1D
Weight (one bay):
5 tray: 650lbs
6 tray: 700lbs

Environmental

Temperature: ..... 0 to 40°C (32 to 122°F)
Humidity: ..... 0 to 95% RH non-condensing
Elevation: ..... -500 to 2800m (-1640 to 9186ft)

Agency Compliance

Safety: ..... CAN/CSA C22.2 No. 60950-1-07+ AMD 1:2011
ANSI/UL 60950-1:2011
NEBS: ..... Level 3 certification

Standard Systems

Battery Racks (black, 23" rated at 3000lbs)

Part Number	Voltage	No. of Trays	Breaker Size
0912001-001	48V Pos.Gnd	5	100A
0912001-002	48V Pos.Gnd	5	125A
0912001-003	48V Pos.Gnd	5	150A
0912001-004	48V Pos.Gnd	5	200A
0912001-005	48V Pos.Gnd	5	250A
0912002-001	24V Neg.Gnd	5	100A
0912002-002	24V Neg.Gnd	5	125A
0912003-001	48V Pos.Gnd	6	100A
0912003-002	48V Pos.Gnd	6	125A
0912003-003	48V Pos.Gnd	6	150A
0912003-004	48V Pos.Gnd	6	200A
0912004-001	24V Neg.Gnd	6	100A

Note: For standalone rack with cable tie brackets, order part# 0300163-001

Accessories (for racks listed above)

Part Number	Width	Description
0380042-021 (black)	NA	Mounting Kit Note: Seismic Kit includes seismic anchors and washers
0380195-001	23"	Insulation Kit Note: Includes insulation pad and bushings
5610292-001	23"	Top Cover

Seismic Rack

Modular Two-Post Relay Rack

- Modular two-post seismic relay rack
- Available in standard 23" or 19" mounting options
- Up to 1500lb zone 4 seismic rating
- Up to 3000lb static load capacity
- Bolt together design facilitates flat packing of racks
- Available in multiple heights
- Wide variety of termination panels, battery accessories and distribution option are available

Standalone Racks

23" Seismic Rack, black (gray)

Part Number	Height	Dynamic Rating (GR63)	Static Rating
0300063-003 (-013)	3.5'	500lb	1000lb
0300047-001 (-011)	7'	1500lb	3000lb
0300047-002 (-012)	7'	1000lb	2000lb
0300047-003 (-013)	7'	500lb	1000lb
0300064-001 (-011)	7'6"	1500lb	3000lb
0300065-001 (-011)	8'	1500lb	3000lb
0300066-001 (-011)	9'	1500lb	3000lb

19" Seismic Rack, black (gray)

Part Number	Height	Dynamic Rating (GR63)	Static Rating
0300062-001 (-011)	7'	1500lb	3000lb
0300062-002 (-012)	7'	1000lb	2000lb
0300062-003 (-013)	7'	500lb	1000lb

23" Seismic Battery Rack, black*

Part Number	Height	Dynamic Rating (GR63)
0300163-001	7'	2400lb

*Welded rack which cannot be used in 'flat pack' applications

Accessories

Mounting Kit

Part Number	Width	Description
0380042-021 (black)	NA	Seismic kit includes: - seismic anchors and washers
0380042-022 (gray)	NA	
5900708-001	NA	Rack joining bracket (require 2 per rack)
5901537-001	30"	Extension base (clips to the base front)

Insulation Kit

Part Number	Width	Description
0380063-001	23"	Includes insulation pad and bushings
0380108-001	19"	Includes insulation pad and bushings

Seismic Battery Tray (does not include breaker housing)

Part Number	Width	Description
0300061-003 (black)	23"	Fits most batteries (4 per tray)
0300061-013 (gray)	23"	
0300077-002 (black)	19"	Designed for the following batteries (4 per tray): • Exide/GNB Marathon M12V90FT • C&D Technologies TEL 12-115 FNG • East Penn 12AVR100-3ET
0300077-012 (gray)	19"	

Breaker Housing, rack mount or left/right mount on battery tray*

Part Number	Width	Description
0380128-001 (black)	NA	AM breakers, single-pole GJ
0380129-001 (gray)	NA	

*AM/GJ breakers are not included

Line Powering Solutions

Alpha offers an extensive assortment of line power products that 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 Fiber to the Home ONTs (Optical Network Terminals, iDAS and WiFi networks equipment), enabling carriers to capitalize on the low cost and maintenance of a centralized battery plant.

Alpha's flagship LPS36 system offers best in class density and efficiency, with mounting options that suit Central Office or remote cabinet applications. The LPS36 converts -48 volts to ±190Vdc. It is complemented by the CSM46 and CSM56, downconverters that transform the elevated voltage back to -48Vdc for powering the remote electronics. We have also launched a series of Downconverter modules, as well as sealed up and down converters for installation in harsh environments.

For indoor applications, such as Indoor Distributed Antenna Systems (iDAS), Alpha developed the eLimiter+™, a line power device that distributes safe 48V power over copper cables to enable indoor DAS providers to power distant nodes up to 1500 feet from the host without the cost and maintenance of UPS's and batteries scattered throughout the facility.

Cordex HP LPS36

-48Vdc to +/-190Vdc Line Power System

- Modular line powering system designed for remotely powering network equipment over twisted copper lines
- High efficiency >92% for increased OPEX savings and reduced carbon footprint
- High temperature tolerance for installation in Central Office or harsh OSP cabinet environments
- Industry leading power density enabling up to 48 channels in a compact 2RU footprint

P/N: 0120011-001

Electrical

Input voltage: ..... -40 to -60Vdc
Output voltage: ..... ±190Vdc
Power: ..... 96W nominal per output
>92W worst case conditions
(4 outputs per module)
Efficiency: ..... >92%
Regulation: ..... <-0.5% no load to full load
<±0.05% line
Noise:
Wide band: ..... <500mV RMS (10kHz to 10MHz)
<2.5V pk to pk (10kHz to 100MHz)
Acoustic: ..... <60dBa @ 1m (3ft), 55C

Performance / Features

Communication Ports:
CAN: ..... Smart Peripherals
Ethernet: ..... 10/100 Base-T for TCIP/SNMP features
Alarm relays: ..... Form C major
Form C minor
Tri Color LED: ..... System ok (green)
Minor alarm (yellow)
Major alarm (red)

Mechanical

Quad Output Power Module
Dimensions:
mm: ..... 386H x 35W x 283D
inches: ..... 3.4H x 1.4W x 11.1D
Weight: 0.61kg (1.4lbs)

Environmental

Temperature:
- Operation with forced air cooling: -40 to 65°C (-40 to 149°F) with mininum cabinet air flow @ 200LFM
- Operation with convection cooling: -40 to 45°C (-40 to 122°F) single shelf operation only or separated by 1RU baffle

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: ..... <118 BTU per hour/module

Mechanical

23" shelf - 12 modules
P/N: 0300090-001
Dimensions:
mm: ..... 88H x 536W x 311D
inches: ..... 3.5H x 21.1W x 12.3D
Weight: 7.28kg (16lbs)
23" Fan Tray P/N: 0300090-002
23" Baffle P/N: 0300090-003

19" shelf - 9 modules
P/N: 0300055-001
Dimensions:
mm: ..... 88H x 435W x 311D
inches: ..... 3.5H x 17.1W x 12.3D
Weight: 5.45kg (12lbs)
19" Fan Tray P/N: 0300055-002
19" Baffle P/N: 0300055-003

Connections:
Input: ..... HOT: 2x sets, ¼" holes on ⅝" centers
RTN: 2x sets, ¼" holes on ⅝" centers
Output: ..... Two 50-pin amp-champ style connector

Agency Compliance

Safety: ..... CSA/UL 60950-1
CSA/UL 60950-21 (RFT-V circuit)
EMC: ..... ETSI 300 386
Emissions:
- CFR47 (FCC) Part 15 Class B
- EN 61000-3-12
- EN 61000-4-3
- 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 CatB3

NEBS/Telcordia:
- GR-1089-CORE - Class A2
- GR-63-CORE

Related Components

7400232-001: ..... CXCI+ controller
0380070-001: ..... Blanking plate kit (2 items)

Cordex HP LPS04

-48Vdc to +/-190Vdc Quad Line Power Up-Converter Unit

- Providing four (4) +/- 190Vdc line powering RFT-V channels with current limiting and ground fault protection
- 92% efficiency for increased OPEX savings and reduced carbon footprint
- Rugged and sealed enclosure for installation either inside or outside power cabinets
- Wide operating temperature range for deployment in harsh OSP environments
- High reliability sealed design

P/N: 0120037-001

Electrical

Input voltage: .....-40 to -60Vdc
Output voltage: .....±190Vdc
Number of outputs: 4
Power:..... 96W nominal per output (4 outputs per module)
Output current: .....Maximum 254 mA per output
Efficiency:.....>92%

Regulation:.....<-0.5% no load to full load
<+-0.05% line
Noise:
Wide band:.....<500mV RMS (10kHz to 10MHz)
<2.5V pk to pk (10kHz to 100MHz)

Performance / Features

Alarm relays: .....Form C

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

Mechanical

Dimensions:
mm:.....138H x 305W x 46D
inches:.....5.4H x 12W x 1.8D
Weight:.....2.9kg (6.5lbs)

Connections:.....Two (2) blunt cut cables

Environmental

Temperature:
Operation:.....-40 to 65˚C (-40 to 149˚F)
Storage:.....-40 to 85˚C (-40 to 185˚F)

Environmental Protection: IP64
Humidity: .....0 to 100% RH
Elevation:.....-500 to 2800m (-1640 to 9186ft)

Agency Compliance

Safety:.....CSA/UL 60950-1
CSA/UL 60950-21 (RFT-V circuit)
EMC:.....CFR47 (FCC) Part 15 Class A

LPR48-150

+/-190Vdc to -48Vdc Line Powering Remote Down-Converter Unit

- Providing up to 150W output at 54Vdc to power remote nodes
- Rugged sealed unit for installation either inside or outside power cabinets
- Wide operating temperature range for deployment in harsh OSP environments

P/N: 0120044-001

Electrical

Input voltage: ..... 195 to 380Vdc (+/- 95 to +/- 190Vdc)
Number of inputs: 2
Output voltage: ..... -50 to -55Vdc (full load to no load)
Power: ..... up to 150 W (de-rates linearly with input voltage)
Output current: ..... 3.0A (de-rates linearly with input voltage)
Efficiency: ..... >85%
Electrical Noise: ..... <100mVRMS to 20MHz (wide band)
<500mVp-p to 20MHz
Acoustic Noise: ..... <45dBa at 1m (3ft)

Performance / Features

LED: ..... Converter A Input OK (green)
Converter A Output OK (green)
Converter B Input OK (green)
Converter B Output OK (green)

Mechanical

Dimensions:
mm: ..... 44H x 300W x 30D
44H x 320W x 40D (w. connectors & flanges)
inches: ..... 1.7H x 11.8W x 1.2D
1.7H x 12.6W x 1.6D (w. connectors & flanges)
Weight: 1.14kg (2.5lbs)

Connections: ..... Two blunt cut cables (input and output)

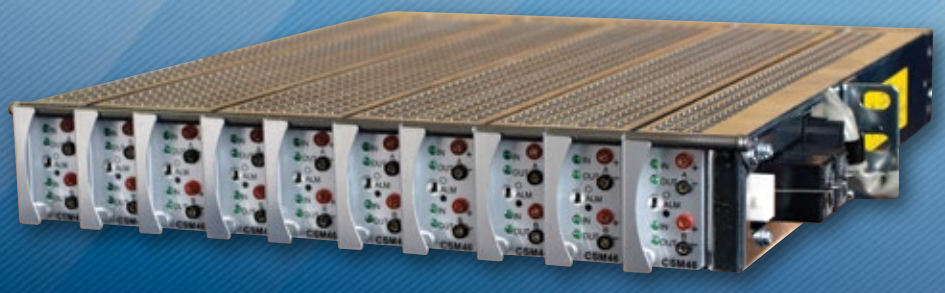
Environmental

Temperature:
Operation: ..... -40 to 65˚C (-40 to 149˚F)
Storage: ..... -40 to 85˚C (-40 to 185˚F)

Environmental Protection: IP64
Humidity: ..... 0 to 100% RH
Elevation: ..... -500 to 2800m (-1640 to 9186ft)

Agency Compliance

Safety: ..... CSA/UL 60950-1
CSA/UL 60950-21 (RFT-V circuit)
EMC: ..... CFR47 (FCC) Part 15 Class A



CSM46

+/-190Vdc to -48Vdc Converter

- +/-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

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

Mechanical

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

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

Performance / Features
Access: ..... Front access
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)

CSM56

+/-190Vdc to -48Vdc Compact Converter

- +/-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)
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
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 (3ft)
Backed up output voltage: ..... -46Vdc ±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
inches: ..... 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

LPR12-30, LPR12-60
LPR48-30, LPR48-60

+/-190Vdc to 12Vdc or 48Vdc Line Power HP Remote Supply Unit

- +/-190V to 12V or 48V DC-DC Downconverter for remote/line powering single family, multi-dwelling unit home (FTTH), premises (FTTP) or muni WiFi networks
- Utilize existing copper pair network for distributing power
- Reduce truck rolls and operating expenses with no batteries at remote sites
- Compact, self-enclosed design ideal for mounting on the side of house, or aerial strands

LPR12-30 P/N: 0120040-001
LPR48-30 P/N: 0120042-001
LPR12-60 P/N: 0120041-001
LPR48-60 P/N: 0120043-001

Electrical

Input voltage: ..... +/-125 to +/-190Vdc
Output voltage: ..... 12Vdc (LPR 12-30/12-60)
48Vdc (LPR 48-30/48-60)
Power: ..... 30W (LPR 12-30/48-30)
60W (LPR 12-60/48-60)

Performance / Features

LED: ..... Presence of network line power provided output voltage
Connections: ..... 6 pin molex connectors
Wall Mounting: ..... Three #8 x 1½" pan head screws with RTV sealing compound

Mechanical

Dimensions:
mm: ..... 168H x 108W x 44D
inches: ..... 6.6H x 4.3W x 1.7D
Weight: 0.30kg (0.7lbs)

Environmental

Temperature: ..... -40 to 65°C (-40 to 149°F)
Humidity: ..... 5 to 95% RH non-condensing

Agency Compliance

Safety: ..... UL 60950-1
CSA/UL 60950-21 (RFT-V circuit compatible)
Emissions: ..... CFR47 (FCC) Part 15 Class A

AlphaCap 665

Short Duration Backup Power Module

- 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 up to 750W, of continuous power ouput
- Ensure load equipment can ride through brief converter resets
- Reduce truck rolls and operating expenses with no batteries at remote site

P/N: 013-015-20

Electrical

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

Safety:.....UL 60950-1
CSA C22.2 No. 60950
FCC:.....47 CFR Part 15 Class A
Telcordia:.....GR-1089-CORE (where applicable)

eLimiter+

100VA Class 2 Distribution System

- Modular line powering system designed for remotely powering iDAS and WiFi network equipment
- Meets NEC class 2 and communication circuit requirements for limited power circuits
- Dramatically reduces Cap-Ex costs and simplifies installation of network equipment requiring remote powering
- Built in DC-DC converter eliminates the need for externally mounted converter devices, significantly reducing network planning and engineering costs
- Industry leading power density enabling up to 36 channels in a compact 2RU footprint
- Cordex controller provides advanced remote web based monitoring and control features

P/N: Consult your Alpha representative for P/N configurations

Electrical

Input voltage: .....-40 to -60Vdc
Output voltage: .....-57Vdc
Power: .....98W nominal per output
±2W tolerance
(4 outputs per module)
Efficiency:.....>92%
Regulation: .....<2% no load to full load
<1% line
Noise:
Wide band: .....<50mV RMS (10kHz to 10MHz)
<100mV pk to pk (10kHz to 100MHz)
Acoustic:.....<60dBa @ 1m (3ft), 55°C

Mechanical

Quad Output Power Module
Dimensions:
mm:.....386H x 35W x 283D
inches: .....3.4H x 1.4W x 11.1D
Weight:.....0.61kg (1.4lbs)

Shelves

19" shelf - 9 modules
Dimensions:
mm:.....88H x 435W x 432D
inches: .....3.5H x 17.1W x 17D
Weight:.....5.45kg (12lbs)
Connections:
Input: .....HOT: 2x sets, ¼" holes on ⅝" centers
RTN: 2x sets, ¼" holes on ⅝" centers
Output: .....9x 8 posn. Screw door TB (12-26AWG)

Environmental

Temperature:
- Operation with forced air cooling: -40 to 65°C (-40 to 149°F) with mininum cabinet air flow @ 200LFM
- Operation with convection cooling: -40 to 45°C (-40 to 122°F) single shelf operation only or separated by 1RU baffle

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:.....<118 BTU per hour/module

Performance/Features

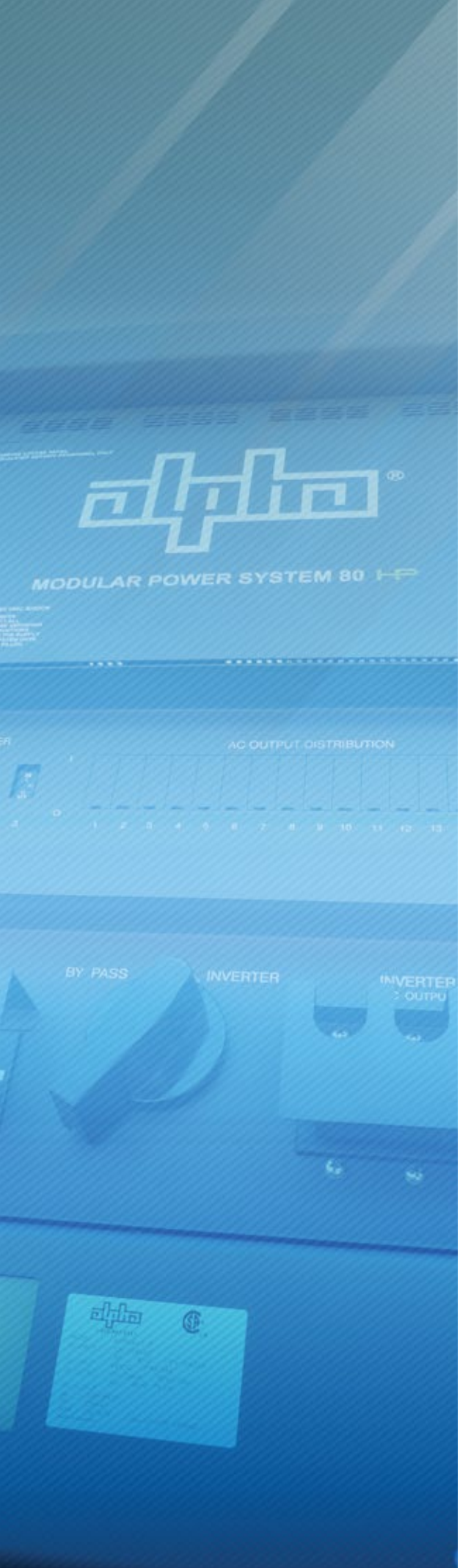
Communication ports:
CAN: .....Smart Peripherals
Ethernet: .....10/100 Base-T for TCIP/SNMP features
Alarm relays: .....Form C major
Form C minor
Form C fan tray alarm
Tri Color LED:.....System ok (green)
Minor alarm (yellow)
Major alarm (red)

Agency Compliance

Safety:.....CSA/UL 60950-1
EMC:.....ETSI 300 386
Emissions:.....CFR47 (FCC) Part 15 Class A
Immunity:.....EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
NEBS/Telcordia: GR-1089-CORE
GR-63-CORE

Related Components

0120028-001 eL:.....elimiter+ module
0300156-001 eL: .....elimiter+ shelf
7400232-001:.....CXCi+ Controller
0300055-002:.....Fan tray
0300055-004:.....Fan tray replacement
0300055-003:.....Air baffle
0380070-001: .....Blank, 2 module



Inverter 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 Centers, Cable Head-Ends and Data Centers. These systems offer exceptional reliability, 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 smaller 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 Topology

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

AMPS is a new tool in the delivery of battery backed AC power. It enables telcos to supply highly reliable video and data delivery as part of triple play service. It offers data centers a more reliable means of powering mission-critical servers and routers. And the same system delivers either single or 3-phase AC power.

The core of the AMPS system is the Alpha Inverter Module (AIM). Unlike a conventional inverter that transforms a DC input into an AC output, or a traditional UPS that delivers an AC output from an AC input, the AIM accepts both AC and DC inputs. This innovative approach is the key reason the AMPS system is more reliable than a UPS, more efficient than an inverter.

Advantage AMPS

The technology behind the AMPS system offers tremendous benefits to the user.

1. **AMPS delivers fully conditioned, line-regulated telecom-grade AC power with up to 94% system efficiency.**
2. **In the event of an AC outage, there is zero transfer time with AMPS.** While the same can be said of an online inverter or double conversion UPS, that is not the case with a line interactive UPS.
3. **AMPS is more reliable than devices that rely on a static transfer switch (STS) for protection.** 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. With AMPS, commercial AC is normally responsible for powering the load, and the 400Vdc bus is always present, so there is no need for an STS.
4. **AMPS can include N+1 redundancy.** The modularity of the system lends itself to redundant operation. AMPS systems can also be configured for N+N redundancy within a single rack system yielding significant floor space savings for revenue generating equipment.
5. **AMPS is scalable.** Even with traditional modular inverter and UPS systems, a STS must be sized at the time of installation thus limiting future expansion. AMPS can grow with the addition of AIM modules and/or modular rectifiers.
6. **AMPS is safe for technicians.** With AMPS, technicians are only exposed to 120Vac and 48Vdc, both prevalent and conventional voltages. On the other hand, UPS systems using elevated voltages to achieve higher system efficiencies expose technicians to unsafe voltages, and even though the AIM modules do produce a 400Vdc bus, that voltage is internal to the inverter module and not accessible by the technician.
7. **AMPS uses conventional 48Vdc power and batteries.** By using 48Vdc, AMPS avoids the expense of high voltage batteries and the expensive service contracts needed to maintain them. And indoor 48Vdc batteries often have a 10 to 20 year design life.

8. **AMPS only requires enough rectifiers to charge the batteries used during an AC outage.** Unlike conventional Inverters, AMPS only requires incoming DC to provide the AC output when the utility AC is out of service. So rather than sizing the rectifiers as if the inverter is another DC load, the rectifiers can be sized only for the amount of time prescribed for recharging the batteries.

9. **AMPS can be configured for either single phase two dole/split phase or 3-phase AC output power.**

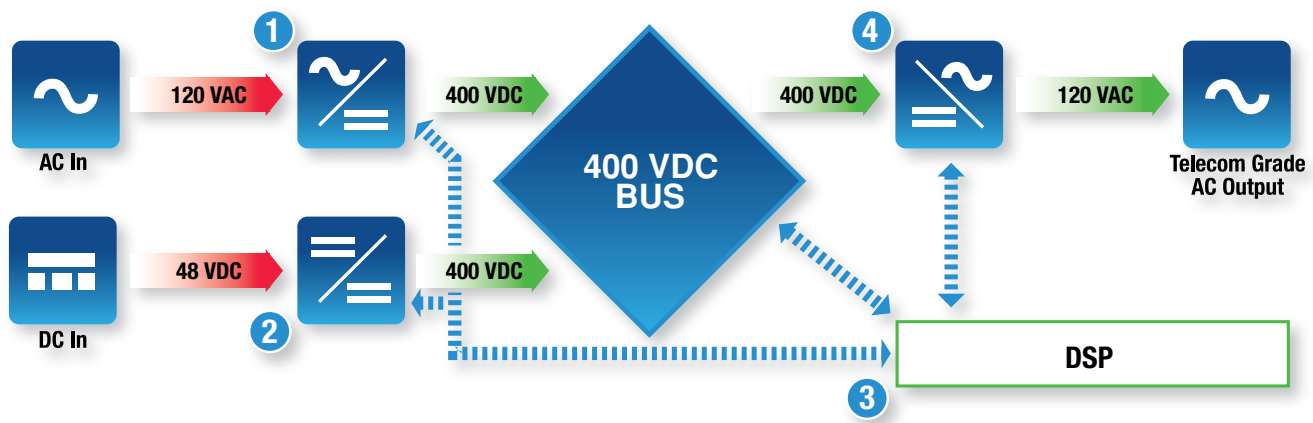
10. **AMPS is designed to handle dynamic load surges.** AIM modules can operate continuously at 110% of rated output, as well as provide short term overload compatibility of up to 150% capacity for 5 seconds.

The advantages of AMPS compared to an AC UPS and Inverter are shown in the table below:

AMPS HP Comparison vs Traditional Inverters/UPS's

Features	Inverter	UPS	AMPS HP
Filtered AC output	●	●	★
High efficiency design	●	★	★
Utilize low voltage, telecom batteries	★	○	★
Eliminates need for STS	●	●	★
Additional rectification ONLY for charging	●	●	★
Modularity / Scalability	★	●	★
Centralized AC & DC control and monitoring	○	★	★
Compatibility with existing DC plants	★	○	★

★= Fully compliant ●=Partially or sometimes compliant ○=Not compliant



AIM Internal Power Architecture

How does it work

1. Each AIM accepts an input from an AC source, typically via AC mains (i.e., commercial utility AC) or an AC generator. It rectifies this 120Vac input into a 400Vdc output for delivery to a common bus. The high output DC voltage enables the unit to achieve a very high efficiency.

2. Each AIM unit also accepts a DC input, either from external battery plants or other energy storage and generation devices such as fuel cells and DC generators. The 48Vdc input is converted to a 400Vdc output for delivery to the common bus. Again, because of the high voltage DC output, the efficiency of the system is very high.

3. An onboard Digital Signal Processor actively monitors both module inputs and controls which one (or how much of each one) is to be delivered to the 400Vdc bus. The selection process is based on the following:
   - If commercial AC is available, the DSP selects the rectified 400Vdc
   - If commercial AC is unavailable, the DSP selects the converted 400Vdc
   - If commercial AC is partially unavailable, as in the case of a brown-out condition, the DSP augments the rectified output with converted output power.
   - DC or AC input priority may also be manually configured, as well as automatically triggered remotely to accommodate advanced energy management such as utility peak shaving.

4. The 400Vdc bus is then inverted into 120Vac to power the equipment.

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
- 94% efficiency and 'HP' technology engineered to deliver high system reliability and low total cost of ownership
- Optional 2.0kW rectifier modules convert the AMPS80 into a modular, standalone, high reliability UPS
- Hot swappable 2.5kVA/2.0kW inverter modules provide flexibility, scalability and redundancy
- Intelligent system controller with integrated SNMP for local and remote management of all system elements
- Small footprint system offers up to 75kVA/60kW in a single 19" box bay rack, freeing up valuable rack and floor space

Consult your Alpha representative for P/N configurations

Performance / 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 x680D
inches:.....84H x 23.6W x 26.75D
System weight (without modules): 270kg (595lbs)

Module dimensions:
mm:.....88.9H x 102W x435D
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 2.0kW rectifier modules (UPS configurations)
- 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	*Proprietory 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 Input				
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 a web browser			
Display	LCD touch-screen display (160 x 160 pixels) OK/Major/Minor 3-Color LED Web based GUI via ethernet			
Communication ports	RJ45 ethernet port RS232 Port (Front)			

AMPS24 HP

Modular AC Power System

- Innovative, modular inverter system for critical facilities and Telecom applications
- Single, dual and three phase configurations with up to 24kVA/19.2kW capacity
- 93% efficiency and 'HP' technology engineered to deliver high system reliability and low total cost of ownership
- Optional 1.8kW rectifier modules convert the AMPS24 into a modular, standalone, high reliability UPS
- Hot swappable 1.5kVA/1.2kW inverter modules provide flexibility, scalability and redundancy
- Intelligent controller with integrated touchscreen display provides local and remote management of all system elements
- High power density yields space for revenue generating equipment

Performance / 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 a web browser

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 (w/o 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)
Weight:.....2.4kg (5.3lbs) inverter/2.8kg (6.2lb) rectifier

Environmental

Temperature
Operating (full load):.....-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 (4,900ft) above sea level

Options

- Up to 4x 1.8kW rectifier modules (UPS configurations)
- 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 - General Specifications	
Technology	*Proprietory HP technology.* Each inverter has DC and AC input
Static switch	Not required; each module has built-in 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

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-phw		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

*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

- 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 or 1000VA/800W
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 x I_{nom} >20s
1.25 x I_{nom} 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 current:.....50A or 100A options
Operation methods: .....Inverter priority/mains priority

Environmental

Temperature:

Operating .....-20 to 70°C (-4 to 158°F)
-5 to 58°C (23 to 122°F) with full performance
Storage:.....-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-232×2:.....Communicate with PC
RS-485×2:.....Communicate with supervision
Dry contact×5: .....Communicate with external monitor
USB×1: .....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

- 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

Nominal 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

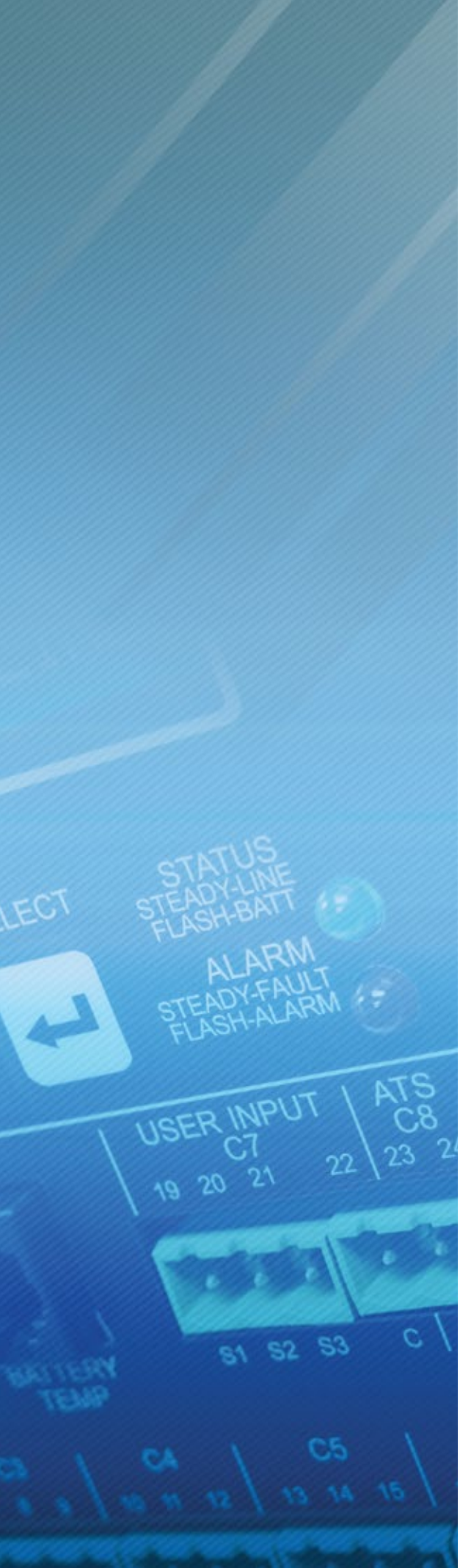
Temperature:
Operating (full load): ..... -20 to 50°C (-4 to 122°F)
Storage: ..... -40 to +70°C (-40 to 158°F)
Relative Humidity: ..... Up to 95%, non-condensing
Operating Altitude: ..... Up to 1500m (4,900ft) above sea level

Mechanical

Dimensions:
mm: ..... 89H x 448Wx 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
Emission: ..... FCC PART 15



Outdoor UPS Solutions

With close to 40 years of experience in the global UPS market, Alpha is the leader in providing a complete line of AC powering solutions for 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 outdoor 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, Alpha's products and solutions are designed to meet each customer's unique power, runtime and installation requirements. 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 a smartphone, laptop or notebook, each with selectable event severity levels to trigger different notifications of events, faults and alarms.

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(s)
- Frequency (Hz) 50 or 60
- Type of loads: Motor loads, inductive loads
- Advise inrush current if any

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 Management System, Enclosures, Racks

What are your warranty/service needs?

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

What quantities are needed?

Number of units required and when

*Ethernet/SNMP communication is standard on some products

FXM 350

Rugged UPS Module

- 350W/VA UPS module designed to operate in extreme environments; providing maximum flexibility while ensuring critical loads remain protected and running during outages and other power disturbances
- Unsurpassed flexibility with dual 120Vac and 24Vac outputs
- Wide range Automatic Voltage Regulation (AVR) lengthens battery life by providing protection without transferring to backup mode during voltage surge or sag
- Local and remote monitoring and control via USB port and Ethernet SNMP interface
- Temperature compensated battery charging protects batteries from overcharging or undercharging at extreme temperatures, extending the life of the battery
- Independently programmable control and report dry contacts allow monitoring and controlling of key functions

Consult your Alpha representative for P/N configurations

Electrical

120Vac Model

Battery string voltage: ...48Vdc or 24Vdc
Nominal voltage:.....120Vac
Frequency:.....60/50Hz ±5% (auto-detection)
Input:
Voltage range (w/o transferring to battery mode): 88 to 152Vac
Current:
• FXM350-24:.....5.3A
• FXM350-48:.....5.7A
Output:
Waveform:.....Pure sinewave
Nominal voltage: .....Dual 120Vac, 24Vac
Voltage regulation: .....±10%
Power at 50°C:.....350W/VA Total
• 24Vac: .....260W/VA (max)
• 120Vac:.....350W/VA (max)
Frequency: .....Output frequency = Input frequency

230Vac Model

Battery string voltage: ...24Vdc
Nominal voltage:.....230Vac
Frequency:.....60/50Hz ±5% (auto-detection)
Input:
Voltage range (w/o transferring to battery mode): 151 to 282Vac
Current:.....2.7A
Output:
Waveform:.....Pure sinewave
Nominal voltage: 230Vac, 24Vac
Voltage regulation: .....±10%
Power at 50°C:.....350W/VA Total
• 24Vac: 260VA (max)
• 230Vac: 350VA (max)
Frequency .....Output frequency = Input frequency

Mechanical

Mounting:..... 19" or 23" rack with the addition of ears for rack mounting
Dimensions:
mm:..... 88.14H x 341.88W x 211.74D
inches:..... 3.47H x 13.46W x 8.34D
Weight:..... 8.62kg (19lbs)

Environmental

Operating temp range*:..... -40 to 74°C (-40 to 165°F)
Audible noise @ 25°C:..... <45dBa @ 1 meter (39in)
*Derates after 50°C

Performance

Typical output voltage THD:.. <3%
Typical efficiency..... >96% (resistive load)
Typical transfer time..... <5ms

Power Connector Options

120Vac Model

	Input	Output
Standard	Terminal Block	Terminal Block

230Vac Model

	Input	Output
Standard	Terminal Block	Terminal Block

Agency Compliance

Electrical safety:.....UL1778, CSA C22.2 No. 107.3; EN62040-1
Marks:.....
EMC:.....CFR47, Part 15 Subpart B, Class A; CES-003 Class A; EN62040-2
**CE applies to 230Vac version only

FXM 650

Rugged UPS Module

- 650W/VA UPS module designed to operate in extreme environments and provide maximum flexibility while ensuring critical loads remain protected and running during outages and other power disturbances
- Wide range Automatic Voltage Regulation (AVR) lengthens battery life by providing protection without transferring to backup mode during voltage surge or sag
- Independently programmable control and report dry contacts allow monitoring and controlling of key functions
- Temperature compensated battery charging protects batteries from overcharging or undercharging at extreme temperatures, extending the life of the battery
- Local and remote monitoring and control via RS232 port and Ethernet SNMP interface*

Consult your Alpha representative for P/N configurations

Electrical

120Vac Model
Battery string voltage: ...24Vdc or 48Vdc
Nominal voltage:.....120Vac
Nominal frequency:.....Auto-sensing
Input:
Current:.....5.8A nominal
Voltage: .....85 to 175Vac
Output:
Voltage regulation: .....+/- 10% over input voltage range
Power at 55°C:.....650W/VA

230Vac Model
Battery string voltage: ...24Vdc
Nominal voltage:.....230Vac
Nominal frequency:.....Auto-sensing
Input:
Current:.....3.0A nominal
Voltage range: .....150 to 328Vac
Output:
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 temp range*:..-40 to 74°C (-40 to 165°F)
Audible noise @ 25°C:....45dBa @ 1 meter (39in)
*Derates after 55°C

Performance

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

Power Connector Options

120Vac Model	Input	Output
Standard	Terminal Block	Terminal Block
230Vac Model		
Standard	Terminal Block	Terminal Block

Agency Compliance

Electrical safety:.....UL1778, CSA C22.2 No. 107.3; EN62040-1
Marks:.....c SP us CE***
EMC:.....CFR47, Part 15 Subpart B, Class A; CES-003 Class A; EN62040-2
*Ethernet SNMP card is standard on the 120Vac model and optional on the 230Vac model
***CE applies to 230Vac version only

FXM 1100

Rugged UPS Module

- 1100W/VA UPS module designed to operate in extreme environments and provide maximum flexibility while ensuring critical loads remain protected and running during outages and other power disturbances
- Wide range Automatic Voltage Regulation (AVR) lengthens battery life by providing protection without transferring to backup mode during voltage surge or sag
- Independently programmable control and report dry contacts allow monitoring and controlling of key functions
- Temperature compensated battery charging protects batteries from overcharging or undercharging at extreme temperatures, extending the life of the battery
- Local and remote monitoring and control via RS232 port and Ethernet SNMP interface*
- UPS panels can be rotated, improving usability and viewing convenience

Consult your Alpha representative for P/N configurations

Electrical

120Vac Model

Battery string voltage: ...48Vdc
Nominal voltage:.....120Vac
Nominal frequency:.....Auto-sensing
Input:
Current:.....9.8A nominal
Voltage: .....85 to 175Vac
Output:
Voltage regulation: .....+/- 10% over input voltage range
Power at 55°C:.....1100W/VA

230Vac Model

Battery string voltage: ...48Vdc
Nominal voltage:.....230Vac
Nominal frequency:.....Auto-sensing
Input:
Current:.....5.1A nominal
Voltage range: .....150 to 328Vac
Output:
Voltage regulation: .....+/- 10% over input voltage range
Power at 55°C:.....1100W/VA

Mechanical

Dimensions:
mm:.....133H x 394W x 222D
inches: .....5.22H x 15.5W x 8.75D
Weight:.....16kg (35lbs)

Environmental

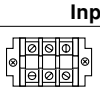
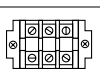
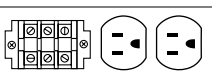
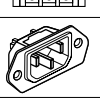
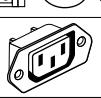
Operating temp range*:..-40 to 74°C (-40 to 165°F)
Audible noise @ 25°C:....45dBa @ 1 meter (39in)
*Derates after 55°C

Performance

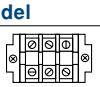
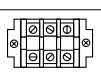
Typical output voltage THD: ..... <3%
Typical efficiency:..... >98% (resistive load)
Typical transfer time: ..... <5ms

Power Connector Options

120Vac Model

	Input	Output
Standard	 Terminal Block	 Terminal Block
Optional	 Terminal Block	 Terminal Block + Dual 5-15R
	 IEC*	 IEC*

230Vac Model

Standard	 Terminal Block	 Terminal Block

*FXM models with IEC connectors come with 4 lines LCD display instead of the traditional 2 lines display

Agency Compliance

Electrical safety:.....UL1778, CSA C22.2 No. 107.3; EN62040-1
Marks:.....c SP us CE ***
EMC:.....CFR47, Part 15 Subpart B, Class A; CES-003 Class A; EN62040-2

*Ethernet SNMP card is standard on the 120Vac model and optional on the 230Vac model
***CE applies to 230Vac version only

FXM 2000

Rugged UPS Module

- 2000W/VA UPS module designed to operate in extreme environments and provide maximum flexibility while ensuring critical loads remain protected and running during outages and other power disturbances
- Wide range Automatic Voltage Regulation (AVR) lengthens battery life by providing protection without transferring to backup mode during voltage surge or sag
- Independently programmable control and report dry contacts allow monitoring and controlling of key functions
- Temperature compensated battery charging protects batteries from overcharging or undercharging at extreme temperatures, extending the life of the battery
- Local and remote monitoring and control via RS232 port and Ethernet SNMP interface*
- UPS panels can be rotated, improving usability and viewing convenience

Consult your Alpha representative for P/N configurations

Electrical

120Vac Model
Battery string voltage: ...48Vdc
Nominal voltage:.....120Vac
Nominal frequency:.....Auto-sensing
Input:
Current:.....17.9A nominal
Voltage: .....85 to 175Vac
Output:
Voltage regulation: .....+/- 10% over input voltage range
Power at 50°C:.....2000W/VA

230Vac Model
Battery string voltage: ...48Vdc
Nominal voltage:.....230Vac
Nominal frequency:.....Auto-sensing
Input:
Current:.....9.4A nominal
Voltage range: .....150 to 328Vac
Output:
Voltage regulation: .....+/- 10% over input voltage range
Power at 55°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 temp range*:..-40 to 74°C (-40 to 165°F)
Audible noise @ 25°C:....45dBa @ 1 meter (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

Power Connector Options

120Vac Model

Input		Output	
Standard	Terminal Block		Terminal Block

230Vac Model

Standard	Terminal Block		Terminal Block

Agency Compliance

Electrical safety:.....UL1778, CSA C22.2 No. 107.3; EN62040-1
Marks:..... c SP us CE ***
EMC:.....CFR47, Part 15 Subpart B, Class A; CES-003 Class A; EN62040-2
*Ethernet SNMP card is standard on the 120Vac model and optional on the 230Vac model
***CE applies to 230Vac version only

Micro Secure 100

Outdoor UPS System

- 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
- Two independently programmable relays allows monitoring 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*
- With input and battery breaker for additional protection

Consult your Alpha representative for P/N configurations

Electrical

120Vac Model

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

230Vac Model

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

Mechanical

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

Environmental

Operating temp range:** -40 to 50°C (-40 to 122°F)
Audible noise @ 25°C:....45dBa @ 1 meter (39in)
Enclosure Rating:.....NEMA 3R

Performance

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

Agency Compliance

Electrical safety:.....UL1778, CSA C22.2 No. 107.3; EN62040-1
Marks:..... c SP us CE****
EMC:.....CFR47, Part 15 Subpart B, Class A; CES-003 Class A; EN62040-2

*Pole mount bracket sold separately
**Requires heater mat at lower temperatures
***Using 4 x 9AH batteries @ 25°C.
****CE applies to 230Vac version only

Micro 350

UPS and Enclosure

- Compact, integrated UPS system designed to operate in extreme environments; providing maximum flexibility while ensuring critical loads remain protected and running during outages and other power disturbances
- Up to 11 hours backup time at full load (350W) for extended system continuity
- NEMA 3R rated enclosure for superior performance in outdoor applications
- Wide range Automatic Voltage Regulation (AVR) lengthens battery life by providing protection without transferring to backup mode during voltage surge or sag
- Local and remote monitoring and control via USB port and Ethernet SNMP interface
- Temperature compensated battery charging automatically adjusts charge voltage extending the life of the battery

Available with 2 dry contacts/2 user inputs or 5 dry contacts and 4 user inputs. Consult your Alpha representative for P/N configurations

Electrical

120Vac Model

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

Input:

Nominal voltage: 120Vac
Voltage range (without transferring to battery mode): 88 to 152Vac
Current:
- Micro350:.....5.7A
- Micro350XL: 6.2A
- Micro350XL3: 7.2A

Frequency: .....60/50Hz ±5% (auto-detection

Output:

Waveform: .....Pure sinewave
Nominal voltage: .....Dual 120Vac, 24Vac
Voltage regulation: .....±10%
Power at 50°C:.....350W/VA Total
- 24Vac: .....260W/VA (max)
- 120Vac: .....350W/VA (max)

Frequency: .....Output frequency = Input frequency

230Vac Model

Battery string voltage: ...24

Input:

Nominal voltage: 230Vac
Voltage range (without transferring to battery mode): 151 to 282Vac
Current:
- Micro350:.....2.7A
- Micro350XL: 3.2A
- Micro350XL3: 3.6A

Frequency: .....60/50Hz ±5% (auto-detection)

Output:

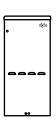
Waveform: .....Pure sinewave
Nominal voltage: 230Vac, 24Vac
Voltage regulation: .....±10%
Power at 50°C:.....350W/VA Total
- 24Vac: .....260VA (max)
- 230Vac:.....350VA (max)

Frequency .....Output frequency = Input frequency

Mechanical

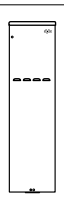
Alpha Micro

Dimensions	mm	500H x 358W x 294D
	inches	19.7H x 14.1W x 11.6D
Weight (w/o batteries)		25kg (56lbs)



Alpha Micro XL

Dimensions	mm	776H x 358W x 294D
	inches	30.6H x 14.1W x 11.6D
Weight (w/o batteries)		29kg (65lbs)



Alpha Micro XL3

Dimensions	mm	1330H x 358W x 294D
	inches	52.4H x 14.1W x 11.6D
Weight (w/o batteries)		33kg (74lbs)

Environmental

Operating temperature range*:...-40 to 74°C (-40 to 165°F)
Audible noise @ 25°C:.....<45dBa @ 1 meter (39in)
Enclosure Rating:.....NEMA 3R
*Derates after 50°C

Performance

Typical output voltage THD:.....<3%
Typical efficiency:.....>96% (resistive load)
Typical transfer time: .....<5ms

Agency Compliance

Electrical safety:.....UL1778, CSA C22.2 No. 107.3; EN62040-1

Marks:..... c SP us CE** **CE applies to 230Vac version only
EMC:.....CFR47, Part 15 Subpart B, Class A; CES-003 Class A; EN62040-2

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 monitoring 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 overcharging/undercharging at extreme temperatures

Consult your Alpha representative for P/N configurations

Electrical

120Vac Model
Battery string voltage: ...48Vdc
Input:
Nominal voltage: 120Vac
Nominal frequency: 60Hz
Current:.....8.8A nominal
Voltage range: .....85 to 175Vac
Output:
Voltage regulation: .....+/- 10% over input voltage range
Power @ 50°C:.....1000W/VA

230Vac Model
Battery string voltage: ...48Vdc
Input:
Nominal voltage: 230Vac
Nominal frequency: 50Hz
Current:.....4.6A nominal
Voltage range: .....150 to 328Vac
Output:
Voltage: 230Vac
Voltage regulation: .....+/- 10% over input voltage range
Power @ 50°C:.....1000W/VA

Performance

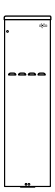
Typical output voltage THD: .. <3%
Typical efficiency:..... >98% (resistive load)
Typical transfer time: ..... <5ms
Run time @25°C:**.....4 x 50Ah batteries - 1 hrs 15 mins (Micro XL)

* 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.

Mechanical

Alpha Micro		
Dimensions	mm	500H x 358W x 294D
	inches	19.7H x 14.1W x 11.6D
Weight (w/o 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 (w/o 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 (w/o batteries)		22.6kg (69.2lbs)

Environmental

Temperature range: ..... -40 to 74°C (-40 to 165°F)*
Humidity: .....15% to 95% RH non condensing
Audible noise@25°C: .....<45dBa @ 1 meter (39in)
Enclosure Rating:.....NEMA 3R
*Derates after 50°C

Agency Compliance

Electrical safety:.....UL1778, CSA C22.2 No. 107.3; EN62040-1
Marks:..... c SP us CE**
EMC:.....CFR47, Part 15 Subpart B, Class A; CES-003 Class A; EN62040-2
**CE applies to 230Vac version only

Alpha Micro 300-12

UPS and Enclosure

- Compact, integrated UPS system designed to operate in extreme environments
- Provides maximum flexibility while ensuring critical loads remain protected and running during outages and other power disturbances
- Wide range Automatic Voltage Regulation (AVR) lengthens battery life by providing protection without transferring to backup mode during voltage surge or sag
- Local and remote monitoring and control via RS232 port and optional Ethernet SNMP interface
- A wide operating temperature range of -40 to 60°C (-40 to 140°F) is suitable for most OSP operating environments
- Can power up to 4 Adtran TA 380 (50W each) while occupying a small 20" x 14" footprint.
- Temperature compensated battery charging protects batteries from overcharging or undercharging at extreme temperatures, extending the life of the battery

Part Number: 017-237-27**

Electrical

Battery string voltage: ...24Vdc
Input:
Nominal voltage: 120Vac
Nominal frequency:.....60Hz
Current:.....3.6A nominal, 5.4A max
Voltage range: .....85 to 175Vac
Output:
Voltage: 12Vdc
Current:.....16Adc (4 x 4A)
Voltage regulation: .....+/- 1.5%
Power @ 50°C:.....200W (4 x 50W)

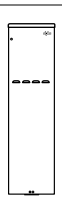
Performance / Features

Run time*: .....2 x AlphaCell 85GXL (50Ah) >2 hrs @ 25°C
*Runtime is contingent upon load profile, battery age and ambient temperature.
**Batteries not included. For XL and XL3 configurations, consult your Alpha representative.

Mechanical

Alpha Micro		
Dimensions	mm	500H x 358W x 294D
	inches	19.7H x 14.1W x 11.6D
Weight (w/o 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 (w/o 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 (w/o batteries)		22.6kg (69.2lbs)

Agency Compliance

Electrical safety: .....UL1778, CSA 22.2 No. 107.3
NEMA: 3R

Indoor UPS Solutions

Alpha also offers a complete line of AC powering solutions for indoor applications. Like Alpha's hardened outdoor UPS solutions, our indoor UPS portfolio also offers superior remote communication and monitoring capabilities including SNMP web-based communication for checking status and alert notifications to your mobile device.

All Alpha indoor UPS models deliver solid reliability, functionality and efficiency you can depend on.

Sentra Rack Configuration

Sentra Tower Configuration

Sentra 750-3000

Line-interactive Pure Sine Wave UPS

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

Nominal Specifications

Model	Sentra 750	Sentra 1000	Sentra 1500	Sentra 2200	Sentra 3000
120Vac Part Numbers	**0170000**	**0170001**	**0170002**	**0170003**	**0170004**
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				

Model		Sentra 750	Sentra 1000	Sentra 1500	Sentra 2200	Sentra 3000
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 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						
Security		EN62040-1-1, UL1778				
Standard EMC		EN62040-2, EN61000-3-2, FCC Class A				
Marking		CE, UL, cUL, FCC				

Sentra XL Rack Configuration

Sentra XL Tower Configuration

Sentra XL 1000-3000

Line-interactive Pure Sine Wave Extended Runtime UPS

- Highly efficient line interactive sine wave UPS with 0.9 output power factor
- Optional external battery packs 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

Nominal Specifications

Model	Sentra XL 1000	Sentra XL 1500	Sentra XL 2200	Sentra XL 3000
120Vac Part Numbers	**0170005**	**0170006**	**0170007**	**0170008**
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			

Model		Sentra XL 1000	Sentra XL 1500	Sentra XL 2200	Sentra XL 3000
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 27.6D	
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					
Security		EN62040-1-1, UL1778			
Performance		EN62040-3			
Standard EMC		EN62040-2, EN61000-3-2, FCC Class A			
Marking		CE, UL, cUL, FCC			

Battery Pack

Model		Sentra XL 1000	Sentra XL 1500	Sentra XL 2200	Sentra XL 2200
Part Number		**0320000-001**	**0320001-001**	**0320002-001**	**0320003-001**
Battery Type		7Ah	9Ah	7Ah	9Ah
Output Voltage		24Vdc	24Vdc	48Vdc	48Vdc
Battery Quantity		8	8	8	8
Unit Weight		29kg (63.93lbs)	33.4kg (73.64lbs)	29kg (63.93lbs)	33.4kg (73.64lbs)
Dimensions	mm	88H x 440W x 482D			
	inches	3.5H x 17.3W x 18.98D			

Continuity Rack Configuration

Continuity Tower Configuration

Continuity 1000-3000

Convertible Indoor On-line UPS Series

- Feature rich on-line UPS series with rack / tower convertible design and 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

Nominal Specifications

Model	Continuity 1000	Continuity 2000	Continuity 3000
120Vac Part Numbers	**0170009**	**0170010**	**0170011**
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	7Ah	9Ah
Quantity	3	6	6
Voltage	36Vdc	72Vdc	72Vdc
Recharge Time	3 hours to 90%		
Built-in Charger (max. Charging Current)	1.8A	2.1A	2.7A

Model		Continuity 1000	Continuity 2000	Continuity 3000
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		
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		
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	
	inches	17.3W x 3.5H x 16D	17.3W x 3.5H x 25.6D	
Input Connector		5-15P	5-20P	L5-30P
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 1m/3.3ft)		
Computer Interface				
Interface Type		Standard RS232 and USB		
Communication Slot		Dry Contact Card or SNMP card		
Agency Compliance				
Safety Standard		EN62040-1 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
Part Numbers		**0320004-001**	**0320005-001**	**0320006-001**
Battery Type		7Ah	7Ah	9Ah
Output Voltage		36Vdc	72Vdc	72Vdc
Battery Quantity		12pcs		
Unit Weight		38kg (83.8lbs)	38kg (83.8lbs)	44.6kg (83.8lbs)
Dimensions	mm	88H x 440W x 650D		
	inches	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 Rack Configuration

Continuity Tower Configuration

Continuity 6K-10K

Indoor On-line UPS Series

- 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

Nominal Specifications

Models	Continuity 6K	Continuity 10K
Part Number	**0170012**	**0170013**
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 (no internal batteries in UPS)
DC Start	Yes	

*120Vac output requires optional transformer module

Model		Continuity 6K	Continuity 10K
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	
Mechanical			
Dimensions	mm	88H x 440W x 543D	132H x 440W x 680D
	inches	3.46H 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			
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

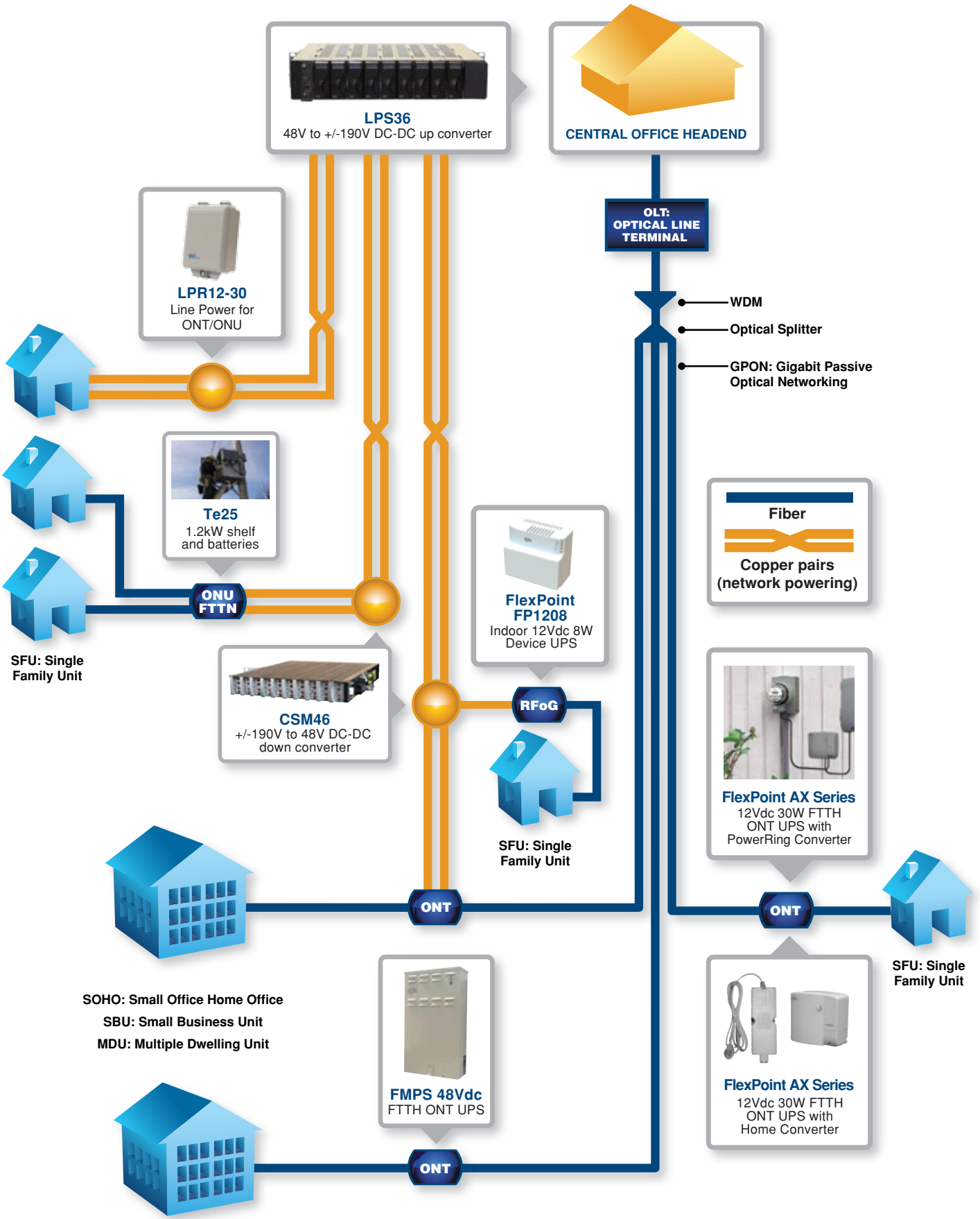
Model		BP Continuity 6K	BP Continuity 6K
Part Numbers		**0320007-001**	**0320008-001**
Battery Type		7Ah	9Ah
Battery Quantity		20pcs	
Output Voltage		240Vdc	
Unit Weight		54.2kg (119.49lbs)	65.2kg (143.74lbs)
Dimensions	mm	132H x 440W x 680D	
	inches	5.2H x 17.3W x 26.8D	

Step-Down Transformer

Model		Continuity 6K	Continuity 6K
Part Numbers		**7400117**	**7400118**
Input Voltage		208Vac	208Vac
Output Voltage		Configurable 120Vac or 120/208Vac or 120/240Vac	
Unit Weight		42kg (92.6lbs)	53kg (116.84lbs)
Dimensions	mm	88H x 440W x 680D	132H x 440W x 680D
	inches	3.46H x 17.3W x 26.8D	5.2H x 17.3W x 26.8D

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 excel in the most demanding environmental conditions while optimizing battery life and performance.


LPS36
48V to +/-190V DC-DC up converter
CENTRAL OFFICE HEADEND
OLT:
OPTICAL LINE
TERMINAL
WDM
Optical Splitter
GPON: Gigabit Passive
Optical Networking
LPR12-30
Line Power for
ONT/ONU
Te25
1.2kW shelf
and batteries
ONU
FTTN
SFU: Single
Family Unit
FlexPoint
FP1208
Indoor 12Vdc 8W
Device UPS
Fiber
Copper pairs
(network powering)
CSM46
+/-190V to 48V DC-DC
down converter
RFoG
SFU: Single
Family Unit
FlexPoint AX Series
12Vdc 30W FTTH
ONT UPS with
PowerRing Converter
ONT
ONT
SFU: Single
Family Unit
SOHO: Small Office Home Office
SBU: Small Business Unit
MDU: Multiple Dwelling Unit
FMPS 48Vdc
FTTH ONT UPS
FlexPoint AX Series
12Vdc 30W FTTH
ONT UPS with
Home Converter
ONT

FlexNet™ MPS 48-7

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

- 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
120V 240 Battery Heater Mat Kit: 189-312-10

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
inches:.....17.5H x 12.7W x 5.25D
Weight (w/o 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
Seismic Zone 4 rated per GR-63
Complies with IPx5 water intrusion criteria per IEC 60529 standard

FlexNet™ FMPS

Multipurpose Power Supply

- 150W Fibre-to-the-premise UPS for multiple dwelling, multiple tenant and small business unit applications
- Supports one or two MDU/SBU ONTs located up to 100ft from FMPS
- Battery management performs periodic battery capacity testing and status reporting to the ONT and customer
- Built-in battery heater provides extended runtime for applications in cold winter conditions
- Hybrid 16AWG and alarm cable minimizes installation labor
- Status indicators and audible alarm provide local status
- Option for dry contact and Packet Cable compliant telemetry connections to ONT and MTA

FlexNet FMPS, 120V Line cord, 150W, 48Vdc out, -40°C (-40°F)
P/N: 010-592-20-052
FlexNet FMPS, FTTX Multipurpose PS, 120V line cord, -40°C (-40°F)
P/N: 010-592-20-053
Dry contact alarm extension kit for 4 x MTA loads: 0370016-001
Alarm relay kit for ONT loads: 0370037-001

Electrical

AC input:
Voltage: .....90 to 320Vac
Frequency: .....45 to 66Hz
Surge protection:.....ANSI/IEEE Std. C62.41 to Category A, B, or C requirements, using a "Ring Wave" or "Combination" waveform, at a level of 6kV
Output:
Operational:.....150W continuous - 170W, 10 sec max.
Voltage: .....48 to 58Vdc w/AC power
42 to 58Vdc with battery
Current:.....3.1A typical (crowbar limited beyond 5A DC)
Power loading:.....Following GR-909 telephone lines in various states, e.g., ringing, off-hook, on-hook, data, and video operation requirements.
Ripple:.....Less than 3mVrms
Noise:.....Less than 100mVp-p
Output connection: .....Two terminal blocks accepting 16AWG, parallel connections

Performance / Features

Battery: .....Four or eight 7.2Ah or 8Ah valve regulated lead acid (VRLA) (batteries sold separately)

Mechanical

Model		FMPS	FMPS + shipping carton
Dimensions	in	14W x 23.75H x 5.5D	17W x 28.5H x 11.75D
	cm	35.6W x 60.3H x 14D	35.6W x 60.3H x 14D
Weight		11.3kg (25lbs)	13.6kg (30lbs)

Environmental

Operating:
Temperature: .....-40 to 46°C (-40 to 115°F) plus solar loading
Humidity: .....0 to 95% RH non-condensing
Elevation: .....0 to 10000ft (0 to 3000m) elevation
Storage:
Temperature: .....-15 to 85°C (-5 to 185°F) plus solar loading
Humidity: .....0 to 95% RH non-condensing
Elevation: .....0 to 50000ft (0 to 15000m)

User Interface

Local Alarms
System LED:.....Green steady = system output normal,
DC output Off = no AC or battery power
Battery LED: .....Yellow steady = system on battery
Off = normal mode
Replace battery:.....Red steady = replace one or two battery strings
Off = batteries within parameters
Replace battery
A&B (internal):.....Red steady = replace one or both battery strings
Off = batteries within parameters

Remote Alarms
Connection:.....Two five position IDC 24AWG, parallel connections
Pin 1 alarm return: .....Open collector return reference
Pin 2 AC fail: .....On battery
Pin 3 replace battery: .....One or both battery strings failed periodic self test
Pin 4 missing battery:.....Less than eight batteries
Pin 5 battery low: .....Battery string voltage is less than 46.8Vdc

Local - Audible Indicator
Alarm on: .....“Alarm Enable/Disable” toggle switch located on UPS
Batteries below voltage parameters

Agency Compliance

CSA/UL 60950, EN 60950, EN 55022 class B, FCC part 15 class B, GR-63 Sect 4.2 fire resistance, GR-1089 Sect 3 emissions, Sect 4 lightning and AC power fault, Sect 7 electrical safety, CE, C-Tick, RoHS 5 of 6

FlexNet™ ELPM-300

Element Powering - 48Vdc 300W UPS

- 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 256Wx 83D
inches:..... 6H x 10.1W x 3.3D
Weight:..... 4.5kg (10lbs)
Mounting:..... Bracket mounted inside enclosure

Environmental

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

- 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

Consult your Alpha representative for P/N configurations

LPE Enclosure Specifications

Dimensions:
mm: ..... 661H x 420W x 305D
inches: ..... 26H x 16.5W x 12D
Weight: 11.3kgs (25lbs)
Material: ..... Exterior powder coated 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 & GMR Enclosures Specifications

PMR-S1 dimensions:
mm: ..... 818H x 660W x 489D
inches: ..... 32.2H x 26W x 19.3D
Weight: 18kg (40lbs)

GMR-S1 dimensions:
mm: ..... 787Hx 699W x 508D
inches: ..... 31H x 27.5W x 20D
Weight: 22kg (49lbs)

PMR-S2 dimensions:
mm: ..... 940H x 762W x 489D
inches: ..... 37H x 30W x 19.3D
Weight: 21kg (47lbs)

GMR-S2 dimensions:
mm: ..... 965H x 787W x 508D
inches: ..... 38H 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

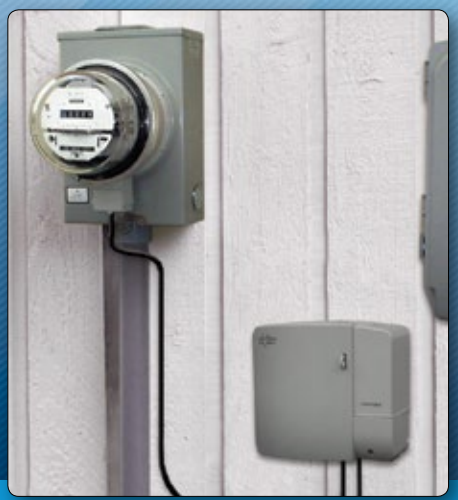
Fiber strain relief tie bar optional:
19" mounting provides ability to strain relief fiber cable plugged into the front of communications equipment

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
- Safe, low-voltage distribution
- 30W with battery module, 24W without battery module

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

FlexPoint™ AX Series

Module Descriptions

Power-Ring

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.

200A continuous, 240A rated

- **AX-POWER-RING-A (power tap after meter)**
  P/N: 021-053-10-021
- **AX-POWER-RING-B (power tap before meter)**
  P/N: 021-053-10-020

320A Continuous, 400A Rated

- **AX-400ARING-A (power tap after meter)**
  P/N: 021-053-10-030
- **AX-400ARING-B (power tap before meter)**
  P/N: 021-053-10-031

Dimensions:
mm: ..... 120H x 178Dia
inches: ..... 4.75H x 7.0Dia
Weight: 0.68kg (1.5lbs)

Battery Modules

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.

AX-12D-BBPS-7.2 — P/N: 031-264-10-022
Dimensions:
mm: ..... 203H x 230W x 102D
inches: ..... 8.0H x 9.0W x 4.0D
Weight: ..... .68kg (1.5lbs)

AX-12D-BBPS-17 — P/N: 031-192-10-032
Dimensions:
mm: ..... 355H x 241W x 127D
inches: ..... 14H x 9.5W x 5.0D
Weight: 2.04kg (4.5lbs)

Home Converter

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.

AX30-12D-HC — P/N: 010-318-10-039
Dimensions:
mm: ..... 209H x 70W x 38D
inches: ..... 8.25H x 2.75W x 1.5D
Weight: 0.32kg (0.7lbs)

Power-Ring Converter

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.

AX30-12D-PC — P/N: 010-318-10-034
Dimensions:
mm: ..... 209H x 51W x 51D
inches: ..... 8.0H x 2.0W x 2.0D
Weight: 0.32kg (0.7lbs)

The UPS Modules

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.

AX-12D-7.2Ah (for 7.2Ah battery) — P/N: 745-816-10-023
AX-12D-17Ah (for 17Ah battery) — P/N: 745-816-10-022

Batteries

The FlexPoint AX battery modules use valve regulated lead acid (VRLA) AGM batteries.

7Ah Standard-life battery, 1-year warranty
P/N: 1810007
Weight: 2.4kg (5.29lbs)

7Ah Long-life battery with wide temperature range, 3-year warranty, P/N: 1810063
Weight: 5.5kg (12.130lbs)

FlexPoint™ 1208F, 1215, 1232 & 1250

FTTH UPS Power Series

- Telecommunications grade power system provides 8W, 15W, 32W & 50W of 12Vdc UPS power for FTTH and radio frequency over glass (RFoG) applications
- Replaceable, 5Ah to 12Ah battery
- Battery management system provides optimum service life and runtime
- Local visual and audible status indicators and remote alarm interface
- Packet Cable™ interface options
- Enhanced surge protection of 6kV

Input OPS

AC input voltage: ..... 110Vac or 240Vac
AC input frequency:..... 50/60Hz
Surge protection:..... ANSI/IEEE Std. C62.41 to category A, B or C requirements using a "ring wave" or "combination" waveform at a level of 6kV

Auxiliary power (use alkaline battery pack)
Coax jack connector
OD dimensions:
inches: 0.14
mm:..... 3.8
ID dimensions:
inches: 0.05
mm:..... 1.3
Input voltage range: ..... 9.5 ~ 20Vdc

Indicators

Visual indicators
AC power:..... Green LED On: AC power present and powering the ONT
Battery:..... Green LED On: Battery powering ONT during AC loss
Green flashing:..... Battery powering ONT during AC loss and running low
Replace battery:..... Red LED Off: Battery present and working correctly
Red LED On: ..... Replace battery / battery missing
Auxiliary power indicator:.. Green LED light: AUX power connected

Audible status indicators
Loss of input power: ..... Single, one second chirp
Low battery:..... Single chirp every 15 seconds at 25% SOC
Replace battery:..... Double chirp spaced fifteen minutes apart

Push buttons
DC start: ..... Press and hold when unit is off to start up on battery without AC present
Silence alarm:..... When any audible alarm is on, press this key at least 1 second and release to silence the audible alarm until power is cycled

Interface

DC output:..... Removable screw terminal plug accepts (2) 16AWG and (5) 24AWG wires or F-Type Coaxial (1208F)
AC input: ..... IEC 320/C6 inlet
Line cord: ..... NEMA 5-15 to IEC 320 C5 (other power cords available upon request)

Supporting Options

AX-STDBAT-5:..... Battery 5.1Ah AGM, 1 year warranty
AX-LONGBAT-5: ..... Battery 5.1Ah AGM, 3 year warranty
AX-STDBAT-6.5: ..... Battery 6.5Ah AGM, 1 year warranty
AX-STDBAT-7: ..... Battery 7.2Ah AGM, 1 year warranty
AX-LONGBAT-7:..... Battery 7.2Ah AGM, 3 year warranty
AX-LONGBAT-8: ..... Battery 8.0Ah AGM, 3 year warranty
AX-STDBAT-12: ..... Battery 12Ah AGM, 1 year warranty
FTTH-CBL:..... ONT hook-up cable, 2x16AWG and 5x24AWG, CMX UL listed
12Ah cover: ..... 12Ah battery cover and velcro strap

Warranty

FlexPoint 1208F, 1215, 1232 & 1250:..... 1 year repair or replace
Batteries available: ..... 1 year or 3 year

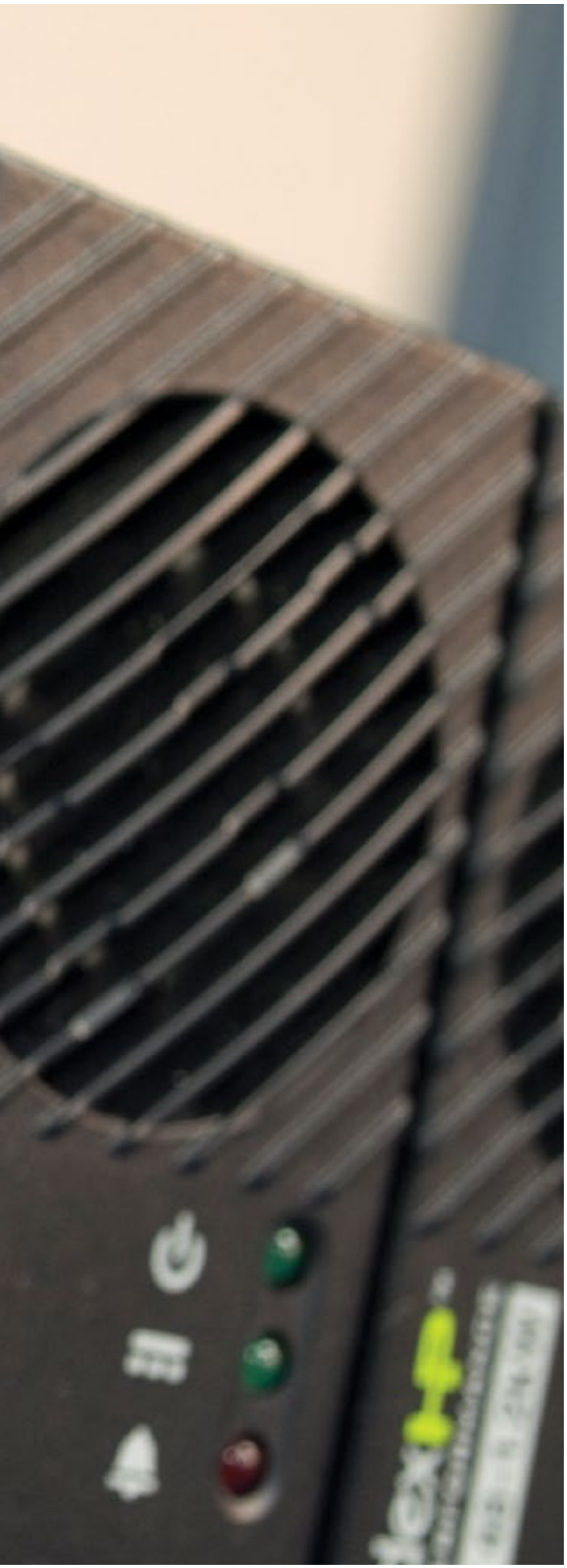
Agency Compliance

System: ..... FCC part 15 Class B, CSA-NRTL\C (60950-1), CE, C-Tick

Model		FP1208F	FP1215	FP1232	FP1250
Output					
Operational output power (ONT load)		8W max continuous	15W max continuous	32W max. continuous	50W max. continuous
Output voltage		12 Vdc nominal (battery voltage upon loss of AC)			
Mechanical					
Dimensions 5, 6.5, 7.2 or 8Ah battery	mm	167.6H x 190.5W x 83.3D	167.6H x 190.5W x 83.3D	—	—
	inches	6.6H x 7.5W x 3.2D	6.6H x 7.5W x 3.2D	—	—
Dimensions 12Ah battery	mm	—	—	167.6H x 190.5W x 109.3D	167.6H x 190.5W x 109.3D
	inches	—	—	6.6H x 7.5W x 4.3D	6.6H x 7.5W x 4.3D
Weight w/o battery		0.54 (1.2lbs)	0.54 (1.2lbs)	0.58 (1.3lbs)	0.63 (1.4lbs)
Battery weight					
5.0Ah battery weight		1.8 (3.9lbs)			
6.5Ah battery weight		1.97 (4.3lbs)			
7.2Ah battery weight		2.6 (5.7lbs)			
8.0Ah battery weight		2.7 (5.73lbs)			
12Ah battery weight		3.8 (8.4lbs)			
Environment					
Storage temperature		-20 to 45°C (4 to 113°F)			
Operating temperature		-20 to 45°C (4 to 113°F)			
Humidity		5 to 95% non condensing			
Elevation operation maximum		3,000m (10,000ft) derate at 2°C (35.6°F) per 304.8m (1,000ft) above 1,828.8m (6,000ft)			
Elevation storage maximum		15,000m (50,000ft)			
Models and Input Power Line Cords					
120VAC 3-conductor NEMA 5-15		FP-1208F-5A	FP-1215-5A	FP-1232-8A	FP-1250-12A
230VAC 3-conductor Schuko		FP-1208F-5B	FP-1215-5B	FP-1232-8B	FP-1250-12B
230VAC 3-conductor United Kingdom		FP-1208F-5C	FP-1215-5C	FP-1232-8C	FP-1250-12C
240VAC 3-conductor Australia/ New Zealand		FP-1208F-5D	FP-1215-5D	FP-1232-8D	FP-1250-12D
120VAC 3-conductor NEMA 5-15 power cord with BC cable		—	—	FP-1232-8-6C	FP-1250-12-6C

Battery Runtimes						
	7.5W Load	15W Load	16W Load	32W Load	36W Load	50W Load
5.0Ah battery	5.8 hrs	2.1 hrs	2.0 hrs	1.4 hrs	1.2 hrs	0.9 hrs
6.5Ah battery	7.4 hrs	4.4 hrs	4.2 hrs	1.8 hrs	1.5 hrs	1.0 hrs
7.2Ah battery	13.6 hrs	5.2 hrs	4.9 hrs	2.1 hrs	1.9 hrs	1.3 hrs
8.0Ah battery	13.6 hrs	5.2 hrs	4.9 hrs	2.1 hrs	1.9 hrs	1.3 hrs
12Ah battery	18.7 hrs	8.1 hrs	7.5 hrs	3.4 hrs	2.8 hrs	1.9 hrs
Battery type	Maintenance free, leak-proof, sealed valve regulated lead acid (VRLA)					


CXCM
AIV
MODEM
RST



Controllers and Communications

Whether it's a UPS being programmed for time of day operation at a traffic 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 features software that 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.

The Cordex™ CXC is Alpha's family of advanced digital controllers for power system monitoring and control. Cordex™ supervisory controllers come in a wide array of modular designs for integration into Alpha power systems. Alpha's CXC family of controllers communicates 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. The common Cordex software platform lowers craft training costs, by providing technicians with a familiar user interface whether working on a 10,000 Amp rectifier plant, a shelf-based converter or an AMPS80 Inverter.

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 lower energy and operational expenses, feature standard advanced management features such as innovative PowerSave™ that improves overall system efficiency. 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.

Cordex™ Controller Features

General

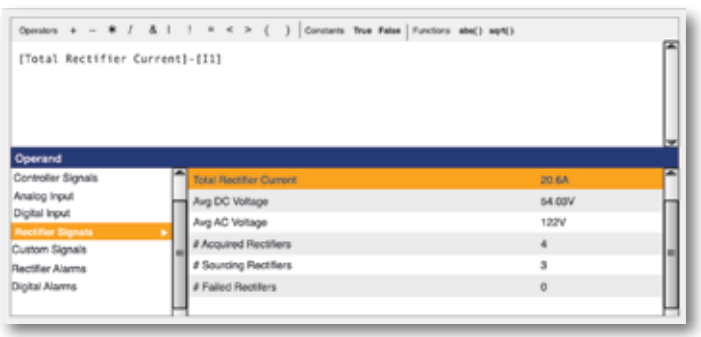
- **Web based GUI interface:** Web browser support for local or remote control and monitoring of power system
- **Single point setup and control**
- **Power save function:** Improves operational efficiency by running minimum number of rectifier modules required depending on system load
- **SNMP support:** Network management service support for managing multiple systems in a single network
- **Email notifications:** Via TCP/IP
- **User programmable logic statements:** Create an event or alarm based on criteria you define
- **Multiple preset alarms:** Ability to configure up to 20 customized alarms
- **Configurable form C relay outputs**
- **Analog and digital inputs**
- **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
- **System start delay:** Allows delay for other AC powered equipment to start before rectifiers
- **Ramp test control:** Disables fail alarm on no-load conditions
- **Auto voltage adjustment and load sharing**
- **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
- **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

- **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
- **Dynamic charge current control:** Limits battery recharge current to a fixed value, helps to prevent thermal runway
- **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 runway
- **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

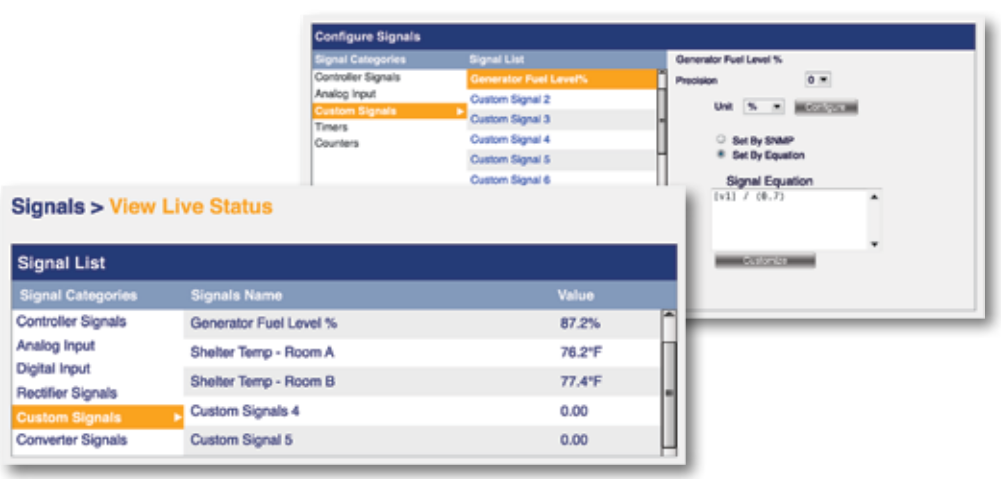
Maintenance

- **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



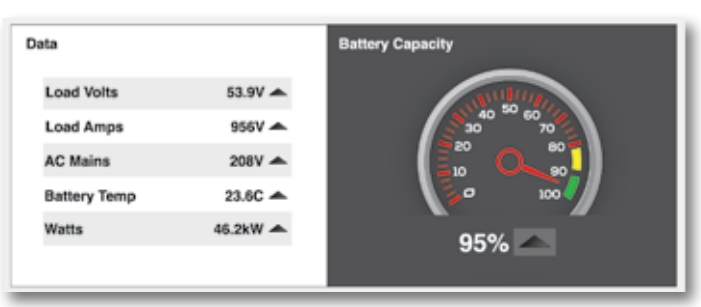
Advanced Equation Editor

Access all internal controller signals and create custom alarms and signals using Boolean expressions and logical operators. Interface combines ease of use with advanced logic and control capabilities (e.g., Generator cycle charge control)



Custom Signals

Customize remotely via SNMP set commands or via the integrated equation editor. Custom unit of measures available for creating various signal types. Timers and Counters allow for advanced functionality (e.g., Generator cycle counter and runtime)



SNMP communication

For remote alarming and network/fleet management applications. Configure 3rd party network management systems for custom display and graphics using Cordex control alarms and signal values.

Cordex™ CXCI+

System Controller

- Compact controller option for 2RU rectifier and DC/DC converter shelves
- Modular, hot swappable design for 1.8/2.0kW CXRF, 2kW CXDF and LPS shelves
- Internet ready and remotely accessible for complete system monitoring and control
- Advanced battery monitoring and power save features for Op-Ex savings
- Highly configurable platform with user definable alarms and data logging

Consult your Alpha representative for P/N configurations

Performance / Features

User Interface

GUI: Embedded web based GUI accessed via ethernet using web browser
Display: 4 Segment LCD display for V & I display
Audio: Built in speaker for audible alarm
LED indicators: System OK – Green
Minor alarm: Yellow
Major alarm: Red

Key Features

- Power save (optimizes rectifier efficiency)
- Power on delay start
- Temperature compensation
- Manual, auto & periodic equalize
- Dynamic charge current control
- Battery runtime & capacity indication
- Auto or manual battery test mode
- User configurable alarms and signals
- Languages for english, chinese & 3rd language option
- Downloadable software & firmware upgrades
- Lithium battery backup for real time clock

Communication

Alarm relays: Potential free Form C contacts
SNMP: SNMP v2.5 via ethernet
Requires SNMP management software
Email: SMTP via ethernet or modem

Communication Ports

CAN: Interface to Cordex series rectifiers, DC/DC converters and optional smart peripherals
Ethernet: 10/100 Base T with half/full duplex

System I/O

Alarm relays: 4 (3 + 1 internal on some models)*
Voltage inputs: 1 + 1 internal
Temp inputs: 2
Current inputs: 1 (0 + 1 internal on some models)
Digital inputs: 2

*I/O identified as internal are used in some configurations for internal monitoring and control and are not available for external connection

Log Files

Daily statistics: Min., max. and average on analogue input channels with date and time stamp
Battery current, rectifier current and AC mains voltage for last 90 days
Event log: All events such as alarms, power on, change of state on digital inputs or other events
Battery log: Battery health history on last 20 discharges with time of discharge and battery capacity.
Data logging: Up to 16 user configurable logs of all system signals including Smart Peripherals

Electrical

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

Mechanical

Dimensions:
mm: 88H x 26W x 280D
inches: 3.5H x 1W x 11D
Mounting: Modular option for Cordex™ 2RU series shelves

Environmental

Temperature: -40 to 65°C
Humidity: 0 to 95% RH non-condensing

Related Components

036-201-20-000: CXCI I/O terminal block extension with 25-pin D-sub cable for 1.8/2.0kW rectifier shelves

Agency Compliance

Safety: UL/CSA C22.2 No 60950-1
IEC/EN 60950-1
CE marked
EMC: ETSI 300 386
Emissions: CFR47 (FCC) Part 15 Class A
ICES-03 Class A
EN55022 (CISPR 22) Class A
C-tick (Australia)
Immunity: EN 61000-4-2,-3,-4,-5,-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 OPEX savings
- Highly configurable platform with user definable alarms and data logging

P/N: 0180030-004
P/N: 0180030-005

Electrical

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

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)

System I/O:
Alarm relays: ..... 7 (6+1 on some systems)
(3+1 on some systems)
Voltage inputs: ..... 1+1 internal
Current inputs: ..... 1 (0+1 internal on some systems)
Temperature inputs: 2
Digital inputs: 2

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™ CXCR/CXCP

System Controller

- Flexible rack and panel mount controller for use with Cordex™ rectifier and DC/DC converter 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)
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 (expandable to 16)

Mechanical

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

Dimensions (excludes mounting brackets):
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

- 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 and MODBUS TCP/IP 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
- Integrated Ground Fault Detection (GFD) circuit to ensure system safety

P/N: 018-570-20

Electrical

Input voltage: .....90 to 300Vdc

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)

Ground Fault Detection: Built in user adjustable 0-10mA

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

Mechanical

Mounting:.....19" or 23" rack mounting

Dimensions (excludes mounting brackets):
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/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 / 7 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 33.4W x 10.11D	3.4H x 5W x 9.7D	7H x 3.4W x 10.1D

Model	CXCI/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/CXCM1+	CXCM2	CXCM4	CXCI/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

Cordex™ 8R/8D ADIO

CXC Smart Peripheral

- Provides additional I/O expansion to existing CXC controller
- Seamless expansion of eight relay outputs and eight digital inputs
- Flexible 1RU rack mounting and wall mount system integration options
- Ideal for monitoring and controlling supplemental equipment such as HVAC and generators
- Enhances site monitor capabilities simplifing deployments and saving CAPEX costs

P/N: 0180002

Electrical

Power supply:
Voltage: .....9V to 60Vdc
Current:.....500mA
Power:.....5W

Digital inputs:
Inactive voltage: .....-1.5 to 1.5V
Active voltage:.....±5 to 60V

Relay outputs:
Voltage: .....Up to 60V
Current:.....500mA

User Interface

Status indication:
LED:.....Power on (green)
Module acquired (green)

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

Operating:
Temperature: .....-40 to 75°C (-40 to 167°F)
Humidity: .....0 to 95% non-condensing

Related Components

Rack mount shelf:.....030-734-20

Agency Compliance

Unit is designed to meet the following standards

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

SD08

Battery Mid-Point Monitor

- Simple and cost effective battery status monitoring solution
- 24 or 48Vdc universal input
- Flexible rack and wall mount installation options
- Local and remote indication of pass/fail status

P/N: 747-109-20-040

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

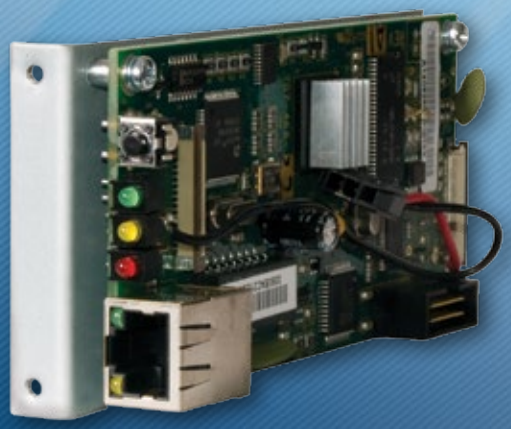
Mechanical

Dimensions:
mm:..... 38.1H x 114.3W x 25.4D
inches: ..... 1.5H x 4.5W x 1D
Mounting:..... 19" rack mount (4 modules)
23" rack mount (5 modules)
Wall mount (1 modules)

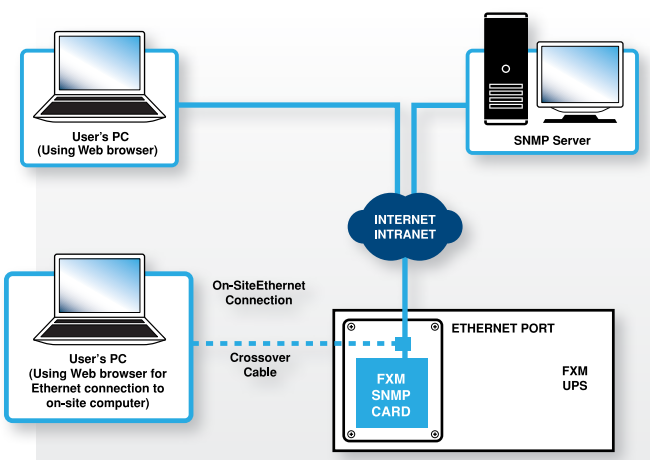
Environmental

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

FXM Micro Communication Card



- For greater effectiveness, control and communication with your UPS system
- The card allows for communication with the Alpha UPS remotely through a web based interface
- The card is powered by the UPS batteries eliminating the need for an external power source
- Capable of providing notifications to different email addresses
- 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



Web interface/GUI

The card provides a web based graphical user interface (GUI) designed to help Alpha FXM/Micro UPS users monitor, control and set various parameters. With a computer and a crossover RJ-45 cable, users are able to see UPS parameters, relay configurations, events and warnings through a web browser. It is an excellent maintenance and troubleshooting tool that updates information every 5 seconds and logs 250 events with time and date stamp. The UPS event log can be saved to a PC via RS232 using Alpha UPS Monitor Software.

Get real-time notification of every alarm and fault that occurs so you can respond proactively. Easy to customize, it allows you to set your own notification preferences and receive it on any PC, smartphone or a tablet that can receive email.

*FXM/Micro communication card is optional on some models, check with your Alpha representative for more details


TECHNOLOGIES™
cordexHP™
HIGH PERFORMANCE
CXRF HP 48-4kW

Power Modules

Alpha's power modules are the engines of our power solutions. Our modules convert AC to DC (rectifiers), DC to DC (converters) and DC to AC (inverters). Featuring high power density, high efficiency, and high reliability, the power conversion modules come in various form factors and power ranges to match the unique needs of our customers. Many of the modules operate in high temperatures, making them ideal for harsh environments including outdoor enclosures.

Rectifiers, DC-DC converters and 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 range from 250W to 12,000W per module, providing the utmost flexibility in power system design. Multiple DC output and AC input options are available to provide the right solution for most telecommunications and utility applications. The hot-swappable, modular rectifiers are controlled and monitored by the Cordex family of controllers, ensuring customer access and management of the modules and the system.

A unique blend of advanced features enables Cordex rectifiers to offer significant operational and capital savings. High power density modules provide users with greater rack space for additional revenue generating equipment in space restricted environments. High efficiency rectifiers reduce power consumption. Fan cooled rectifier options are industry leading in terms of high temperature operation in harsh environments. And the inherent high reliability of the Alpha design ensures a long product life.

cordex HP™
HIGH PERFORMANCE

Cordex HP™ 300W

Modular Switched Mode Rectifier

- High performance 300W rectifier provides unique combination of size, efficiency and performance
- 94% Efficiency for increased OPEX savings and reduced carbon footprint
- Wide range AC input for worldwide installation requirements
- Wide temperature operating range for installation in harsh outdoor and indoor environments

P/N: 0100010

Electrical

Input voltage:
Standard:.....90 to 265Vac
Maximum:.....300Vac (without damages)
Input frequency:.....47 to 63Hz
Power factor:.....99%
Input current:.....1.40A @ 230Vac
3A @ 110Vac
Efficiency:.....95%
Output:
Voltage:.....43 to 58Vdc
Power:.....300W
Current:.....5.6A @ -54Vdc
Load regulation:.....±0.5%
Line regulation:.....±0.2%
Wide band noise:.....<10mVrms
Psophometric noise:.....<2mVrms
Acoustic noise:.....<49dBA

Performance / Features

Indicators:
- LED off - no power available
- Green LED - no failure
- Orange LED - stand by (remote off)
- Red LED - Low DC voltage (<37Vdc)
- Blinking red LED - AC failure, thermal failure or short circuit

Protections:
- Mains out of range (input fuse)
- Output overvoltage
- Output overload
- Short circuit current
- Smart power derating
- Thermal shutdown
- Hot swap

Mechanical

Dimensions:
mm:.....41.5H (1U) x 86W x 166D
inches:.....1.6H x 3.4W x 6.5D
Weight:.....0.57kg (1.2lbs)

Environmental

Temperature:
Standard:.....-40 to 70°C (-4 to 158°F)
Storage:.....-40 to 85°C (-40 to 185°F)
Humidity:
Operating:.....20 to 80% RH non-condensing
Storage:.....10 to 95% RH non-condensing
Elevation:.....Up to 3000m (9842ft)
Cooling:.....Fan cooled (front to rear)

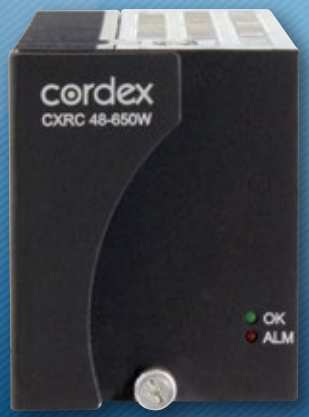
Related Components

Shelf:
0300072:.....Power shelf with 3 rectifier slots, DC distribution and control unit
Supervisory:
7400325:.....Comp@s communication card
Accessories:
0100010-001:.....Blank plate for rectifier slot

Agency Compliance

Safety:.....EN60950
CE marked
Environment:.....IEC 60068-2-27
ETSI EN 300 019-1-3 class 3.4
EMC:.....ETSI EN 300386
NEBS:.....GR-1089-CORE
GR-63-CORE
GR-3108-CORE

*Consult factory for certification status



Cordex 650W

48Vdc Modular Switched Mode Rectifier

- Available in 13.5A @ 48Vdc
- Universal 120V/208 to 240V single phase AC input
- Power limiting and wide range AC input
- 91% efficiency and power factor correction
- Convection cooled
- Hot swappable, 2RU ultra compact design

120V model P/N: 010-571-20
Universal 120/240 model P/N: 010-570-20

Electrical

Input voltage (120Vac model):
Operating: .....90 to 140Vac (output power 650W)
Extended: .....90 to 70Vac (de-rated output power)
Power output: .....650W at nominal 120Vac

Input voltage (universal 100 to 240Vac model):
Operating: .....176 to 320Vac (output power 650W)
Extended: .....176 to 90Vac (de-rated output power)
Operating: .....100 to 140Vac (output power 500W)
Power output: .....650W at nominal 208 to 240Vac & 500W at nominal 120Vac
Input frequency:.....45 to 70Hz
Power factor: .....>99%
THD:.....<5%
Efficiency:.....>90%
Output:
Voltage: .....42 to 58Vdc
Current:.....12A @ 54Vdc (13.5A max)
Load regulation:.....Static <±0.5%
Dynamic <±1% for 40 to 90% load step
2ms recovery time
Line regulation:.....Static <±0.1%
Dynamic <±1% for any change within rated limits
Wide band noise: .....<10mVrms
<100mVp-p
Psophometric noise:.....<1mV Rms

Performance / Features

Indicators: .....AC mains OK—green LED
Module alarm—red LED
Cooling: .....Natural convection

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

Protection:
- Current limit/short circuit
- Output high voltage shutdown
- Thermal foldback/shutdown
- AC low line foldback/shutdown
- Input/output fuses
- Output power limiting
- Input transient
- 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
- EN55022 (CISPR 22) Class B
- EN 61000-3-2
- ICES-03 Class B
- C-Tick (Australia)
- EN 61000-3-3

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

Cordex™ 1kW

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
Current: ..... 18.5A @ 54Vdc (20.8A max)
Load regulation: ..... <±0.5% (static)
Line regulation: ..... <±0.1% (static)
Transient response: ..... ±1% for 50 to 100% load step, 2ms recovery time
Noise:
Voice band: ..... <32dBrnC
Wide band: ..... <5mVrms
<100mVpk to pk
Psophometric: ..... <1mV

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
- High and low voltage alarms
- Current limit
- Slope %
- Battery test voltage
- High voltage shutdown
- Start delay timers

Protection:
- Current limit/short circuit
- Input/output fuses
- Output power limiting
- Input transient
- AC high voltage shutdown
- Start delay
- Output high voltage shutdown
- Thermal foldback/shutdown
- AC low line foldback/shutdown

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
- EN55022 (CISPR 22) Class B
- EN 61000-3-2
- ICES-03 Class B
- C-Tick (Australia)
- EN 61000-3-3

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

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/in^3) yields more space for revenue generating equipment
- Wide AC input range for a variety of global installation requirements

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 (via CXC Controller):
- Float and equalize voltage
- High and low voltage alarms
- Current limit
- Slope %
- Battery test voltage
- High voltage shutdown
- Start delay timers

Protection:
- Current limit/short circuit
- Input/output fuses
- Output power limiting
- Input transient
- AC high voltage shutdown
- Start delay
- Output high voltage shutdown
- Thermal foldback/shutdown
- AC low line foldback/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 75°C/167°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
- EN55022 (CISPR 22) Class B
- EN 61000-3-2
- ICES-03 Class B
- C-tick (Australia)
- EN 61000-3-3

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

NEBS / Telcordia: GR-1089-CORE
GR-63-CORE

cordex HP™
HIGH PERFORMANCE

Cordex™ HP 2.0kW

48Vdc Modular Switched Mode Rectifier

- 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: 010-622-020

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 input)
26A @ 48Vdc (@ 120Vac input)
Output power: ..... 2000W continuous @ nominal input
1248W (@ 120Vac)
Load regulation: ..... <±0.5% (static)
Line regulation: ..... <±0.5% (static)
Transient response: ..... ±2% for 40 to 90% load step
Noise:
Voice band: ..... <38dBrnC
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 (via CXC Controller):
- Float and equalize voltage
- High and low voltage alarms
- Current limit
- Slope %
- Battery test voltage
- High voltage shutdown
- Start delay timers

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

Model:		19/23" shelf (4 modules)	23" shelf (5 modules)
P/N:		030-749-20	030-747-20
Dimensions:	mm:	89H x 438W x 310D	89H x 541W x 310D
	in:	3.5H x 17.2W x 12.2D	3.5H x 21.3W x 12.2D
Weight:		8.5kg (19lbs)	10kg (22lbs)
Mounting:		19" flush or center mount	23" flush or center mount
		23" center mount only	

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
- EN55022 (CISPR 22) Class B
- EN 61000-3-2
- ICES-03 Class B
- C-Tick (Australia)
- EN 61000-3-3

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

NEBS: GR-1089-CORE, GR-63-CORE, GR-3108-CORE

NEW

Cordex HP™ 2.4kW

Modular Switched Mode Rectifier

- High efficiency (>96%) for reduced OPEX and carbon footprint
- High temperature operating range for installation in non-controlled environments
- Multiple 48V configurations up to 250A in a compact 1RU shelf system
- Industry leading power density (28W/in³) yields more space for revenue generating equipment
- Wide AC input operating range for global installation requirements

P/N: 0100003-001

Electrical

Input voltage:
Nominal: ..... 187 to 277Vac
Operating: ..... 187 to 310Vac
Extended: ..... 90 to 187Vac (de-rated power)
Input frequency: ..... 45 to 66Hz
Power: ..... 2400W continuous
(1200W output @ 120Vac Input)
Power factor: ..... >0.99 (50 to 100% load)
THD: ..... <5%
Efficiency: ..... >96%
Output voltage: ..... 44 to 58Vdc
Output current: ..... 44.5A @ 54Vdc (50A max.@ 48Vdc)
(~25A @ 48Vdc at 120Vac Input)
Load regulation: ..... <±0.5% (static)
Line regulation: ..... <±0.1% (static)
Transient response: ..... ±2% for 40 to 90% load step
Noise:
Voice band: ..... <32dBrnC
Wide band: ..... <20mV RMS (10kHz to 10MHz)
<100mV pk to pk (10kHz to 100MHz)
Psophometric noise: ..... <1mV RMS
Acoustic: ..... <60dBa @ 1m (3ft), 55C

Mechanical

Dimensions:
mm: ..... 41H x 104x 333D
inches: ..... 1.6H x 4.1W x 13.1D
Weight: 1.76kg (3.9lbs)

Environmental

Temperature:
Operation: ..... -40 to 55°C (-40 to 131°F)
Extended ..... -40 to 75°C (-40 to 149°F), derated power
2000W @ 65°C (167°F)
Storage: ..... -40 to 85°C (-40 to 185°F)
Humidity: ..... 0 to 95% RH non-condensing
Heat Dissipation: ..... <430 BTU per hour

Cordex 48-2.4kW Rectifier Shelves

23in 1RU universal mount 12,000W
P/N: 0300057-001
Rectifiers: ..... 5 x CXRF HP 48-2.4kW
Distribution: ..... Bulk power for external distribution
Dimensions:
mm: ..... 44H x 537W x 420D
inches: ..... 1.75H x 21.1W x 16.5D
Weight: 5.7kg (12.6lbs)

19in 1RU universal mount 9,600W
P/N: 0300040-001
Rectifiers: ..... 4 x CXRF HP 48-2.4kW
Distribution: ..... Bulk power for external distribution
Dimensions:
mm: ..... 44H x 438W x 420D
inches: ..... 1.75H x17.3W x 16.6D

Communications ports: CAN: interface to control rectifiers & smart peripherals

Agency Compliance

Safety: ..... CSA C22.2 No 60950-1-03
CE Marked
EMC: ..... ETSI 300 386
Emissions:
- CFR47 (FCC) Part 15 Class B
- EN 61000-4-3
- EN 61000-3-12
- EN 61000-3-3

Immunity:
- EN 61000-4-2
- EN 61000-4-4
- EN 61000-4-6
- ANSI / IEEE C62.41 CatB3
- EN 61000-4-3
- EN 61000-4-5
- EN 61000-4-11

NEBS/Telcordia: GR-1089-CORE
GR-63-CORE
GR-3108-CORE

cordex HP™
HIGH PERFORMANCE

Cordex HP™ 4.0kW

48Vdc Modular Switched Mode Rectifier

- 95% peak efficiency for reduced operating expenses and carbon footprint
- Available in 83.33A @ 48Vdc
- High power density, over 23kW per 23" shelf
- Power limiting and wide range AC input
- Hot swappable, 4RU ultra compact design
- Backwards compatability with Cordex 3.6kW rectifier shelves and power solutions providing cost effective upgrade path

P/N: 010-623-20

Electrical

Input voltage:
Nominal: ..... 208 to 277Vac
Operating: ..... 187 to 312Vac
Extended: ..... 187 to 90Vac (de-rated power)

Input frequency: ..... 45 to 66Hz
Power factor: ..... >0.99 (50 to 100% load)
THD: ..... <5% (@ 208Vac)
Efficiency: ..... 95% peak
Output voltage: ..... 42 to 60Vdc
Output power: ..... 4000W continuous/module
Float voltage: ..... 48 to 58Vdc
Output current: ..... 74A @ 54Vdc (83.3A max 48V)
Load regulation: ..... <±0.5% (static)
Line regulation: ..... <±0.1% (static)
Transient response: ..... ±3% for 40 to 90% load step,
Noise:
Voice band: ..... <38dBrnC
Wide band: ..... <30mV RMS (10kHz to 10MHz)
<150mV pk to pk (10kHz to 100MHz)
Psophometric: ..... <2mV
Acoustic: ..... <60dBa @ 1m (3ft)

Performance / Features

Indicators: ..... AC mains OK—green LED
Module OK—green LED
Module fail—red LED
Controls: ..... CAN interface to Cordex controllers
Adjustments (via CXC controller):
- Float voltage
- High/low voltage alarm
- Current limit
- Start delay
- Equalize voltage
- High voltage shutdown
- Slope

Protection:
- Current limit/short circuit
- Input/output fuses
- Power limiting
- Input transient
- Start delay
- Output high voltage shutdown
- Thermal foldback/shutdown
- AC low line foldback shutdown

Mechanical

Dimensions:
mm: ..... 160H x 87W x 300D
inches: ..... 6.3H x 3.4W x 11.8D
Weight: 3.9kg (8.6lbs)

Environmental

Temperature:
Standard: ..... -40 to 55°C (-40 to 149°F)
Extended: ..... -40 to 75°C (-40 to 167°F)
derated power (~3600W @ 65°C (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: ..... <1150 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
- EN55022 (CISPR 22) Class B
- EN 61000-3-2
- ICES-03 Class B
- C-Tick (Australia)
- EN 61000-3-3

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

NEBS: ..... GR-1089 CORE
GR-63 CORE
GR-3108-CORE

Cordex HP™ 12kW

Modular Switched Mode Rectifier

- -48V high capacity rectifier for C.O., MSC, Data Center and Cable Headend facilities
- Legacy power system upgrade ready, with Cordex controller
- 95% efficiency for decreased OPEX and reduced carbon footprint
- Wide AC input operating range that satisfies a variety of global installation requirements

P/N: 0100002-002

Electrical

Input voltage:
Nominal: ..... 208 to 240Vac (3PH-3W)
360 to 480Vac (3PH-4W)
Input frequency: ..... 45 to 66Hz
Power: ..... 12,000W continuous/module
Power factor: ..... >0.99 (50 to 100% load)
THD: ..... <5% (@208 Vac)
Efficiency: ..... 95% peak @ 277Vac
Output voltage: ..... 44 to 60Vdc
Float Voltage: ..... 48 to 58Vdc
Output current: ..... 222A @ 54Vdc (249A max. @ 48V)
Load regulation: ..... <±0.5% (static)
Line regulation: ..... <±0.1% (static)
Transient response: ..... ±3% for 40 to 90% load step
Noise:
Voice band: ..... <38dBrnC
Wide band: ..... <20mV RMS (10kHz to 10MHz)
<150mV pk to pk (10kHz to 100MHz)
Psophometric: ..... <2mV
Acoustic: ..... <60dBa @ 1m (3ft)

Performance / Features

Indicators: ..... AC mains OK—green LED
DC output OK—green LED
Module fail—red LED
Controls: ..... CAN interface to Cordex controller
Adjustments (via CXC controller):
- Float voltage
- 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 261W x 300D
inches: ..... 6.3H x 10.2W x 11.8D
Weight: 12kg (27lbs)

Environmental

Temperature:
Standard: ..... -40 to 55°C (-40 to 131°F)
Extended: ..... -40 to 75°C (-40 to 167°F) (derated power)
~10800W @ 65°C (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: ..... <3450 BTU per hour

Shelves

P/N: 030-716-20

23" shelf (2 modules)
Dimensions:
mm: ..... 177H x 530W x 389D
inches: ..... 6.9H x 20.8W x 15.3D
Weight: 14.5kg (32lbs)
Mounting: ..... Fits 23" racks only flush/center mount

Connections
Input: ..... Box type terminal block
6 to 16mm² (10 to 6AWG)
Output: ..... Bus adapters with ⅜" 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
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 61000-3-12
- 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

Cordex™ 400W

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

P/N 010-582-20

Electrical

Input voltage: .....90 to 320Vac
Input frequency:.....45 to 70Hz
Power factor: .....>99%
THD:.....<5%
Efficiency:.....>88%
Power output:.....400W (max)
Output voltage: .....20 to 29Vdc
Output current: .....14A (current limited)
Load regulation:.....Static <±0.5%
Dynamic <±2% for 40 to 90% load step
2ms recovery time
Line regulation:.....Static <±0.1%
Dynamic <±1% for any change within rated limits
Wide band noise: .....<10mVrms
<100mVp-p
Psophometric noise: .....<1mV RMS

Performance / Features

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

Cooling: .....Natural convection

Adjustments (via CXC controller):

- Float voltage
- High/low voltage alarm
- Current limit
- Start delay
- Equalize voltage
- High voltage shutdown
- Slope

Protection:

- Current limit/short circuit
- Input/output fuses
- Power limiting
- Input transient
- Start delay
- Output high voltage shutdown
- Thermal foldback/shutdown
- AC low line foldback 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
- EN55022 (CISPR 22) Class B
- EN 61000-3-2
- ICES-03 Class B
- C-Tick (Australia)
- EN 61000-3-3

Immunity:

- EN 61000-4-2
- EN 61000-4-4
- EN 61000-4-6
- EN 61000-4-3
- EN 61000-4-5
- 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 18kW per 23" shelf
- Power limiting and wide range AC input
- Compliant with the stringent EMI immunity requirements for power station and substation environments
- High efficiency and power factor correction
- Hot swappable, 4RU ultra compact design

P/N: 010-572-20

Electrical

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

Protection:
- Current limit/short circuit
- Input/output fuses
- Power limiting
- Input transient
- Start delay
- Output high voltage shutdown
- Thermal foldback/shutdown
- 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 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
- EN55022 (CISPR 22) Class B
- EN 61000-3-2
- ICES-03 Class B
- C-Tick (Australia)
- EN 61000-3-3

Immunity:
- EN 61000-4-2
- EN 61000-4-4
- EN 61000-4-6
- EN 61000-4-3
- EN 61000-4-5
- EN 61000-4-11
- ANSI/IEEE C62.41 Cat B3
- IEC TS 61000-6-5:2001 Electromagnetic compatibility (EMC) Part 6-5_Generic Standards Immunity for power station and substation environments

NEBS: ..... GR-1089 CORE
GR-63 CORE

Cordex™ 250W

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: ..... <±0.5% (static)
Line regulation: ..... <±0.1% (static)
Transient response: ..... ±2% for 50 to 100% load step
2ms recovery time
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 (via CXC controller):

- Float voltage
- High/low voltage alarm
- Current limit
- Start delay
- Equalize voltage
- High voltage shutdown
- Slope

Protection:

- Current limit/short circuit
- Input/output fuses
- Power limiting
- Input transient
- Start delay
- Output high voltage shutdown
- Thermal foldback/shutdown
- AC low line foldback 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
- EN55022 (CISPR 22) Class B
- EN 61000-3-2
- ICES-03 Class B
- C-Tick (Australia)
- EN 61000-3-3

Immunity:

- EN 61000-4-2
- EN 61000-4-4
- EN 61000-4-6
- EN 61000-4-3
- EN 61000-4-5
- 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 <±0.5%
Line regulation: ..... Static <±0.1%
Transient response: ..... <±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): ..... See page 84

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)
(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 ⅝" centers
Chassis ground: ..... ¼" stud
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 A
- EN55022 (CISPR 22) Class A
- EN 61000-3-2
- ICES-03 Class A
- C-Tick (Australia)
- EN 61000-3-3

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

Cordex™ 1.1kW

220Vdc Modular Switched Mode Rectifier

- Available 5A output @ 220Vdc
- Power limiting and wide range AC input
- 93% efficiency with power factor correction
- Compliant with the stringent EMI immunity requirements for power station and substation environments
- Hot swappable, convection cooled

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 <±0.5%
Line regulation: ..... Static <±0.1%
Transient response: ..... <±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): ..... See page 84

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)
(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
4–6mm² (12–10AWG)
Output: ..... ¼" studs on ⅝" centers
Chassis ground: ..... ¼" stud
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 A
- EN55022 (CISPR 22) Class A
- EN 61000-3-2
- ICES-03 Class A
- C-Tick (Australia)
- 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
- IEC TS 61000-6-5:2001 Electromagnetic compatibility (EMC) Part 6-5_Generic Standards Immunity for power station and substation environments

Cordex™ 4.4kW

Modular Switched Mode Rectifier

- Available in 35A @ 125Vdc or 20A @ 220Vdc
- High power density, 22kW per 19" shelf
- Compliant with the stringent EMI immunity requirements for power station and substation environments
- 92% efficiency and power factor correction
- Hot swappable, power limiting and wide range AC input

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 <±0.5%
Line regulation: ..... Static <±0.1%
Transient response: ..... <±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 (via CXC controller): See page 84

Mechanical

Dimensions:
mm: ..... 160H x 87W x 300D
inches: ..... 6.3H x 3.4W x 11.8D
Weight: 4.65kg (10.57lbs)

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 ⅜" 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
EMC: IEC/EN 60950-1
Emissions:
- CFR47 (FCC) Part 15 Class A
- EN55022 (CISPR 22) Class A
- EN 61000-3-2
- ICES-03 Class A
- C-Tick (Australia)
- 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
- IEC TS 61000-6-5:2001 Electromagnetic compatibility (EMC) Part 6-5_Generic Standards Immunity for power station and substation environments

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 allows you to maintain a single voltage battery system.

CXDF 24-48/2kW
CXDF 48-24/2kW

Cordex™ 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

Electrical

Model	CXDF 24-48/2kW	CXDF 48-24/2kW
Part Number	**012-526-20**	**012-527-20**
Input voltage	21 to 30Vdc	-42 to -60Vdc
Input current	Up to 94A @ 24V	<48A @ 48V (55A max)
Efficiency	>88%	>88% (50 to 100% load)
Input noise		
Voice band	<32dBrnC	<32dBrnC
Wide band	<10mV RMS to 10MHz <150mVp-p to 100MHz	<10mV RMS to 10MHz <150mVp-p to 100MHz
Output power	2000W max @ -54V	2000W max @ 27Vdc
Output voltage	-54Vdc nominal	27Vdc nominal
Output current	37A max	74A max @ 27Vdc
Regulation	-1% +/-0.1% load (static) +/- 0.1% line (static)	-1% +/-0.1% load (static) +/- 0.1% line (static)
Output noise		
Voice band	<38dBrnC	<38dBrnC
Wide band	<10mV RMS to 10MHz <150mVp-p to 100MHz	<20mV RMS to 10MHz <150mVp-p to 100MHz
Acoustic noise	<60dBa @ 1m (3ft)	<60dBa @ 1m (3ft)

Mechanical

Dimensions:
mm:.....84H x 100W x 235D
inches:.....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

Dimensions:
mm:.....89H x 584W x 304D
inches:.....3.5H x 23.0W x 12.0D
Weight:.....10.4kg (23.0lbs)

24-48V 4-Mod 19" shelf (dual input) P/N: 030-839-20

Dimensions:
mm:.....89H x 438W x 310D
inches:.....3.5H x 17.2W x 12.2D
Weight:.....85kg (19lbs)

48-24V 4-Mod 19/23" shelf P/N: 030-840-20

Dimensions:
mm:.....88.4H x 438W x 332D
inches:.....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

Related Components

External Options:
747-599-20-000:.....Kydex cover kit, 23" CXDF shelf
747-587-20-000:.....Kydex cover kit, 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 380-48/2kW

Cordex™ Series DC-DC Converters

- DC-DC converter supplying 48Vdc output flow 380Vdc sourcee
- High power density modular design, up to 2kW output per module
- Advanced monitoring and control capability including remote accessibility
- Hot swappable, 2RU compact design

P/N: 0120034-000

Electrical

Input voltage: .....380Vdc (nominal)
Input voltage range: .....<260 to 400Vdc (operating)
Efficiency:.....>94.3% (40 to 80% load)
Input noise:
Voice band: .....<32dBrnC
Wide band: .....<10mV RMS to 10MHz
<150mVp-p to 100MHz
Output power: .....2000W max nominal I/P
Output voltage: .....57Vdc (default)
Output voltage range: ....48-59Vdc (set by software)
Output current: .....41.7A @ 48Vdc (nominal I/P)
Regulation:.....-1% +/-0.1% load (static)
+/- 0.1% line (static)
Output noise:
Voice band: .....<38dBrnC
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 Cordex controller

Mechanical

Dimensions:
mm:.....86H x 102W x 270D
inches:.....3.4H x 40W x 10.6D
Weight:.....2.3kg (5.1lbs)

Environmental

Temperature:.....-40 to 55°C (de-rated power up to 75°C)
Humidity: .....0 to 95% NC

Shelves

380-57V 4-Mod 19/23" shelf P/N: 0300168-001

Mechanical
Dimensions:
mm:.....88.4H x 438W x 332D
inches:.....3.48H x 17.2W x 13.1D
Weight:.....8.6kg (18.9lbs)

Performance / Features
CAN bus communication to remote Cordex controllers/peripherals
Optional integrated CXCI+ controller

Agency Compliance

Safety:.....CSA/UL C22.2 60950 (NRTL)
CE IEC/EN 60950
EMI:.....Class A radiated
Class A conducted
EN 6100-4-2, -3, -4, -6

Inverters

Alpha's -48Vdc inverter modules (AIM) and stand-alone inverters are ideal means of supplying AC power in a battery backup environment. The modules 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. The INVERTER 2000 is a stand-alone inverter.

Alpha Inverter Module 2500

For installation in AMPS80 HP Systems

- 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

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
Max 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 x435D
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

- 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

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
Maxcrest 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 x300D
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

INEX 1000 & 1500

For installation in INEX Systems

- Pure sine wave
- Hot swappable replacement in shelf
- Operating 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 to158°F)

120Vac, 1500VA P/N: 014-114-10 / 1000VA P/N: 014-114-10
230Vac, 1500VA P/N: 014-115-10 / 1000VA P/N: 014-115-10

Electrical

AC output:

Power rating:	1500VA/1200W or 1000VA/800W
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

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)

Mechanical

Dimension:

mm:	270D x 215W x 43.8H
inches:	10.63D x 8.46W x 1.72H
Weight:	3.0kg (6.61lbs)

Environmental

Temperature:

Operating:	-20 to 70°C (-4 to 158°F) -5 to 58°C (23 to 122°F) with full performance
Storage:	-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

- 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
- Operating 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

AC Input:
Voltage range: ..... 120Vac: 89 to 138Vac
230 Vac: 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

DC Input:
Nominal voltage: 48Vdc
Operating range: ..... 40 to 58Vdc
Psophometric noise voltage: ..... ≤1.0mV ITU-T O.41 (16.66~6000Hz)

Mechanical

Dimensions:
mm: ..... 43.8H x 440W x 360D
inches: ..... 1.72H x 17.3W x 14.2D
Weight: 7.1kg (15.7lbss)

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


TECHNOLOGIES™

Distribution

Alpha offers a wide assortment of breaker and fuse panels for distributing power to critical loads. Panels are available in various sizes and output voltages, and use industry-standard breakers and fuses. The panels can be engineered into Alpha Technologies systems, or offered as standalone products.

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.

BDFB 8x800A

Secondary Distribution System

- Secondary distribution solution for Cell Site, CO, MSC, Data Center and Cable Headend facilities
- Total system capacity exceeding 5000A (continuous rating)
- Flexible dual, quad, 6 or 8 feed options with a maximum rating of 640A per feed
- Each panel consists of 20 secondary load positions
- Flexible circuit breaker and TPS fuse options
- Options for internal and external return

Consult your Alpha representative for P/N configurations

Electrical

System voltage: .....-48V
Output current per load/panel: ..640A (continuous rating)
No. of loads/panel per bay:.....2,4,6 (or) 8
Secondary load positions: .....20 positions per panel
Over current protection: .....TPS/TLS Plug in bullet up to 125A
Single pole LEL breaker up to 125A
Double pole LEL breaker up to 200A
Triple pole LEL breaker up to 300A

Distribution & Termination

Input feeder cable
Termination details: .....⅜" dia. on 1" centers (or) ½" dia. on 1¾" centers
Secondary load cable
Termination details: .....1 pole are ¼" dia. on ⅝" centers,
2 pole and 3 pole are ⅜" dia. on 1" centers
Internal ground bar: .....¼" dia. on ⅝" centers (lug adapters for
2 pole and 3 pole)
External ground bar:.....21 x ¼" dia. on ⅝" centers, 8 x ⅜" dia.
on 1" centers and 7 x ½" dia. on 1 ¾" centers
GMT fuse
Termination detail:.....0.34 to 2.5mm² (14 to 22AWG)

Mechanical

Mounting:.....Standard boxbay mounting options
Dimensions:
Standard width option
mm:.....2134H x 610W x 610D
inches:.....84H x 24W x 24D

Extended width option
mm:.....2134H x 813W x 610D
inches:.....84H x 32W x 24D

Environmental

Temperature:.....0 to 40°C (32 to 122°F)
Humidity: .....0 to 95% RH non-condensing
Elevation:.....-500 to 2800m (-1640 to 9186ft)

System Level Alarm & Control

- Local monitoring of voltage per panel
- Local monitoring of current for panels with shunts
- Bay level breaker/fuse trip lamp indicator
- Individual panel "Power" indicator
- Individual panel breaker trip indicator
- Alarm Relay (dry contacts)
  -Overcurrent alarm on any panel
  -Loss of input feed alarm
  -Fuse/breaker trip alarm
- Alarm connections: 1.5mm² (16 to 30AWG)

Options

- 2' and 4½' cabinet extension
- Cabinet top covers for bottom feed applications
- Seismic anchors and washers kit
- Isolation pad and bushing kit

Agency Compliance

Safety:.....CSA C22.2 No. 609050-1-03
NEBS:..... level 3 certification (pending)

Related Components

AM plug-in breakers: See page 125
TPS/TLS fuses: See page 126
O/P adapters: See page 125

CXDS-M MICRO
CXDS-M Mini

Distribution Systems

CXDS-M Micro

- Modular distribution solution for Cell Site, CO, MSC, Data Center and Cable Headend facilities
- Flexible dual feed options with a maximum rating of 1200A per feed
- Compact front access design reduces floor and rack space footprint
- Flexible circuit breaker and TPS fuse options ensuring a solution for all requirements
- Remote access, monitoring and data logging via optional Cordex™ controller simplifies planning and maintenance

Electrical

System voltage: .....-24V, +24V and -48V
Dual input: .....1200A x2 max (common return)
Dual input: .....600A x2 max (split return)

Distribution and Termination

The Micro distribution system consists of a single module; the mini distribution system consists of two modules.

Each module contains 2 banks of 12 plug-in bullet positions.

Module ratings (continuous):
Plug in bullet positions: ..600A per bank

Fuses:
GMT: .....10 positions, up to 10A (max.)
TLS/TPS plug-in bullet:
- Mini: .....48 positions, up to 100A (max.)
- Micro: .....24 positions, up to 100A (max.)

Breakers:
AM plug-in bullet:
- Mini: .....48 positions, up to 100A per pole (max.)
- Micro: .....24 positions, up to 100A per pole (max.)

Output termination:
GMT Fuse: .....0.34 to 2.5mm² (14 to 22AWG)
TLS/TPS/AM breaker:.....1 pole and 2 pole are ¼" dia. on ⅝" centers
3 pole are ⅜" dia. on 1" centers

Internal ground bar:.....¼" dia. on ⅝" centers
DC Input: .....3 sets ⅜" dia. on 1" centers per polarity per feed

Mechanical

Mounting:.....Standard flush or center mount 19" or 23" relay rack mounting options
23" dimensions (1 module):
mm:.....263H x 660W x 482D
inches: .....10.5H x 26W x 19D

19" dimensions (1 module):
mm:.....263H x 550W x 482D
inches: .....10.5H x 22W x 19D

Weight (1 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 (optional)

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)

Related Components

520-059-10: .....Plug In Bullet TPS/TLS Fuse Holder 1-125A

Agency Compliance

Safety:.....CSA C22.2 No. 609050-1-03
NEBS level 3 certification

CXDS-M 1200 & CXDS-M 600/600

Modular Distribution System

CXDS-M 600/600 4 module system

- Modular distribution solution for Cell Site, CO, MSC, Data Center and Cable Headend facilities
- Flexible single and dual feed options with a maximum rating of 1200A per feed
- Compact front access design reduces floor and rack space footprint
- Flexible circuit breaker, TPS and TPL fuse options ensuring a solution for all requirements
- Remote access, monitoring and data logging via Cordex™ controller simplifying planning and maintenance

Consult your Alpha representative for P/N configurations

Electrical

System voltage: ..... -24V, +24V and -48V
Single input: ..... 1200A max
Dual input with isolated return: ..... 600A x2 max
Dual input with common return: ..... 1200A x2 max

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.

Module ratings (continuous)
Plug in bullet positions: ..600A per bank
TPL fuse (LC*): .....600A per fuse
TPL fuse (HC*):.....600A per fuse

Fuses
GMT: .....10 positions, up to 10A (max.)
TPL(LC*): .....6 positions, 61 to 800A (max.)
TPL(HC*): .....24 positions, 61 to 800A (max.)
TLS/TPS plug-in bullet: ..96 positions up to 100A (max.)

Breakers
AM plug-in bullet: .....96 positions up to 100A per pole (max.)

Output termination
GMT fuse: .....0.34 to 2.5mm² (14 to 22AWG)
TPL fuse:.....2 hole ⅜" dia. on 1" centers
• HC*: .....Up to 6 fuse positions; dual cable landing 2x (750MCM)
• LC*: .....Up to 24 fuse positions; single cable landing 1x 350MCM
TLS/TPS/AM breaker:.....1 pole and 2 pole are ¼" dia. on ⅝" centers
3 pole are ⅜" dia. on 1" centers

Internal ground bar:.....¼" dia. on ⅝" centers
External ground bar (optional): .....72 sets ¼" dia. on ⅝" centers
24 sets ⅜" dia. on 1" centers or ½" on 1¾" centers
DC input: .....3 sets ½" dia. on 1 ¾" centers per polarity

Mechanical

Mounting:.....Standard flush or center mount 19" or 23" relay rack mounting options
23" module dimensions:
mm:.....263H x 660W x 482D
inches: .....10.5H x 26W x 19D

19" module dimensions:
mm:.....263H x 550W x 482D
inches: .....10.5H x 22W x 19D

Weight (one module):.....27.2kg (60lbs) approx

Environmental

Temperature:.....0 to 90°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.

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)

Related Components

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

Agency Compliance

Safety:.....CSA C22.2 No. 609050-1-03
NEBS:.....Level 3 compliant

*LC - Low capacity termination
**HC - High capacity termination

CXDM-E1

Universal Distribution Module

- 225A capacity distribution center with 10 load breaker positions
- Ultra compact, high density utilizing standard plug-in circuit breakers
- Integrated low voltage battery disconnect and 2 breakers for battery protection
- Universal 19/23" rack mounting
- Compact 1RU high maximizing space for revenue generating equipment
- Integrated controller I/O for 1.2 and 2kW rectifiers simplifying installation

P/N 0200066-001

Electrical

Voltage: ..... -48Vdc
Current: ..... 225A DC max (200A load max)

Mechanical

Dimensions (excludes mounting brackets):
mm: ..... 45H x 432W x 318D
inches: ..... 1.75H x 17.25W x 12.5D
Mounting: ..... 19/23", flush/center mount

Performance/Features

Distribution: ..... 10x load breakers (Plug-in bullet style)
2x battery breakers (Plug-in bullet style)
Maximum capacity: 125A single pole
200A double pole
Access: ..... Front and rear required
Alarm interface: DB25
LVD: ..... 225A Low voltage battery disconnect
LVD override: ..... Front mounted switch with status indicators
Shunt: ..... 400A battery shunt
Alarms: ..... LVBD
Circuit breaker trip

Connnections

Load breaker: ..... ¼"-20 studs on ⅝" centers
Battery breaker: ..... ¼"-20 studs on ⅝" centers
Ground bar: ..... 13x sets ¼" studs on ⅝" centers

Rectifier Input:
Hot: ..... 2x sets ⅜" holes on 1" centers
Return: ..... 2x sets ⅜" holes on 1" centers
Alarm: ..... 1.31 to 0.128mm^2 (#16 to #26AWG)

Environmental

Temperature: ..... -40 to +65°C (-40 to +149°F)
*Requires air circulation for above 30°C ambient
Humidity: ..... 0 to 95% non-condensing
Elevation: ..... -500 to +4000m (-1640 to 13124ft)

Agency Compliance

Safety: ..... CSA C22.2, N0.60950

DCP03

Universal 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
inches: ..... 5.23H x 17.25W x 12.5D
Mounting: ..... 19/23", flush/center mount
Weight: 11.6kg (25.6lbs)

Connections:
Load breaker: ..... ¼"-20 studs on ⅝" centers
*18x sets w/L87, 14x sets w/ L88
Battery breaker: ..... ¼"-20 studs on ⅝" centers
*4x sets w/L88 only
Ground bar: ..... 18x sets ¼" holes on ⅝" centers

Rectifier input:
Hot: ..... 2x sets ⅜" holes on 1" centers
Return: ..... 2x sets ⅜" 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)
037-202-20-000: ..... Kydex cover kit; for UDC & single 19/23" 2kW rectifier shelf
037-207-20-000: ..... Kydex cover kit; for UDC & two 19" 2kW rectifier shelves
039-272-20-000: ..... Kydex cover kit; for standalone UDC

DCP03 rear view

Related Components

AM plug-in breakers: See page 125

Circuit Breakers

DC Distribution Options

AM Series, Bolt-In Style Breakers

P/N	Description
747-011-20	5 Amp w/ Jumper Kit
747-012-20	10 Amp w/ Jumper Kit
747-013-20	15 Amp w/ Jumper Kit
747-014-20	20 Amp w/ Jumper Kit
747-015-20	25 Amp w/ Jumper Kit
747-016-20	30 Amp w/ Jumper Kit
747-017-20	40 Amp w/ Jumper Kit
747-018-20	50 Amp w/ Jumper Kit
747-019-20	60 Amp w/ Jumper Kit
747-020-20	70 Amp w/ Jumper Kit
747-021-20	80 Amp w/ Jumper Kit
747-022-20	90 Amp w/ Jumper Kit
747-023-20	100 Amp w/ Jumper Kit

GJ Series, Bolt-In Style Breakers

P/N	Description
470-120-10	100 Amp
470-125-10	125 Amp
470-188-10	150 Amp
470-171-10	175 Amp
470-121-10	200 Amp
470-081-10	225 Amp
470-228-10	250 Amp
470-122-10	300 Amp (2-Pole)
470-126-10	400 Amp (2-Pole)
470-210-10	450 Amp (3-Pole)
470-123-10	500 Amp (3-Pole)
470-219-10	600 Amp (3-Pole)
470-208-10	700 Amp (3-Pole)
4700150	800 AMP (4-Pole)
4700157	1000 Amp (5-Pole)
4700152	1200 Amp (6-Pole)

1RU Load Breakers for CXPS-HD Systems

P/N	Description
4700054	3A Circuit breaker, 1RU
4700055	5A Circuit breaker, 1RU
4700056	10A Circuit breaker, 1RU
4700057	20A Circuit breaker, 1RU
4700058	30A Circuit breaker, 1RU
4700059	40A Circuit breaker, 1RU
4700060	50A Circuit breaker, 1RU
4700061	60A Circuit breaker, 1RU

Plug-In Style Breakers
Mid Trip Load Breakers 0-100A

P/N	Description
470-300-10	1 Amp, Mid-Trip
470-301-10	3 Amp, Mid-Trip
470-302-10	5 Amp, Mid-Trip
470-303-10	10 Amp, Mid-Trip
470-304-10	15 Amp, Mid-Trip
470-305-10	20 Amp, Mid-Trip
470-306-10	25 Amp, Mid-Trip
470-307-10	30 Amp, Mid-Trip
470-308-10	35 Amp, Mid-Trip
470-309-10	40 Amp, Mid-Trip
470-310-10	45 Amp, Mid-Trip
470-311-10	50 Amp, Mid-Trip
470-312-10	60 Amp, Mid-Trip
470-313-10	70 Amp, Mid-Trip
470-314-10	80 Amp, Mid-Trip
470-315-10	90 Amp, Mid-Trip
470-316-10	100 Amp, Mid-Trip

Plug-In Style Breaker Kits
MidTrip Load Breakers 110-250A

The selection of breakers are compatible with the following Alpha panels (part numbers):

020-418-20, 020-419-20, 020-646-20
020-635-20, 020-645-20

P/N	Description
747-220-20-000	110 Amp, Mid-Trip Breaker Kit, 2P
747-147-20-000	125 Amp AM Breaker Kit, 2P
747-148-20-000	150 Amp AM Breaker Kit, 2P
747-149-20-000	175 Amp AM Breaker Kit, 2P
747-150-20-000	200 Amp AM Breaker Kit, 2P
747-200-20-000	225 Amp AM Breaker Kit, 2P
747-221-20-000	250 Amp AM Breaker Kit, 2P
7400383-001	200 Amp AM Breaker Kit, 2P

The selection of breakers are compatible with the following Alpha part numbers:

020-702-20

P/N	Description
747-523-20	125 Amp AM Breaker Kit, 2P
747-524-20	150 Amp AM Breaker Kit, 2P
747-525-20	175 Amp AM Breaker Kit, 2P
747-526-20	200 Amp AM Breaker Kit, 3P
747-527-20	250 Amp AM Breaker Kit, 3P
7400345-001	200 Amp AM Breaker Kit, 2P UL489A

Plug-in SeriesTrip Battery Breakers

Plug-in SeriesTrip Circuit Breakers for use with Alpha panels:

020-702-20, 030-770-20

Plug-in SeriesTrip Circuit Breakers for use with Alpha Rectifier Shelves:

030-728-20, 030-782-20, 030-704-20
030-773-20, 030-763-20

P/N	Description
470-346-10	60 Amp AM Breaker
470-346-10	80 Amp AM Breaker
470-347-10	100 Amp AM Breaker,
747-503-20-000	150 Amp AM Breaker Kit,
747-504-20-000	250 Amp AM Breaker Kit

Fuses

DC Distribution Options

GMT Series Fuses

P/N	Description
460-004-10	0.5 Amp
460-006-10	1 Amp
460-081-10	1.33 Amp
460-082-10	1.5 Amp
460-083-10	2 Amp
460-013-10	3 Amp
460-085-10	4 Amp
460-084-10	5 Amp
460-105-10	7.5 Amp
460-069-10	10 Amp
460-150-10	15 Amp
520-046-10	GMT Fuse Cover

TPL Series Fuses

P/N	Description
460-140-10	100 Amp
460-141-10	150 Amp
460-142-10	200 Amp
460-143-10	225 Amp
460-139-10	250 Amp
460-144-10	300 Amp
460-145-10	400 Amp
460-146-10	500 Amp
460-147-10	600 Amp
460-148-10	800 Amp

TPS Series Fuses

P/N	Description
460-215-10	1 Amp
460-216-10	3 Amp
460-217-10	5 Amp
460-218-10	6 Amp
460-219-10	10 Amp
460-220-10	15 Amp
460-221-10	20 Amp
460-222-10	25 Amp
460-223-10	30 Amp
460-224-10	40 Amp
460-225-10	50 Amp
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 (plug-in type)

Bypass & 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. Optional wall mount kits are 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 External Bypass Switch

Indoor External Maintenance Bypass Switch

- 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

Consult your Alpha representative for P/N configurations

Electrical

Voltage rating: ..... 120/208 and 120/240 Vac (nominal)
Current rating: ..... 255 A
Short circuit current rating: 5kA

Current vs. Temperature Rating

Current	Ambient Temperature
255A	40°C (104°F)
210A	45°C (113°F)
170A	50°C (1220°F)

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

Alpha Transfer Switches

Outdoor Solutions

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.

Dimensions: mm: 81H x 135W x 152D
inches: 3.25H x 5.3W x 6.0D

Mounting options: Wall, shelf or single side rack mount

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.

Dimensions: mm: 81H x 135W x 152D
inches: 3.25H x 5.3W x 6.0D

Mounting options: Wall, shelf or single side rack mount

Alpha Maintenance Bypass Switch

Alpha Maintenance Bypass Switch

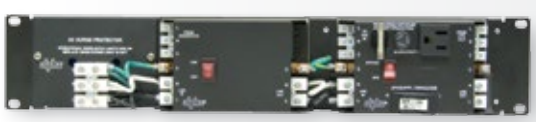
›120V
›230V option not available

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.

Dimensions: mm: 117H x 120.6W x 165D
inches: 4.6H x 4.75W x 6.5D

Mounting options: Wall, 4 point shelf mount or single side rack mount



Rack Mount Options

Other Mounting Options

›Rack mount kit 2RU – 19 or 23"

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 cabinets for any application, including secure indoor and outdoor uses.

Designed, tested and compliant with the highest industry operating standards, Alpha outdoor enclosures are equipped with control systems that maintain temperatures within the specified operating ranges of internally mounted equipment. Each enclosure offers flexible thermal management solutions based on open and/or closed loop design to enable convenient matching to load and environmental factors.

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.

Combine your Alpha Enclosure with Alpha power and you have an optionally integrated, reliable and efficient power plant.

Enclosure Naming Convention

Alpha outdoor enclosures are divided into 3 categories: Standard Enclosure (SE), Tailored Enclosure (TE) and Premium Enclosure (PE).

SE – Standard off-the-shelf product with high degree of configurability both in power & cooling options.

PE – Premium enclosure solutions share the same qualities as SE but with greater focus towards aesthetics and environmental protection as governed by the GR-487 standard.

TE – Tailored solutions are custom engineered to meet the requirements of specific customers.

example:

TE 27 - 22 18
1 2 3 4

Character	Representation
1	Tailored Enclosure
2	Height (in)
3	Width (in)
4	Depth (in)

Enclosure Selection Considerations

What are the requirements for the base enclosure?

Dimensions (in/mm)	Mounting		Accessibility	Cable entry/exit		Security
Height:	❒ Pad	❒ Rack	❒ Front	❒ Rear	❒ Top	❒ Padlock-able
Width:	❒ Pole	❒ Pedestal	❒ Rear	❒ Bottom	❒ Front	❒ Special “keyed”
Depth:	❒ Wall		❒ Top	❒ Sides		Other:

What are the environmental conditions?

Temperature (°C/°F)		Wind Driven		Seismic zone	
Minimum:		❒ Rain	❒ Dust	❒ 1	❒ 3
Maximum:		❒ Snow	Other:	❒ 2	❒ 4

What is the electrical service available at the location?

AC Voltage			Main breaker rating		
❒ 120Vac	❒ 120/240Vac	❒ 277/480Vac	❒ 15A	❒ 30A	❒ 100A
❒ 120/208Vac	❒ 347/600Vac	Other ____	❒ 20A	❒ 50A	Other:

What are the operating parameters of your equipment?

AC Voltage		DC Voltage		Total load current (A)	Mounting
❒ 24Vac	❒ 208Vac	❒ 12Vdc	❒ 125Vdc	Minimum:	❒ 19" rack
❒ 120Vac	❒ 240Vac	❒ 24Vdc	❒ 48Vdc		
Other:		Other:		Maximum:	❒ 23" rack

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/Heating		Thermal Management Selection Guide
❒ Fan(s)	❒ Heat exchanger	• Fan(s) - open loop system utilizing filtered outside ambient air to cool the electronics • Air conditioner - closed loop system where electronics require an environment cooler than ambient • Heat exchanger - closed loop system that keeps ambient air contaminents out of the enclosure but temperature inside is slightly above ambient
❒ Air conditioner	❒ Heater	

What are the battery requirements?

Application	Battery chemistry		Discharge time	Recharge time
❒ Cycle	❒ Lead-acid	❒ Li-Ion	Hour(s):	Hour(s):
❒ Float	❒ Ni-Cad	Other:	Minute:	Minute:

How is the power distributed to the critical loads?

❒ Fuse	(Specify size and quantity if known):
❒ Breaker	(Specify size and quantity if known):

Have you considered these system options?

❒ Load center	❒ Surge suppression	❒ Fiber winding box
❒ Generator inlet	❒ Meter base	❒ Convenience outlet(s)
❒ Transfer switch	❒ Battery heater mat	Specify other options required:

Are there any requirements for agency compliance?

GR standard		NEBS	Safety compliance
GR487:	GR1089:	❒ Level 1	❒ CSA/UL 60950
GR13:	GR63:	❒ Level 2	❒ CE
Other:		❒ Level 3	Other:

TE13-2128

13" Ceiling Mount Outdoor Enclosure

- IP66 rated ceiling mount power system enclosure
- 13" tall, 21" wide and 28" deep provides a compact overall footprint ideal for oDAS applications
- Powder coat finish provides excellent corrosion protection
- Front and rear doors provides greater access for equipment installation and wiring
- Designed for use with FXM series AC Outdoor UPS with AlphaCell GEL batteries

Consult your Alpha representative for P/N configurations

Electrical

Input voltage: ..... 120VAC, 60Hz, single phase
Output voltage: 120VAC
Output power: ..... 1700W (max)

Mechanical

Dimensions:
mm: ..... 330H x 533W x 711D
inches: ..... 13H x 21W x 28D
Weight (empty): 20kg (45lbs)
Construction: ..... High strength corrosion resistant aluminum
Finish: ..... Powder coat
Equipment space: ..... FXM UPS Power Module with 3RU of available equipment space
4 x AlphaCell 85GXL (50AH)

Hardware

Hinge type: ..... Piano hinge on both front and rear door
Door latch: ..... Vise action compression latch
Battery shelf: ..... Space for 4 x AlphaCell 85GXL (50Ah)

HVAC

Cooling: ..... Sealed cabinet with hydrogen vent cap

Environmental

Temperature:
Operating: ..... -40 to 46°C (-40 to 115°F)
Storage: ..... -40 to 85°C (-40 to 185°F)

Installation

Access: ..... Front and rear access

Enclosure options

Mounting: ..... Ceiling mount only
Consult factory for other options

System Specifications (as shown)

- FXM2000 Outdoor AC UPS
- 4 x AlphaCell 85GXL (50Ah) batteries
- Fiber management tray
- Customer equipment

Agency Compliance

NEMA rating: IP66

TE20-2120 (Formerly TE25)

20" General Purpose Outdoor 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 to 46°C (-40 to 115°F)
Storage:.....-40 to 85°C (-40 to 185°F)

Installation

Access:.....Full front access with removable rear louver panel 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)

TE22-2210

22" NEMA 4 Outdoor Enclosure

- NEMA 4 rated outdoor enclosure designed for use with 24V/400W or 48/650W Cordex PSU module and batteries
- 22" tall, 22" wide and 10" deep provides a compact overall footprint ideal for space constrained applications
- Powder coat finish provides excellent corrosion protection

Consult your Alpha representative for P/N configurations

Electrical

Input voltage: ..... 120VAC/240VAC, 60Hz, single phase
Output voltage: 24/48Vdc
Output power: 24V/400W, 48/650W

Mechanical

Dimensions:
mm: ..... 559H x 559W x 254D
inches: ..... 22H x 22W x 10D
Weight (empty): 25kg (55lbs)
Construction: ..... High strength corrosion resistant aluminum
Finish: ..... Powder coat
Equipment space: ..... Back plate available for mounting customer equipment
Cordex 24V/400W or 48V/650W module mounted on door

Hardware

Hinge type: ..... 2 position lift-off hinge
Door latch: ..... 3 point latch
Battery shelf: ..... Space for 4 x 17Ah batteries or 2 x 33Ah batteries

HVAC

Cooling: ..... Sealed cabinet with hydrogen vent cap

Environmental

Temperature:
Operating: ..... -40 to 46°C (-40 to 115°F)
Storage: ..... -40 to 85°C (-40 to 185°F)

Installation

Access: ..... Front access only

Enclosure options

Mounting: ..... Pole or Wall

System Specifications (as shown)

- Cordex 48V/650W PSU module
- 4 x 17Ah batteries
- GFCI convenience outlet
- Back plate for customer equipment
- Battery heater mat
- AC mains disconnect
- Surge arrestor

Agency Compliance

CSA/UL: ..... C22.2 No. 60950
NEMA rating: ..... NEMA 4

TE27-2218 (Formerly MMOE)

27" General Purpose Outdoor Enclosure

- 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 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 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)
Rear of enclosure: .....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 (-40 to 115°F)
Storage:.....-40 to 85°C (-40 to 185°F)

Installation

Access:.....Front hinged door provides full front access

Maintenance

Door installed louvers:...Equipped with splash baffle (optional filters available)

Enclosure Options

Mounting:.....Pole, wall, pedestal or stake mount

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

TE27-2218 (Formerly MMOE)

27" General Purpose Outdoor Traffic Enclosure

- 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 makes installation and maintenance easy and convenient
- Three-point latching mechanism with Corbin Type 2 lock for maximum security

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)
Rear of enclosure: .....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 (-40 to 115°F)
Storage:.....-40 to 85°C (-40 to 185°F)

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

System Specifications (as shown)

- Battery shelf with 4x AlphaCell™ 85GXL batteries
- FXM2000 UPS
- 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

TE36-2120 (Formerly TE25xh)

36" General Purpose Outdoor 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

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 on the bottom and rear of enclosure
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)
(optional)

HVAC

Cooling:.....Air conditioner w/heater/heat exchanger/ thermostat controlled filtered fan cooling
Ventilation:.....Door installed louvers

Environmental

Temperature:
Operating:.....-40 to 46°C (-40 to 115°F)
Storage:.....-40 to 85°C (-40 to 185°F)

Installation

Access:.....Full front access with removable rear louver panel for equipment installation

Maintenance

Door installed louver:.....Equipped with washable/replaceable filter

Enclosure Options

Mounting:.....Wall, pole, pedestal or rack

System Specifications (as shown)

- 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 2000 BTU/hr
- AC load centre
- AC surge protector

Agency Compliance

CSA/UL:.....C22.2 No. 60950
NEMA rating:.....Type 3R (CSAC22.2 No 94-M91)

TE40-2425 (Formerly TE49)

40" GR487 Dual Compartment Enclosure

- Dual compartment design 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
- 9RU of rack space in the top section provides room for rectifiers, distribution and customer equipment
- Pre-configured -48Vdc power system capable of delivering maximum power of 6kW (N+1)
- 40" tall, 24" wide and 25" deep provides a compact overall footprint ideal for oDAS applications
- Certified to GR-487 requirements, the enclosure is designed for high reliability and long operating life in extreme environments
- Battery Expansion Cabinet (BEC) allows for an additional string of -48Vdc batteries each rated at 180Ah or less

Consult your Alpha representative for P/N configurations

Electrical

Input voltage: ..... 120/240Vac, 60Hz single phase
Output voltage: 48Vdc
Output power: ..... -48V 6kW (N+1)
DC distribution: ..... 18 breaker positions
AC distribution: ..... AC load center

Mechanical

Base enclosure dimensions:
mm: ..... 1016H x 610W x 635D
inches: ..... 40H x 24W x 25D
Base enclosure w/ BEC dimensions:
mm: ..... 1422H x 610W x 635D
inches: ..... 56H x 24W x 25D
Base enclosure
Weight (no batteries): 115kg (253lbs)
Mounting: ..... Plinth, Pole and Wall mount
Cooling: ..... Heat exchanger for power compartment
Forced air ambient for battery compartment
Enclosure: ..... Aluminum, 5052-H32
Rack units: ..... 19", 9RU (UC)

Environmental

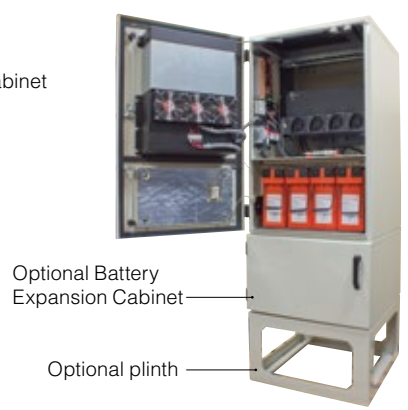
Operating temperature: .-40 to +46°C (-40 to 115°F)
Storage temperature: ..... -40 to +85°C (-40 to +185°F)
Humidity: ..... 0 to 95% non-condensing
Elevation: ..... 3600 m, see operating temperature (12,000ft)
Weather tightness: ..... NEMA Type 3R

Other Information

Alarm:
Connection: ..... Terminal block
Description: ..... High/low temperature, intrusion, fan fail, AC fail
Chassis ground: ..... Multiple connection Bus bar located in cabinet
Security: ..... Pad-lockable doors with socket pin-head key

Enclosure options

- Wall Mount
- Pole Mount
- Plinth Mount
- Battery Expansion Cabinet
- AC surge protection
- DC surge protection
- AC generator
- Battery heater mat
- Meter socket
- AC load Centre



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

SE41-2722

41" General Purpose Outdoor Enclosure

- Configurable-to-order outdoor enclosure designed for mobile broadband applications
- 23" mounting rails with adjustable front to back rack angles (23" to 19" adapter plates available as an option)
- 20RU of available equipment space for power, batteries, accessory panel and customer equipment
- Rear access gland plate provides greater flexibility to access customer installed equipments
- Flexible thermal management solutions (including fan, heat exchanger and air conditioning variants) enable convenient matching to load and environmental parameters
- Various mounting options available: wall, pole, plinth and pad

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm: ..... 1051H x 701W x 559D
inches: ..... 41.4H x 27.6W x 22D
Weight: 52kg (115lbs)
Construction: ..... High strength corrosion resistant aluminum
Finish: ..... Powdercoat
Equipment rails: ..... 23" (23" to 19" adapter plates available as option)
Equipment space: 20RU
Cable entrance: ..... Knockouts located on sides, bottom and rear of enclosure

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
Air Conditioner (120VAC, 2000 BTU/hr)
Heat Exchanger (48Vdc, 50W/C)
Heating: ..... Integrated with Air Conditioner (500W)

Environmental

Temperature:
Operating: ..... -40 to 46°C (-40 to 115°F)
Storage: ..... -40 to 85°C (-40 to 185°F)

Installation

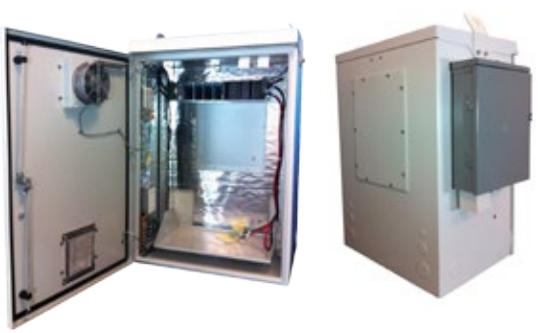
Access: ..... Full front access as well as rear access with a removable gland plate

Enclosure Options

Mounting:
SE41-2722: ..... Wall, pole, plinth and pad

Agency Compliance

NEMA rating: 3R
CSA: ..... C22.2 No. 60950



SE48-1616 (Formerly S6)

48" Outdoor Traffic BBS Enclosure

- Traffic grade aluminum enclosure protects battery backup power systems (BBS) 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 shelves
Equipment rails:.....EIA standard 19" (vertical)
Cable entrance:.....Bottom of enclosure: 1 x 76mm (3") dia. 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 (-40 to 115°F)
Storage:.....-40 to 85°C (-40 to 185°F)

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
- Tamper switch
- Tilt switch
- AlphaGuard™ battery balancer
- Door activated interior light
- Battery heater mats
- "On Battery" indicator light

Agency Compliance

CSA/UL, CE:.....UL50E/C22.2 No.94
NEMA rating:.....3R

TE60-3030

60" General Purpose Outdoor Enclosure

- 30RU available equipment space provides room for rectifiers, distribution, customer equipment and batteries
- Pad-lockable door and durable powder coated aluminum construction allow for secure outdoor or indoor applications
- Flexible thermal management solutions enable convenient matching to load and environmental parameters

Consult your Alpha representative for P/N configurations

Electrical

Voltage: ..... 120/240VAC, 60Hz single phase

Mechanical

Dimensions:
mm: ..... 1524H x 762W x 762D
inches: ..... 60H x 30W x 30D
Weight (empty): 120kg (265lbs)
Construction: ..... High strength corrosion resistant aluminum
Finish: ..... Powder coat
Equipment space: ..... 30RU (23" rack mount)
Cable entrance: ..... Multiple KO locations

Hardware

Handle: ..... Padlockable
Door latch: ..... 3 point latch
Battery trays (qty): ..... Up to 4 if used as a battery only enclosure

HVAC

Cooling: ..... Fan cooled only (consult factory for other solutions)
Heating: ..... Battery heater mats

Environmental

Temperature:
Operating: ..... -40 to 46°C (-40 to 115°F)
Storage: ..... -40 to 85°C (-40 to 185°F)

Installation

Access: ..... Front and rear access

Enclosure options

AC distribution: ..... AC load center
TVSS: ..... 120/240VAC surge arrestor
Mounting: ..... Pad or platform mount
Consult factory for other options

Agency Compliance

CSA/UL: ..... C22.2 No. 60954
NEMA rating: ..... Type 3R (CSA C22.2 No. 94-M91)

Consult factory for other configurations of TE60-3030

TE72-3030 (Single Compartment)

72" GR-487 Single Compartment Enclosure

- 39RU power enclosure offering full height equipment installation flexibility
- Battery enclosure designed to hold 5 strings of front terminal batteries configured @ -48Vdc
- Pad-lockable door and durable powder coated aluminum construction allow for secure outdoor or indoor applications
- Multiple knockouts provide cable interface locations for flush or remote installation of enclosures
- Certified to GR-487 requirements, the enclosure is designed for high reliability and long operating life in extreme environments

Consult your Alpha representative for P/N configurations

Electrical

Voltage: ..... 120/240VAC, 60Hz single phase

Mechanical

Dimensions:
mm: ..... 1829H x 762W x 762D
inches: ..... 72H x 30W x 30D
Weight (empty): 250kg (550lbs)
Construction: ..... High strength corrosion resistant aluminum
Finish: ..... Powder coat
Equipment space: ..... 39RU (23" rack mount) in power enclosure
5 battery trays in battery enclosure
Cable entrance: ..... Knockouts on sides and bottom

Hardware

Hinge type: ..... 4 position lift off hinges
Handle: ..... Padlockable
Door latch: ..... 3 point latch
Battery trays (qty) ..... Configurable based on application requirements

HVAC

Cooling: ..... Power enclosure (4K BTU air conditioner with EVS or fan cooled)
Battery enclosure (fan cooled)
Heating: ..... Power enclosure (500W heater integrated with air conditioner)
Battery enclosure (battery heater mats)
Audible noise: ..... <65 dBA

Environmental

Temperature:
Operating: ..... -40 to 46°C (-40 to 115°F)
Storage: ..... -40 to 85°C (-40 to 185°F)

Installation

Access: ..... Removable rear panels and front hinged door provide full enclosure access

Enclosure options

AC distribution ..... AC load center
TVSS: ..... 120/240VAC surge arrestor
Mounting: ..... Pad or platform mount
Consult factory for other options

System Specifications (as shown)

Power enclosure
- Cordex 2kW rectifiers
- Air conditioner with EVS
- AC load center
- 2 battery trays

Battery enclosure
- 5 battery trays for GNB 155Ah or larger FT batteries

Agency Compliance

CSA/UL: ..... C22.2 No. 60954
Telcordia: ..... GR-487 compliance – contact factory for specific compliances
NEMA rating: ..... Type 3R (CSA C22.2 No. 94-M91)

TE72-3030 (Dual Compartment)

72" GR-487 Dual Compartment Enclosure

- Dual compartment power enclosure provides operational cost savings using a heat exchanger to cool equipment in upper sealed upper compartment and ambient cooling for batteries in vented lower compartment
- 11RU in upper compartment provides room for rectifiers, distribution and customer equipment; 3 battery trays in lower compartment for 155Ah size batteries or larger
- Maximum power supported by the power enclosure is 16kW (N+1) @ -48Vdc
- Battery enclosure designed to hold 5 strings of front terminal batteries configured @ -48Vdc
- Pad-lockable door and durable powder coated aluminum construction allow for secure outdoor or indoor applications
- Certified to GR-487 requirements, the enclosure is designed for high reliability and long operating life in extreme environments

Consult your Alpha representative for P/N configurations

Electrical

Voltage: ..... 120/240VAC, 60Hz single phase
Output voltage: 48Vdc
Output power: ..... 16kW (N+1) max
DC distribution: ..... 36 breaker positions

Mechanical

Dimensions:
mm: ..... 1829H x 762W x 762D
inches: ..... 72H x 30W x 30D
Weight (empty): 295kg (650lbs)
Construction: ..... High strength corrosion resistant aluminum
Finish: ..... Powder coat
Equipment space: ..... 11RU (23" rack mount) in upper compartment (power enclosure)
3 battery trays in lower compartment (power enclosure)
5 battery trays in battery enclosure
Cable entrance: ..... Knockouts on sides and bottom

Hardware

Hinge type: ..... 4 position lift off hinges
Handle: ..... Padlockable
Door latch: ..... 3 point latch
Battery trays (qty) ..... Configurable based on application requirements

HVAC

Cooling: ..... Power enclosure (heat exchanger for upper compartment and forced ambient air for battery compartment)
Battery enclosure (fan cooled)
Heating: ..... Battery enclosure (battery heater mats)
Audible noise: ..... <65 dBA

Environmental

Temperature:
Operating: ..... -40 to 46°C (-40 to 115°F)
Storage: ..... -40 to 85°C (-40 to 185°F)

Installation

Access: ..... Removable rear panels and front hinged door provide full enclosure access

Enclosure options

Mounting: ..... Pad or platform mount
Consult factory for other options

System Specifications (as shown)

Power enclosure
- Cordex 4kW rectifiers
- Heat exchanger
- 3 battery trays

Battery enclosure
- 5 battery trays for GNB 155Ah or larger FT batteries

Agency Compliance

CSA: ..... C22.2 No. 60950-01-03
UL: ..... Std. No 60950-01
Telcordia: ..... GR-487 compliance – contact factory for specific compliances
NEMA rating: ..... Type 3R (CSA C22.2 No. 94-M91)

TE84-3030

84" GR-487 Single Compartment Enclosure

- 44RU 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 of enclosures
- Pad-lockable door and durable powder coated aluminum construction allow for secure outdoor or indoor applications
- Heating, ventilation and cooling options maintain equipment operating temperatures for various loads in all climate conditions
- Certified to GR-487 requirements, the enclosure is designed for high reliability and long operating life in extreme environments

Electrical

Voltage: ..... 120/240VAC, 60Hz single phase

Mechanical

Dimensions:
mm: ..... 2134H x 762W x 762D
inches ..... 84H x 30W x 30D
Weight (empty): 300kg (660lbs)
Construction: ..... High strength corrosion resistant aluminum
Finish: ..... Powder coat
Equipment space: ..... 44RU (23" rack mount)
Cable entrance: ..... Knockouts on sides and bottom

Hardware

Hinge type: ..... 5 position lift off hinges
Handle: ..... Padlockable
Door latch: ..... 3 point latch
Battery trays (qty) ..... Configurable as battery only enclosure for up to 5 battery trays

HVAC

Cooling: ..... 4K BTU air conditioner, heat exchanger or fan cooled
Heating: ..... 500W heater integrated with air conditioner and battery heater mats
Audible noise: ..... <65 dBA

Environmental

Temperature:
Operating: ..... -40 to 46°C (-40 to 115°F)
Storage: ..... -40 to 85°C (-40 to 185°F)

Installation

Access: ..... Removable rear panels and front hinged door provide full enclosure access

Enclosure options

AC distribution ..... AC load center
TVSS: ..... 120/240VAC surge arrestor
Mounting: ..... Pad or platform mount
Consult factory for other options

System Specifications (as shown)

Power enclosure
- Cordex 2kW rectifiers
- Heat exchanger
- 3 battery trays

Agency Compliance

CSA/UL: ..... C22.2 No. 60954
Telcordia: ..... GR-487 compliance – contact factory for specific compliances
NEMA rating: ..... Type 3R (CSA C22.2 No. 94-M91)

CXPS-48-500-IWM

Indoor Power System Enclosure

- 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 offers 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 ¾" knock-out
Bottom of enclosure.....1 x 3" diameter knock-out; 4 x ¾" knock-out
Sides of enclosure.....2 x 3" diameter knock-out; 4 x ¾" 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 (0 to 104°F)

Installation

Access:.....Full front access

Maintenance

No filters used
Bug screen protected on vent openings

Enclosure Options

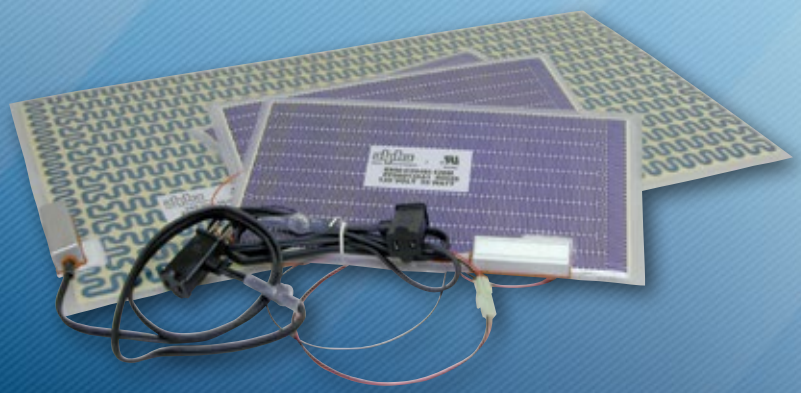
Mounting:.....Wall mount only

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

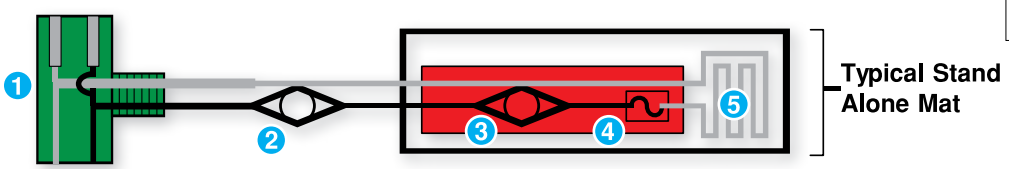
- Durable polyester or silicone construction
- Sealed on-mat electronics for maximum protection
- On-mat thermal switch and thermal fuse for redundant safety
- Insulated design directs heat to the batteries not the enclosure for a 30% reduction in power consumption
- Piggyback plug standard on 120V models

All Mats

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 battery 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.

Line Cord Thermostat
Turn on Temperature: .....5°C (41°F)
Turn off Temperature: ..... 15°C (59°F)

Mat Mounted Thermostat
Over Temperature Off: .....50°C (122°F)
Turn Back on: .....40°C (104°F)
Thermal Fuse Rating: .....85°C (185°F)



Typical Stand Alone Mat

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 operation.

Please contact your Alpha representative to determine the proper battery heater mat required for your outdoor power system.


NOTICE

Shelters

With the escalating demands for greater coverage and bandwidth, today's communication networks are placing equipment closer and closer to the end user, often involving remote installations.

Wireless network radios and the systems that keep them powered are often deployed into sites that feature little or no existing infrastructure to house and protect equipment, hence creating a need for a suitable, robust shelter.

"Technical Shelters" are structures designed for housing and protecting electronics and power equipment, commonly used in telecommunication base stations and remote switching centers. Typically designed to be discreet, shelters are built to withstand extreme weather conditions and protect the critical internal communication equipment from vandalism and theft.

Alpha Technologies has the network knowledge, engineering experience and resources to satisfy all of your power and electronic shelter requirements. Whether your next project involves a complex deployment at a remote site, a site upgrade due to expansion or improving protection of the existing electronic equipment, Alpha can work with your requirements, and turn them into a fully working powering site, when and where it's needed. We offer a broad selection of turnkey services for technical shelter projects:

- Full cycle project management
- Site survey and geological testing
- System design and engineering drawings
- Building permits, on-site construction, installation and commissioning
- Shipping and off-loading
- Site completion including landscaping, fencing and security

Alpha Technical Shelters

Choosing the most critical element - Power

Being a recognized leader in power conversion, protection and standby products, Alpha offers complete AC, DC and renewable energy powering solutions to reliably power your application, including complete power plants, distribution and system controllers, batteries, supporting systems/hardware and much more.

- DC Power Systems
- AC Power Systems
- Batteries
- Generators
- Cable Racks
- Climate Control Systems
- Safety and Security
- Solar Systems

At the heart of our technical shelters are Alpha's industry renowned Cordex® controllers, acting as the central management brain that tightly integrates and monitors performance of power, batteries, alarms, HVAC and other critical elements. Every Alpha controller is designed to be easily accessed through a common website browser.

Customization

All Alpha shelters feature the ability to be fully customized, providing your critical equipment the ultimate protection in almost all scenarios. Depending on the application, Alpha can provide shelters in a multitude of sizes and form factors (from small pole-mount outdoor enclosures to substantial multi-room shelters), all offering the same standard of technology, functionality, protection and robustness of a larger shelter. Modular designs permit future expansion; where envisaged.

Functionality and Features

Depending on the application and requirements, Alpha has the ability to provide custom shelters that feature:

- Centralized/remote management (multiple alarms for intrusion, fire, fuel leaks)
- Single or multiple rooms
- Rugged outdoor construction withstanding vandalism, break-ins, temperature extremes (sun, snow, ice)
- Fire and earth-quake resistance (fire-rated doors with heavy duty lockset and weather stripping)
- Impact resistance (including bullet proofing)
- Single or redundant climate control systems
- Fully insulated finished interiors—durable, low maintenance and light reflective
- Aesthetically attractive designs feature robust, exterior construction and a multitude of finishes and colors (powder coated, aggregate, wood/metal siding)
- Maintenance-free roof and truss system
- Available in either aluminum or steel construction (or other to suit purpose or budget)
- Optional all-welded assembly: no screws or pop-rivets
- Optional modular designs that allow your shelter to grow with future needs
- NEMA rating if required

Our engineers and technicians are experts in power system installation and every customization project adheres to the highest levels of construction standards and safety. Our team has national coverage and a long history of successful turn-key installation projects in telecommunications, including outside plant and shelters.

Environmental Controls

Being an ISO 14001:2004 certified company, reducing environmental impact is a standard mindset when designing our shelter solutions. From fuel spill prevention mechanisms, to the use of convection cooling to reduce or even eliminate the need for HVAC, every shelter strives to reach an environmentally friendly balance.

- Alpha's current portfolio of power solutions conform to RoHS standards and are designed to be highly efficient across a wide temperature range, while occupying less space
- Shelters can feature heavy insulation to minimize temperature fluctuations
- Heat exchangers/hydronic heating systems reduce HVAC loads
- LED based lighting systems to minimize power consumption
- Specially designed fuel tanks ensure no fuel is wasted, with remote monitoring to alert fast fuel decreases or leaks
- Climate control mechanisms ensure internal temperatures are optimal during hot and cold weather extremes
- Solar power options available

Accessories

Should you require them, we have available an extensive set of accessories including:

- Access control
- Video cameras
- Fire suppression systems
- Diesel and propane generators and fuel tanks
- Cable chutes in floor
- Cable ladders
- HVAC systems
- Halo grounding systems
- Double doors

What's the difference at Alpha?

Over several decades, Alpha Technologies has established itself as a leader in powering critical devices in communication networks, notably becoming North Americas' most prolific supplier of outside plant cabinets. Our distinctive excellence is the ability to be nimble and respond rapidly to customer needs, delivering solutions that solve their unique powering challenges.

Alpha's TL 9000 certified quality management system governs our products and services portfolio, procedures and processes. Combine this with our operational excellence and continuous improvement programs; we aim to deliver complete customer satisfaction by providing solutions of the highest standard and value.

If your network needs shelter solutions, why look any further than the experts in communications power to supply the right housing for your power and electronic equipment?

Contact us with your specific requirements at **1-800-667-8743** or email **shelters@alpha.ca**
Visit Alpha online at **www.alpha.ca/shelters** for more information.


ALPHACell
PREMIUM GEL 220 GOLD-HP
Made in USA • Cell Alpha Technologies for battery replacement information at 360 647 2360 or visit www.
Date:
VDC:
Mhos:
WARNING: DO NOT USE EXISTING HARDWARE.
Proper Hardware Provided.
Hardware size: ¼"-20 UNC x ¾" max length
Terminal Torque: 110 in-lbs (12.4Nm)
Float Charge Voltage: 13.5 to 13.8 Vdc @ 77F
12 VOLT - 220 Minute Runtime @ 4 to 1.75 VPC @ 77F)
ADVERTENCIA: NO SE USE CON EL HERRAJE EXISTENTE.
El herraje apropiado se provee con la batería.
Tamaño del herraje: ¼"-20 UNC x ¾" Máximo de largo
Torque en la terminal: 110 in-lbs (12.4 Nm)
Voltaje de carga: 13.5 to 13.8 Vdc @ 25C
12 Voltios - 220 minutos de ejecución (2.0 a 1.75 VPC @ 25C)
ATTENTION: NE PAS UTILISER LE MATÉRIEL EXISTANT.
Matériel adapté fourni.
Taille de la pièce ¼" -20 UNC x ¾" longueur maximum
PROPOSITION 65
WARNING
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 GX
Cell Alpha Technologies for battery replacement information at 360 647 2360 or visit www.
Mhos:
ATTENTION:

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, Alpha also offers AGM and specialty batteries that support multiple applications while offering extended runtime and warranty options. Excellent heat displacement characteristics have shown Alpha's Gel cell batteries to exhibit superior working life and reliability. AlphaCell™ GXL, HP and XTV 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 configure 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, 48, 125Vdc or 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.

Is fire retardant case a requirement?
- Non FR or UL94-VO.

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.

Advanced Battery Technologies

Alpha is continuously exploring new, innovative specialty energy storage technologies that help our customers lower their Total Cost of Ownership (TCO). 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. Contact your Alpha sales representative for advice on which battery technology will best satisfy your requirements.

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 ($LiMn_2O_4$ 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
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

AlphaCell™ GXL

Gel Top-Terminal Batteries

- 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

Model		220 GXL	195GXL	165GXL	85GXL-HP
P/N		**181-231-10**	**181-230-10**	**1810015**	**181-213-10**
Warranty[1]		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**		221 mins	196 mins	165 mins	85 mins
BCI group size		31	31	27	22
Terminals		Threaded insert ¼ to 20 UNC			Threaded insert 10-32 UNC Bolt
Cells per unit		6	6	6	6
Voltage per unit		12.8V	12.8V	12.8V	12.8V
Conductance value		960-1400	880-1320	800-1200	480-720
Impedance @ 60Hz (Ohms)		0.005	0.005	0.0055	0.0065
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
Mechanical					
Dimensions w/terminals	mm	215.4H x 340.9W x 172.7D	215.4H x 340.9W x 172.7D	215.4H x 317.8W x 173.4D	206H x 228W x 139D
	inches	8.48H x 13.42W x 6.80D	8.48H x 13.42W x 6.8D	8.48H x 12.5W x 6.83D	8.1H x 9W x 5.5D
Weight		33.2kg (73lbs)	30.5kg (67lbs)	28.6kg (63lbs)	18kg (39.6lbs)
Environmental					
Discharge		-40 to 71°C (-40 to 160°F)			
Charge (with temperature compensation)		-23 to 60°C (-9.4 to 140°F) (Charger temp comp @ ±5mV/C per °C)			
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			

Current discharge ratings table in Amps (end voltage 1.75VPC @ 25°C/77°F)

Hours	1	2	3	4	6	8	10	12	20	24	48	72	100
220GXL	67.7	40.4	29.1	22.9	16.1	12.6	10.2	8.7	5.5	4.6	2.4	1.6	1.2
195GXL	65.1	37.4	26.8	21	14.8	11.5	9.5	8	5	4.3	2.2	1.5	1.1
165GXL	55.9	32.8	23.5	18.4	12.9	10	8.2	6.9	4.3	3.7	1.9	1.3	0.9
85GXL	33.2	18.8	13.3	10.4	7.34	5.70	4.68	3.97	2.50	2.12	1.11	0.76	0.56

1. Warranty varies by country and region. Warranty valid only when used with Alpha approved power supplies, chargers and enclosures in US/Canada. 5 years warranty when purchased in conjunction with AlphaGuard. Consult your salesperson or manual for details. **Runtime calculated using a 25A DC constant current load.

AlphaCell™ Gold HP

GOLD-HP GelCell Batteries

- 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 5 and 6 year full warranties[1]
- Wide operating temperature range

Nominal Specifications

Model		220 GOLD-HP	195 GOLD-HP
P/N		**181-233-10**	**181-232-10**
Warranty[1]		5 to 6 year[3] full replacement	5 to 6 year[3] full replacement
Service life		Extended	Extended
Typical runtime[2]		220 mins	195 mins
Sealed VRLA		Valve regulated lead acid	Valve regulated lead acid
Heat resistant		Extreme	Extreme
Hydrogen emission		Low	Low
Terminals		Threaded insert ¼" - 20 UNC	Threaded insert ¼" - 20 UNC
Cells per unit		6	6
Voltage per unit		12.8	12.8
Conductance value		960-1400	880-1320
Max. discharge current		900A	900A
Short circuit current		2800A	2600A
10 Second volts @ 100A		11.4	11.3
Impedance @ 60Hz (Ohms)		0.0050	0.0050
Nominal capacity at 20hrs: (to 1.75VPC)		109Ah	100Ah
Nominal capacity at 20hrs: (to 1.70VPC)		110Ah	102Ah
BCI Group Size		31	31
Mechanical			
Dimensions w/terminals	mm	215.4H x 340.9W x 172.7D	215.4H x 340.9W x 172.7D
	inches	8.48H x 13.42W x 6.80D	8.48H x 13.42W x 6.80D
Weight		33.2kg (73lbs)	30.5kg (67lbs)
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 (Charger temp comp @ ±5mV/C per °C)	
AC ripple charger		0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4% P-P	

1. Warranty varies by country and region. Warranty valid only when used with Alpha approved Power Supplies, Chargers and Enclosures. Consult your sales person for details.
2. Runtimes calculated using a 25A DC constant current load.
3. The Gold-HP warranty is 6 years when purchased in conjunction with AlphaGuard™ Charge Management, and 5 years if AlphaGuard Charge Management is not used.

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

Nominal Specifications

Model		AlphaCell™ 135 AGM-P	AlphaCell™ 160 AGM (Top Terminal)
P/N		**1810043**	**1810017**
Warranty[1]		4 year full replacement	1 year full replacement
Service life		Long	Long
Sealed VRLA		Valve Regulated Lead acid	Valve Regulated Lead Acid
Heat resistant		High to moderate	Moderate
Hydrogen emission		Low	Low
Terminals		Threaded insert ¼" - 20 UNC	L Type with .28" hole
Typical runtime[2]		135 mins	160 mins
Cells per unit		6	6
Voltage per unit		12.8V	12.8V
Conductance value		900-1350	1040-1560
Max. discharge current		800A	800A
Short circuit current		3100A	3300A
10 Second volts @ 100A		11.5	11.6
Impedance @ 60Hz (Ohms)		0.005	0.004
Capacity at 20hrs (to 1.75VPC)		75Ah	88Ah
Mechanical			
Dimensions w/terminals	mm	203.6H x 260.5W x 173.4D	229.8H x 317.8W x 173.4D
	inches	8.02H x 10.26W x 68.3D	9.05H x 12.57W x 6.83D
Weight		24.9kg (54.8lbs)	28kg (62lbs)
Environmental			
Discharge		-40 to 71°C (-40 to 160°F)	-40 to 71˚C (-40 to 160˚F)
Charge (with temp compensation)		-23 to 60°C (-9.4 to 140°F)	-23 to 60˚C (-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% P-P	

Current Discharge Ratings Table in Amps (end Voltage 1.75VPC @ 25°C/77°F)					
Hours	1	2	4	8	20
160 AGM	54.3	31.0	17.8	9.9	4.40
135 AGM-P	49.0	28.0	15.5	8.63	3.75

1. Warranty varies by country and region. Warranty valid only when used with Alpha approved power supplies, chargers and enclosures. Consult your salesperson for details.
2. Runtime calculated using a 25A DC constant current load.

AlphaCell™ XTV

Extreme Temperature Batteries

- Extreme temperature Absorbed Glass Mat (AGM) technology
- Significant cold temperature performance improvement over gel
- Longer runtimes help increase network reliability
- Multiple models provide options for all network architectures
- Power density gains allow more runtime from smaller sized battery
- Extended service life for non-temperature controlled outdoor enclosures
- Full 5-year replacement warranty[1]

Nominal Specifications

Model		100XTV	150XTV	195XTV	230XTV
P/N		**1810226**	**1810227**	**1810228**	**1810229**
Warranty[1]		5-year full replacement			
Operating Temperature Range (w/Temperature Compensation)		-40 to 60°C (-40 to 140°F) (charger temperature compensation @ ±3.3mVpc per °C)			
Storage Temperature		-10 to 40°C (14 to 104°F)	-10 to 40°C (14 to 104°F)	-10 to 40°C (14 to 104°F)	-10 to 40°C (14 to 104°F)
Self Discharge		Battery can be stored up to 12 months at 25°C (77°F). Higher temperatures during storage will require more frequent recharge.			
Voltage Per Unit		12V	12V	12V	12V
Float Charge Voltage		13.5 to 13.8Vdc average per 12V unit at 25°C (77°F)			
Refresh/Boost Charging Voltage		14.4 to 15.0Vdc average 12V unit at 25°C (77°F)			
Maximum AC Ripple (Charger)		0.5% RMS or 1.5% of float recommended for best results. Maximum voltage allowed = 4% P/P			
Terminal Type		Threaded alloy insert terminal to accept M6 x 12mm bolt	Threaded alloy insert terminal to accept M6 x 20mm bolt		
Terminal Hardware Torque		13.6NM / 120in-lbs	13.6NM / 120in-lbs	13.6NM / 120in-lbs	13.6NM / 120in-lbs
Case Sizes		22NF	24	27	31
Mechanical					
Dimensions w/terminals	mm	207H x 138W x 228D	214H x 168W x 275D	214H x 322L x 169W	217H x 343L x 170W
	inches	8.17H x 5.46W x 9.01D	8.44H x 6.65W x 10.85D	8.43H x 12.71L x 6.67W	8.57H x 13.50L x 6.71W
Weight		17.7kg (39lbs)	25.4kg (56lbs)	30.5kg (67lbs)	32kg (75lbs)
Battery					
Runtime Rating 25A (@ 25°C/77°F to 1.75Vpc)		100 minutes	150 minutes	195 minutes	230 minutes
Amp Hour Capacity 20Hr Rate (@ 25°C/77°F to 1.75Vpc)		56Ah	80Ah	100Ah	110Ah
Conductance Range Fully Charged New Battery (@ 25°C/77°F)		700 - 800	900 - 1100	1050 - 1250	1250 - 1550

Current Discharge Ratings Table in Amps (end Voltage 1.75VPC @ 25°C/77°F)										
Hours	1	2	3	4	5	6	8	10	12	20
100XTV	39.4	22.1	15.8	12.4	10.3	8.7	6.7	5.4	4.6	2.8
150XTV	53.0	30.6	21.6	16.8	13.9	11.9	9.3	7.7	6.5	4.0
195XTV	65.5	37.6	26.9	21.0	17.3	14.7	11.3	9.4	7.9	5.0
230XTV	75.6	42.5	30.3	23.9	19.5	16.5	12.8	10.4	8.8	5.5

1. Warranty varies by country and region. Warranty valid only when used with Alpha approved power supplies, chargers and enclosures in US/Canada. Consult your salesperson or manual for details.

AlphaCell™ 3.5 & 4.0 HP

Pure Lead Top-Terminal Batteries

- 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[1]

Nominal Specifications

Model		3.5HP	4.0HP
P/N		**1810077**	**1810078**
Warranty[1]		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[2]		210 mins	240 mins
BCI group size		31	
Terminals		Threaded insert 1/4 - 20 UNC"	
Cells per unit		6	
Voltage per unit		12.8	
Conductance value		1400-1850	1700-2500
Max. discharge current		800A	900A
Short circuit current		2800A	3200A
10 second volts @ 100A		11.7	11.8
Impedance @ 60Hz (Ohms)		2.7	2.2
Mechanical			
Dimensions 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 140°F)	
Charge (with temperature compensation)		-40 to 60°C (-9.4 to 140°F)	
Float charging voltage		13.5 to 13.8Vdc (Charger temp comp @ ±4mV/C per °C)	
AC ripple charger		0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4%V pk to pk	

Current Discharge Ratings Table 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

1. Warranty varies by country and region. Warranty valid only when used with Alpha approved power supplies, chargers and enclosures in US/Canada. Consult your salesperson or manual for details.
2. Runtimes calculated using a 25A DC constant current load to 1.75Vdc @ 25°C

AlphaCell™ 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

Nominal Specifications

Model		**195 GXL-FT**
P/N		**1810029**
Service life		Extended warranty - 3 year full replacement[1]
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		800-1200
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	11.2H x 4.3W x 15.5D
Weight		34.5kg (76.3lbs)
Environmental		
Discharge		-40 to 71°C (-40 to 160°F)
Charge (with temp compensation)		-20 to 50°C (-4 to 122°F) (Charger temp comp @ ±4mV/C per °C)
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

Current Discharge Ratings Table in Amps (End Voltage 1.75VPC @ 25°C/77°)

Hours	1	2	3	4	6	8	10	12	20	24	48	72	100
195 GXL-FT	69.2	38.0	26.8	21.1	15.2	12.0	9.92	8.48	5.50	4.60	2.31	1.56	1.13

1. Warranty varies by country and region. Warranty valid only when used with Alpha approved power supplies, chargers and enclosures in US/Canada. Consult your salesperson or manual for details.

AlphaCell™ BT

Broadband/Telecom VLRA Battery Series

- Front access terminal battery for Broadband/Telecom applications
- Long life alloy design
- Reduced headspace requirement provides higher energy density in cabinet or rack applications
- Removable handles for ease of installation
- Thermally welded case-to-cover bond ensures a leak-proof seal

Nominal Specifications

Model		AlphaCell 160 BT	AlphaCell 180 BT	AlphaCell 210 BT
P/N		**1810119**	**1810120**	**1810154**
Warranty[1]		4 years full replacement then 6 years prorated		
Voltage		12V	12V	12V
Ampere hour capacity 8hr rate @ 25°C (77°F) to 1.75 V/c		157Ah	181Ah	202Ah
Ampere hour capacity 10hr rate @ 25°C (77°F) to 1.75 V/c		161Ah	186Ah	209Ah
Maximum discharge current		800A	800A	800A
Short circuit current		4,700A	4,500A	4,500A
Ohms impedance 60Hz (Ω)		0.0031 Ohms	0.0037 Ohms	0.0040 Ohms
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 14.80Vdc average per 12V unit @ 25°C (77°F)		
Terminal: Inserted interunit connector provided		Threaded copper alloy insert terminal to accept ¼-20 UNC bolt		
Terminal hardware initial torque		110 in. lbs. (12.4 Nm)		
Mechanical				
Dimensions	mm	283H x 559D x 126W	320H x 559D x 126W	320H x 559D x 126W
	inches	11H x 22D x 5W	13H x 22D x 5W	13H x 22D x 5W
Weight		52.2kg (115lbs)	59.4kg (131lbs)	60kg (132lbs)
Environmental				
Operating temperature range (with temperature compensation)		Discharge: -40 to 71°C (-40 to 160°F) Charge: -23 to 60°C (-10 to 140°F)		
Nominal operating temperature range		23 to 27°C (74 to 80°F)		
Recommended maximum charging current limit		C/5 amperes (20hr rate)		
Float charging voltage		13.5 to 13.8Vdc average per 12V unit (Charger temp comp @ ±5mV/C per °C)		
Maximum AC ripple (charger)		0.5% RMS or 1.5% of float charge voltage recommended for best results. Max voltage allowed = 4% P-P		

Current Discharge Ratings Table in Amps (End Voltage 1.75VPC @ 25°C/77°)

Hours	1	2	3	4	5	6	7	8	10	12	20	24
AlphaCell 160 BT	107.1	62.2	44.9	35.4	29.3	25.1	22.0	19.7	16.1	13.7	8.6	7.3
AlphaCell 180 BT	123.1	71.1	51.7	40.8	33.8	29.0	25.4	22.6	18.6	15.9	10.0	8.5
AlphaCell 210 BT	138.0	82.7	58.4	45.8	37.9	32.3	28.4	25.3	20.9	178.8	11.5	9.8

1. Warranty in US/Canada only for other regions consult your salesperson for details.

AlphaCell HR

High Rate UPS Standby Power Applications

- Front access threaded copper alloy inserts for reduced maintenance and increased safety
- Front terminal design maximizes energy density with direct connect extrusion fusion weld technology
- Reduced headspace promotes higher energy density in cabinet or rack applications
- Removable handles for easy installation
- Thermally welded case-to-cover bond to ensure a leak-proof seal

Nominal Specifications

Model		**AlphaCell 700 HR**
P/N		**1810118**
Warranty		3 years
Voltage per unit		12Vdc
Maximum terminal discharge current rating (Amps)		800
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)
Terminal: Inserted - Inter-unit connector provided		Threaded copper alloy insert terminal to accept ¼-20 UNC bolt
Terminal hardware initial torque		110 in.-lbs. (12.4 N-m)
Mechanical		
Dimensions	mm	320.04H x 559.05D x 125.73W
	inches	12.60H x 22.01D x 4.95W
Weight		60kg (131lbs)
Environmental		
Operating temp range with temp compensation		Discharge: -40 to 71°C (-40 to +160°F) Charge: 60 to -23°C (-10 to +140°F)
Nominal operating temp range		23 to 27°C (+74 to +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

Current Discharge Ratings Table in Amps (End Voltage 1.75VPC @ 25°C/77°)

Hours	1	2	3	5	8	10	12	20	24	72
1.85	105	66.1	48.8	32.5	21.9	18.1	15.4	9.67	8.16	2.60
1.80	116	70.4	51.7	34.4	23.1	19.0	16.2	10.1	8.54	2.70
1.75	124	74.0	53.8	35.5	23.7	19.5	16.5	10.3	8.70	2.80

Specifications subject to change without notice

Constant Power Discharge Ratings - Watts Per Cell @ 77°F (25°C)

Operating Time to End Point Voltage (in minutes)

End Point Volts/Cell	5	10	15	20	30	40	45	50	60	90
1.75	821.1	700.8	596.0	512.5	398.3	326.9	300.6	278.5	243.2	177.7
1.70	961.5	804.0	665.6	559.0	422.4	341.9	312.9	288.7	250.8	181.5
1.67	1058.8	853.6	700.0	575.3	432.5	349.0	319.0	294.0	254.6	182.9
1.65	1075.6	866.0	699.2	581.1	436.1	351.8	321.5	296.3	256.7	184.5
1.60	1097.4	881.5	712.2	592.2	444.1	357.5	326.4	300.5	259.8	186.0

1. Warranty in US/Canada only for other regions consult your salesperson for details.

AlphaCell RE Top-Terminal

Top Terminal Renewable Energy Applications

- Deep cycle battery designed for renewable energy applications
- Robust lead alloy plates for extended cycle life and low calcium grid alloy for reduced gas emissions and ease of recycling
- Flame-arresting, one-way pressure-relief vent for safety and long life
- UL-recognized component

Nominal Specifications

Model		AlphaCell 34 RE	AlphaCell 52 RE	AlphaCell 78 RE	AlphaCell 95 RE	AlphaCell 106 RE
P/N		**1810252**	**1810248**	**1810253**	**1810254**	**1810164**
Warranty[1]		2 years				
Voltage per unit		12.84				
Electrolyte		Absorbed H2SO4' SG=1.300				
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 a recharge sooner than batteries stored at lower temperatures.				
Terminal		Inserted Terminal (Copper Alloy) 10-32 UNF bolt (AlphaCell 34 RE, 52 RE) ¼-20 UNC bolt (AlphaCell 78 RE, 95 RE, 106 RE)				
Terminal hardware Initial torque		30 in.-lbs (3.4 N-m) (AlphaCell 34 RE, 52 RE) 110 in.-lbs (12.4 N-m) (AlphaCell 78 RE, 95 RE, 106 RE)				
Mechanical						
Dimensions (H x W x D)	mm	172.7 x 131.9 x 197.1	205.1 x 139.2 x 228.6	203.5 x 173.4 x 273.2	204.8 x 173.4 x 317.8	216.4 x 172.7 x 340.9
	inches	6.80 x 5.19 x 7.76	8.07 x 5.48 x 9.0	8.01 x 6.83 x 10.76	8.06 x 6.83 x 12.51	8.52 x 6.80 x 13.42
Weight		12kg (27lbs)	18kg (40lbs)	25kg (54lbs)	30kg (64lbs)	31kg (69lbs)
Environmental						
Operating temperature range (with temperature compensation)		Discharge: -40 to +71°C (-40 to +160°F) Charge: -23 to +60°C (-10 to +140°F)				
Normal operating temperature range		+20 to +27°C (+68 to +80°F)				
Recommended maximum charge current limit		C/5 amperes @ 20hr rate				
Float charge voltage		13.5 to 13.8 Vdc/unit Average at 25°C (77°F)				
Equalization and cycle service charging and current limits		14.4 to 14.8 Vdc/unit Average at 25°C (77°F)				

Current Discharge Ratings Table in Amps (End Voltage 1.75VPC @ 25°C/77°)

Hours	1	2	3	4	5	6	7	8	10	12	20	24	72	100
AlphaCell 34 RE	19.70	11.80	8.70	7.00	5.80	4.93	4.30	3.80	3.11	2.64	1.65	1.38	0.47	0.34
AlphaCell 52 RE	29.60	17.55	12.97	10.35	8.66	7.43	6.49	5.75	4.72	4.00	2.50	2.10	0.72	0.52
AlphaCell 78 RE	43.50	26.60	19.50	15.50	12.90	11.10	9.80	8.70	7.10	6.00	3.75	3.15	1.08	0.78
AlphaCell 95 RE	47.00	29.00	22.00	17.70	14.80	12.70	11.14	9.90	8.17	6.97	4.40	3.70	1.29	0.95
AlphaCell 106 RE	49.20	30.75	23.33	19.00	16.12	14.00	12.40	11.13	9.20	7.85	5.00	4.21	1.44	1.06

1. Warranty in US/Canada only for other regions consult your salesperson for details.

EnergyCell RE Front Terminal Battery

Front Terminal Renewable Energy Applications

- Front Terminal Access Design for ease of maintenance and installation
- High-density pasted plates for high cycle life
- Lead-calcium-tin alloy plates for long life in both cycling and float applications
- High recharge efficiency
- Compact footprint for higher energy density requirements
- Thermally welded case-to-cover bond to eliminate leakage
- UL-recognized component

Nominal Specifications

Model		EnergyCell 170RE	EnergyCell 200RE
P/N		**1810255**	**1810137**
Warranty[1]		2 years	2 years
Voltage Per Unit		12 Vdc	12 Vdc
Self Discharge		Battery can be stored up to 18 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.	
Temp Compensation Factor (Charging)		±5mV per °C per cell (2V)	
Terminal		Threaded copper alloy insert terminal to accept ¼"-20 UNC bolt	
Terminal Hardware Initial Torque		110 in-lbs (12.4 Nm)	
Mechanical			
Dimensions*	mm	283H x 559D x 126W	320 x 5509 x 126
	inches	11.14H x 22.01D x 4.95W	12.60 x 22.01 x 4.95
Weight		52kg (115lbs)	60kg (131lbs)

* Batteries to be installed with 0.5in (12.7mm) spacing minimum and free air ventilation

Environmental	
Operating Temperature Range (with temperature compensation)	Discharge: -40 to 71°C (-40 to 160°F) Charge: -23 to 60°C (-10 to 140°F)
Optimal Operating Temp Range	23 to 27°C (74 to 80°F)
Recommended Maximum Charging Current Limit Per String	25 Amps DC / 30 Amps DC
Float Charging Voltage	13.62 Vdc/unit average at 25°C (77°F)
Equalization and Cycle Service Charging Limits	14.4 Vdc/unit average at 25°C (77°F)

Current Discharge Ratings Table in Amps (End Voltage 1.75VPC @ 25°C/77°)										
Hours	1	3	4	5	8	12	20	24	48	100
EnergyCell 170RE	89.1	38	30.15	25.18	17.12	12.10	7.69	6.54	3.41	1.7
EnergyCell 200RE	103	44	34.9	29.1	19.8	14	8.9	7.55	3.95	2

1. Warranty in US/Canada only for other regions consult your salesperson for details.

UPS Batteries

7 to 34AH

- 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

Nominal Specifications

Consult your Alpha representative for P/N configurations		
Electrical		
Type		Valve regulated lead acid
Range of capacity		7 to 34Ah
Recommended float voltage		13.5Vdc @ 20°C (68°F)
Terminal type		Threaded copper insert or fast on (vary by battery Ah)
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 to 50°C (-4 to 122°F)
	Charge	-20 to 50°C (-4 to 122°F)
	Storage	-20 to 50°C (-4 to 122°F)

*For information on warranties please contact your sales rep.

PowerAgent

Remote Battery Monitoring

- Intelligent site controller monitors up to 6 strings of 40 batteries (2V or 12V cells)
- Monitors string and cell voltage, admittance, cell temperature, ripple current and float current
- Expand site monitoring capabilities via external analog and digital inputs and alarm relay outputs
- Predictive measurements and sophisticated data logging for comprehensive battery health indication
- Advanced local and remote monitoring options including SNMP over TCP/IP

Electrical

Site Controller Unit:
Sensors: 20-60Vdc
Power consumption:.....5W @ 20-60Vdc plus 5W
(If 12V source used at max load)

Sensors:
Voltage:
- 2V: 1.65-3.0Vdc
- 12V: 8.0-16Vdc

Power consumption:
- 2V: <15ma nominal, 2/5A during admittance test
- 12V: <15ma nominal, 5/7A during admittance test

Rim Modules:
AC line measurement: ....90 to 140Vac, RMS, Sine, 50/60Hz

Mechanical

Sensors (2V)
Battery Interface
Battery positive: Ring terminal with 12" wire
Battery negative: Bracket or ring terminal with 12" wire

Rim Modules
Dimensions:
mm:.....68.6H x 81.3W x 25D
inches:.....2.7H x 3.2W x 1D
Weight:.....0.11kg (0.25lbs)

Environmental

Site Controller Unit:
Operation:.....-45 to 65°C

Sensors:
Operating range:
- 2V: -40 to 80°C
- 12V: -40 to 80°C

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

Communications

Site Controller Unit:.....SNMP via TCP/IP
USB (X4)

Sensors:
Communications Interface:
- 2V: Optically isolated RJ-45 (1200V)
- 12V: Optically isolated RJ-45 (1200V)

What pieces make up the system

1. Intelligent 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.

2. Battery Sensors
Battery sensors are connected to the terminal posts of each battery cell or block in the system. The sensors measure the battery's admittance (internal resistance), voltage, and post temperature.

3. Current Sensors
Float current sensors are available for monitoring charging currents as low as 20mA and also provide ripple current measurements. A discharge monitoring sensor is also available for DC currents up to 500A with a 1A resolution

4. RIM/ROM Modules
RIM/ROM modules expand the system capabilities beyond just battery monitoring to integrate complete facilities, HVAC, and security monitoring. RIM modules provide up to six analog or digital inputs. ROM modules provide four remotely controllable output relay contacts.

Key System Features

- Enterprise Class system designed to manage thousands of batteries from a single console using open standard interfaces
- Automated, consistent, continuous measurement data thereby dramatically increasing the reliability of measurements and making historic trending simple
- Intelligent equalization which balances float charging across battery cells reducing or eliminating gassing or sulphation caused by unequal charge on batteries
- Holistic approach to monitoring including voltages, ohmic measurements, individual cell temperatures, ripple current, float current, etc.
- Facilities and environmental monitoring options
- Data logging of parameter data and discharge events (number, depth, duration, and cell performance)

Software and Monitoring Options

1. Integrated Site Controller Access
The site controller's internal web interface provides information for all components connected to the Site Controller.

2. Lookout™ Software
Lookout™ Software provides a global view of multiple installations with the ability to "drill in" to details. Lookout™ is provided at no charge.

3. Continuity SBL
Continuity SBL enterprise-class battery system monitoring and analysis package provides predictive trending information and can manage thousands of battery sites.

4. 3rd Party NMS/EMS Systems
Any software that supports an SNMP interface.

Battery Accessories

AlphaGuard™ Battery Charge Management System

AlphaGuard™ Potted Version

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, Alpha-Guard 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.

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

- 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 generators provide extended runtime to critical loads, while minimizing the amount of battery backup required at the site. 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.

AlphaGen™ DC generator systems are specifically designed for outside plant communication networks requiring -48Vdc power. They offer quiet operation and low profile for a discreet presence in populated areas.

AlphaGen™ Portable

3.0kW Portable 36/48Vdc Generator System

- 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 20 hrs

P/N: 041-028-10

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)

3.0kW Portable Generator Sound Levels

Ambient background noise level at 45dBA
All readings are 8 point averages

Required Accessories

Output interface cable: ..... Available in 10', 30' or 50' lengths
Battery interface cable: ..... Choose ring lung, heavy-duty alligator clamp, or Y-adapter*
*Connects the power supply's battery input directly to the generator


30' Output interface
P/N: 875-324-20
10' P/N: 875-324-22
50' P/N: 875-324-21


Alligator clamp battery interface
P/N: 875-324-21


Ring lug battery interface
P/N: 874-946-21


Y-Adaptor battery
P/N: 874-946-22

Optional accessories:
DCX-PG-WK: ..... Portable generator wheel kit
P/N: 745-793-20
AG-PG-TOOL: ..... Punch tool kit for enclosures
P/N: 745-131-20
AG-PG-UK: ..... Enclosure upgrade kit
P/N: 745-131-21
DCX-PG-HANDLE: ..... Locking handle
P/N: 745-792-20
AG-CAB-KIT ..... Cable bag with cable and key lanyard
P/N: 745-764-21


AlphaGen
front view


AlphaGen
portable trailer


AlphaGen
with wheel kit

Agency Compliance

CSA C22.2 No. 100-95, 107.1-01,107.2-M89, 0.4 FCC part 15B Class A

DCX 2000 & ACX 2000i

Nominal Specifications

Model		AlphaGen DCX 2000	AlphaGen ACX 2000i
Features		›Large 1.7 gallon (6.4L) fuel tank for longer runtime ›Optional remote monitor cable ›Requires no Automatic Transfer Switch(ATS) ›No need to disconnect or reconnect power supply to utility power ›Quiet operation, less than 71 dBA at 7m(22ft) ›Capable of parallel operation with other DCX2000 units	›1.4 gallon (5.3L) fuel tank ›Inverter equipped for clean AC power ›Limited 12VDC output ›Fuel economy switch ›Quiet operation, less than 67 dBA at 7m (22ft)
Engine Type		4 stroke,OHV, single cylinder, air cooled, manual choke	4 stroke,OHV, single cylinder, air cooled, manual choke
Rated Voltage		36VDC	120VAC
12VDC Output		No	12VDC to 8.3A
Rated Power		2,000W continuous, 2,200W maximum	1,900W continuous, 2,000W maximum
Rated Current		50A	15.8
Rated Frequency		-	60Hz
Output Connector		Andreson type SBE-80 connector	1 x 120VAC, 20A 5020R Duplex
Fuel		Unlead Gasoline	Unlead Gasoline
Tank Capacity		1.7gal (6.5L)	1.4gal (5.3L)
Dry Weight		28kg (62lbs)	28kg (62lbs)
Weight w/Fuel		36.2kg (80lbs)	36.2kg (80lbs)
Dimensions	mm	545L x 290W x 500H	559L x 279.4W x 482.6H
	inches	21L x 11.4W x 19.7H	22L x 11W x 19H
Audible Noise db		60 to70dBA @7m	56 to 66dBA @7m
Cetrification		• CSA C22.2 no 100-04 • CSA B376 • FCC part 15B Class A • CARB	• EPA • CETL • CARB • ISO 9001
Runtime @ 50% Load		6.3hrs	3.0hrs
Runtime @ 100% Load		5.0hrs	7.50hrs
Required Accessories			**Included Accessories**
Output Interface Cable:		• 10' • 30' • 50'	• Oil Jug • 12V Charge Cable • Spare Spark Plug • Spark Plug Wrench & Handle • Manual • Oil Drain Extension
Battery Interface Cable (choose one):		• Ring Lug Battery Interface • Alligator Clamp Battery Interface • Y-Adaptor*	

* Connects the power supply's battery input directly to the generator

AlphaGen™

DC Generator System

- 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 powernode 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

Nominal Specifications

Model: 7.5kW
DC output voltage: ..... 52.0V ±0.5V @ no load 48V configuration
104.0V ±0.5V @ no load 96V configuration
DC output load regulation: .. 0.5V
Output current: ..... 52.0V @ 144A max
104V @ 72A max
Engine: ..... 624CC, Air cooled, Twin OHV 15hp
(using natural gas fuel)
RPM: (variable speed): ..... 2800 to 3600RPM
Acoustical noise
dBA 10' @ 100% rated load: ... 70.3Ave
dBA 20' @ 100% rated load: ... 64.3Ave
dBA 10' @ 70% rated load:..... 66.4Ave
dBA 20' @ 70% rated load: 60.4Ave

Performance / Features

Gas inlet pressure: .....0.5 to 2 PSI inlet pressure (see note 1)
Ign charger
Voltage: 13.5Vdc
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
- Low fuel pressure shutdown (propane only)
- Gas hazard (propane or natural gas)
- Over temp
- Water intrusion
- Pad shear
- Over speed
- Over crank

Optional feature:
Cold start kit: Provides additional starting capability at temperatures below 17.7˚C (0˚F).

Mechanical

PN-6x Dimensions:
cm..... 99H x 100W x 61D
inches..... 39H x 39.25W x 24D
with optional pedestal ..... 144H cm (57H in)
Weight: 174kg (338lbs)
with optional pedestal 168kg (370lbs)
APU fuel consumption:
Natural gas: 1000 BTU/Ft.^{3} ..... 156ft^3/hr
Propane gas: 2520 BTU/Ft.^{3}..... 1.48gal/hr
54ft^3/hr
6.24lbs/hr
Exterior surface temperature ..... 65°C max (149˚F)
(meets requirements of UL/CSA)

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

Renewable Energy Solutions

The Alpha Group member companies represent global powering expertise in the Renewable, Industrial, Cable TV/Broadband and Telecommunications industries. Through partnership between OutBack Power and Alpha Energy , Alpha Group companies are able to leverage collective experience and resources that come with many years as a global powering solutions pioneer.

- **Focus on Engineered Off-Grid and Hybrid Power Systems (HPS)** Alpha Group has built its reputation by providing customized powering solutions designed to meet the unique powering requirements of each individual installation throughout the world
- **Unparalleled Design Expertise** As a member of The Alpha Group of companies, we draw on more than three decades of powering expertise to ensure that projects are completed on time and on budget.
- **Optimized Reliability** High-profile, mission-critical projects in the military and security markets underscore our capability and commitment to innovative designs that uphold maximum reliability.
- **OEM Supplier Advantage** Leveraging key supplier relationships and volume purchasing contracts allows us to maximize customer value and provide simplified single-point accountability.
- **System Superiority at All Stages** From proposal, design and manufacturing to testing, delivery and support, Alpha offers complete, single-source solutions to meet today's powering challenges.

Renewable Energy Solutions

Alpha Energy

Alpha Energy, member of The Alpha Group and a division of Alpha Technologies Services, is a full-service engineering and project development company for the distributed generation power industry. Alpha is recognized as a market innovator in packaging renewable energy technologies and is one of the leading developers of turn-key photovoltaic systems for commercial, residential, institutional and remote applications. Utilizing solar, wind and alternative resources, Alpha Energy provides innovative power conversion solutions for the most demanding applications.

OutBack Power

Outback Power Technologies, a member of The Alpha Group, is the leading designer and manufacturer of advanced power electronics for renewable energy, backup power and mobile applications. With an emphasis on product performance, OutBack has established itself as the product of choice in harsh environmental conditions where product reliability is paramount. For grid-tied, grid-interactive, and off-grid applications, OutBack has advanced power conversion electronics to make your renewable energy system efficient and dependable.

Components

Radian Series Inverter/Charger

- 8000W of continuous power
- UPS mode capabilities
- Unsurpassed surge capability
- 120/240Vac split-phase voltage
- Simplified parallel design allows
- Quick and easy installation easy installation of systems from 8 to 80kW

The Radian Series GS8048 provides a comprehensive answer for grid-interactive and stand-alone power systems.

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 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

Solar Power Systems (SPS)

Alpha's Solar Power Systems (SPS) are solar powered DC power systems that support loads of up to 200 Watts. All system designs include the most recent advances in PV manufacturing, electronic controls and power management.

- Battery-based, off-grid applications
- For smaller loads up to 200 watts
- Multiple design choices including economy, standard or premium grade
- Pole-mount arrays and enclosed electronics
- Larger, ground-mount battery banks also available

Hybrid Power Systems (HPS)

Alpha's Hybrid Power Systems (HPS) are ideal for a wide variety of missioncritical applications, including telecom, security, military and pipeline operations. These highly versatile power plants are fully-configurable with AC or DC input and output options, and include inverters, DC rectifiers, converters, breakers,alarms, batteries and solar controllers.

- Multiple power generation sources
- Fully integrated system design
- For larger, off-grid applications
- Application specific, custom systems available

Security Solar Power Systems (sSPS)

Security Solar Power Systems (sSPS) are specifically designed, engineered and built to meet the unique powering requirements of wireless high-end security cameras in locations where grid power is either non-existent or impractical to access. Each sSPS model is a complete solution featuring:

- Integrated pole-mounted PV/solar panel
- Back-up battery storage
- Compact NEMA 3-R corrosion resistant enclosure with conformal coating
- Integrated on-board electronics support Class III 802.3 compliant cameras
- Operating temperature range from -20 to 55°C**
- Integrated Power over Ethernet (PoE) switch, 1-4 port pre-configured on selected models

** Temperature range applies to component functionality and not the potential effects of extreme temperatures on system or battery operations.

Photovoltaic Power System (PVPS)

Alpha's Photovoltaic Power Systems (PVPS) are ideal for customers seeking to incorporate solar electricity into DC-based powering applications. These scalable systems provide direct DC to DC input and output, maximizing available power. This fully configurable power plant also offers diverse options including programmable remote monitoring.

- Battery-based, on-grid or off-grid applications
- Provides power to battery bank or DC bus
- Fully scalable to meet power requirements
- Optional remote status monitoring

Services and Support

Alpha has the knowledge, experience and resources to provide you with the service and support solutions that keep your power infrastructure optimized and providing continuous, reliable power. We offer a full range of services designed to optimize investments by protecting assets and maximizing uptime, while ensuring reliability and performance of your equipment when it's needed most.

Alpha's service goal is to enable you to confidently focus on your core business, knowing there is a single point of contact for all of your power system servicing needs such as training, troubleshooting, project management, warranties, EF&I and more. Alpha's services including:

- Complete EF&I services
- Both on-site repair and depot repair
- Critical facility upgrades
- Turnkey installation and startup
- Project management, site evaluations and facility audits
- Monitoring and emergency service planning
- Bundled or single element service contracts
- Preventative maintenance including proactive diagnosis
- Battery renewal or replacement
- Turn up and test
- Extended warranty
- Training: Standard, in-class sessions; or customized for you and available on-site.
- Custom and on-demand services
- 24/7 emergency technical support

We service telecom customers of all sizes, from small independents to the largest national carriers in the following domains:

- Central Offices
- Co-location facilities
- Broadband headends
- Cell sites
- Outside plant
- Customer premise
- Line power
- DAS
- Small cells

Services and Support

Alpha Service Plans

WHAT'S THE DIFFERENCE AT ALPHA?

Our distinctive service excellence at Alpha is not just having expertise or the latest high-tech equipment…but simply being as "easy to do business with" as possible, and understanding your powering challenges better than anyone else. Combining this with our innate understanding of Alpha product uniquely positions us as the most qualified supplier of services for power infrastructure in the marketplace.

Alpha's TL 9000 certified quality management system governs not only our products but our broad services portfolio, procedures and processes. Pooling this with our operational excellence and continuous improvement programs, we aim to achieve complete customer satisfaction by providing service of the highest standard and value.

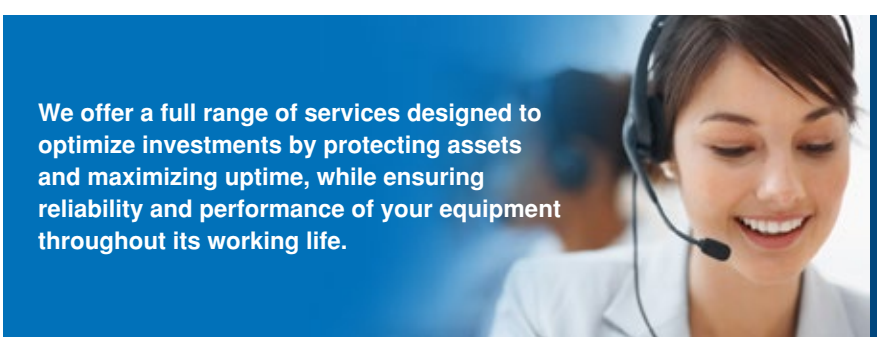
If you have a pressing powering challenge, contact us with your specific requirements at **1.800.667.8743** or email **sales@alpha.ca**. Visit Alpha online at www.alpha.ca/service for more information.

SERVICES

Service	Delayed Startup Warranty	Factory Warranty	Extended Warranty	Reliability	Reliability Plus
Remote Technical Support	Postpones Factory Warranty / Extended Warranty for 6 months - 2 years	7:00 am - 5:00 pm PST Mon - Fri	7:00 am - 5:00 pm PST Mon - Fri	24x7	24x7
Advanced Replacement		60 days post purchase	90 days post purchase	120 days post purchase	180 days post purchase
Depot Repair		Included	Included	Included	Included
Freight to Customer		Included	Included	Included	Included
Install & Commissioning	Purchaseable via Quote	Purchaseable via Quote	Purchaseable via Quote	Discount Eligible	Discount Eligible
Parts	N/A	N/A	N/A	OOW Discount Eligible	OOW Discount Eligible
Preventative Maintenance	N/A	N/A	N/A	Annual PM Included	Annual PM Included
Onsite 5 Day Response	N/A	N/A	N/A	Time & Materials	Included *Priority

SERVICE UPLIFTS - A LA CARTE

Service	Delayed Startup Warranty	Factory Warranty	Extended Warranty	Reliability	Reliability Plus
Batteries	N/A	N/A	N/A	Discount Eligible	Discount Eligible
PM - more than annual	N/A	N/A	N/A	Discount Eligible >1 year term	Discount Eligible >1 year term
Onsite Next Business Day Response	N/A	N/A	N/A	N/A	Location Dependent
Onsite 2 Business Day Response	N/A	N/A	N/A	N/A	Location Dependent
Emergency Response	N/A	N/A	N/A	N/A	Location Dependent



We offer a full range of services designed to optimize investments by protecting assets and maximizing uptime, while ensuring reliability and performance of your equipment throughout its working life.

All requests for repair are easily initiated by visiting **www.alpha.ca/rma** or calling toll free **1.888.462.7487**

FIELD SERVICES – INSTALLATION, TEST & COMMISSION

Alpha offers a broad array of field and engineering services for your AC and DC power system and battery requirements, including turnkey installation to commissioning, testing and reporting according to strict TL9000 standards. We can safely handle system reconfigurations, upgrades, relocations and decommissionings up to, and beyond 10,000 Amps, and we offer reduced commissioning pricing if purchased in conjunction with an Alpha Service Plan.

If your business is new to Alpha, our service technicians have the experience and qualifications to work with power equipment of other makes and models.

TECHNICAL SUPPORT

The goal of our technical support team is to delight our customers with exceptional support, and we achieve this by employing a response system featuring traceability and an escalation path that leads right up to our CEO.

Aside from regular business hours, Alpha provides Emergency Technical Support 24 hours per day, 7 days per week.

WARRANTIES & CONTRACTS

Predictive and preventative maintenance is a critical part of ensuring your power equipment continues to operate as it did the day it was installed. An annual preventative maintenance visit performed by Alpha's certified technicians will ensure that your batteries and system are up to the job. They will tune up your equipment with precision and speed, using genuine parts and documenting all findings/actions with a comprehensive site report.

Alpha service plans and warranties are designed to help you plan for, and minimize costs. Our Reliability Plan provides regularly scheduled preventative maintenance visits that keep your equipment running smoothly and mitigate costly faults or failures before they happen. Should one of our standard services not be exactly what you are looking for, we would be happy to work with you to define a custom service plan to address the key challenges in your business.

Visit www.alpha.ca/warranty or www.alpha.ca/serviceplans for more details.

For assistance, contact Alpha Technical Support

Toll free North America: **1.888.462.7487**

Outside Canada and USA: **+1.604.436.5547**

7:00 AM - 5:00 PM North American Pacific Standard Time for regular inquiries

24/7 Emergency Support: **1.888.462.7487**

To report a problem, visit: **www.alpha.ca/report-a-problem**

To request depot repair, visit: **www.alpha.ca/rma**

Alpha Training Courses

Today's advanced power electronics require skilled, experienced technicians to not only maintain a networks' safety and performance; but to ensure its efficiency, reliability and cost effectiveness. Alpha Technologies offers a range of industry renowned Power Training Courses that are both interactive and technical. Delivered by qualified and experienced industry professionals, these courses offer a mix of theory, group activities and hands on training. Attendees will be in an active learning environment that focuses on understanding every nuance of the technology. Field ready information will be presented that can be applied directly to your team's benefit. Safety and best practices will always be in the foreground to complement and enhance the skills of your team.

Alpha also provides custom training courses, including generic DC Power training, as well as courses on Uninterruptible Power Systems (UPS), AMPS inverter systems and more. Custom courses are tailored to our clients' specific requirements, and can be delivered onsite or online.

Visit **www.alpha.ca/training** for more details.

COURSE 1 - TELECOM DC POWER AND CORDEX ADVANCED POWER SYSTEM TRAINING

(P/N: 0700016-001)

This intensive course covers concepts, design, application, maintenance and operation of DC power systems/components, and includes classroom instruction as well as hands-on training. Courses are taught by industry experts in a classroom and lab environment.

The classes are focused on the advanced Alpha Cordex series of power system controllers and rectifiers. Many of the engineering, installation and maintenance practices can be applied to all types of DC power systems.

Course is available to be conducted on site at your location.

Who should attend

Developed specifically for Alpha customers, the course is intended to complement the basic electrical knowledge of Telecommunications technicians/engineers with specialized training in modern DC power systems and components.

Students will receive certificates upon successful completion of the course.

Key Features

- DC Power system theory
- DC System sizing
- Site engineering
- Installation and commissioning
- Safety
- Cordex controller programming
- Remote access, Ethernet, POTS and SNMP
- 40% hands-on training
- Basic maintenance and troubleshooting techniques
- Checking alarm set-points
- Certification
- SNMP and MODBUSS

Benefits

On completion of the course students will be proficient in the design, installation, maintenance and operation of Alpha Cordex DC power systems and will be prepared to work safely and efficiently in this environment.

Alpha Training Courses

COURSE 2 - POWER SYSTEMS FOR CABLE APPLICATIONS

(P/N: 0700017-001)

Headend DC Power Training

The DC power headend course covers concepts, maintenance and operation of DC power systems/components, and includes classroom instruction as well as hands-on training. The classes are focused on the advanced Alpha Cordex series of power system controllers and rectifiers with an overview of the AMPS inverter systems.

Outside Plant Course

The outside plant course will cover the XM3 cable UPS operating and configuration parameters. The communication module along with battery maintenance and Midtronics Celltron conductance testing will be included in the classroom instruction as well as hands-on training.

Courses are available to be conducted on site at your location.

Who should attend

Developed specifically for Alpha customers, the course is intended to complement the basic electrical knowledge of Cable Telecommunications technicians/engineers with specialized training in modern DC power systems and or outside plant components.

Key Features

Headend
- DC Power system theory
- Cordex controller; setting parameters
- Remote access; Ethernet, and SNMP
- Programming and checking alarm set-points
- 25% Hands-on training
- AMPS Inverter System

Outside Plant
- XM3; setting parameter
- Understanding parameters
- Battery theory and safe practices
- Celltron battery conductance testing
- Hands on for both the XM and batteries

Benefits

Having two separate course focused on the cable telecommunication field you will have the opportunity to train your team on the equipment they are working with and to be prepared to work safely and efficiently in this environment.

COURSE 3 - CORDEX POWER SYSTEMS - BASIC

(P/N: 0700019-001)

This introductory course covers concepts and operation of DC power systems/components, and includes classroom instruction as well as hands-on training. Courses are taught by industry experts in a classroom and lab environment.

The classes are focused on the advanced Alpha Cordex series of power system controllers and rectifiers.

Course is available to be conducted on site at your location.

Who should attend

Developed specifically for Alpha customers, the course is intended to complement the basic electrical knowledge of Telecommunications technicians/engineers with specialized training in modern DC power systems and components.

Key Features
- Cordex controller; setting parameters
- Remote access; Ethernet, and SNMP
- 50% hands-on training
- Checking alarm set-points
- Programming

Benefits

On completion of the course students will be proficient in navigating the Alpha Cordex Controller in DC power systems and will be prepared to work safely and efficiently in this environment.

COURSE 4 - CORDEX POWER SYSTEMS - ADVANCED

(P/N: 0700018-001)

This intensive course covers concepts and operation of DC power systems/components, and includes classroom instruction as well as hands-on training. Courses are taught by industry experts in a classroom and lab environment.

The classes are focused on the advanced Alpha Cordex series of power system controllers and rectifiers.

Course is available to be conducted on site at your location.

Who should attend

Developed specifically for Alpha customers, the course is intended to complement the basic electrical knowledge of Telecommunications technicians/engineers with specialized training in modern DC power systems and components.

Key Features

- DC Power systems
- Installation and commissioning
- Safety
- Cordex controller programming
- Remote access, Ethernet, POTS and SNMP
- 60% hands-on training
- Basic maintenance and troubleshooting techniques
- Checking alarm set-points
- SNMP and MODBUSS

Benefits

On completion of the course students will be proficient in the installation and operation of Alpha Cordex DC power systems and will be prepared to work safely and efficiently in this environment.

COURSE 5 - TELECOM DC POWER

(P/N: 0700020-001)

This intensive, course covers concepts, design, application, maintenance and operation of DC power systems/components, and includes classroom instruction as well as hands-on training. Courses are taught by industry experts in a classroom and lab environment.

The classes are focused on the advanced Alpha Cordex series of power system controllers and rectifiers. Many of the engineering, installation and maintenance practices can be applied to all types of DC power systems.

Course is available to be conducted on site at your location.

Who should attend

Developed specifically for Alpha customers, the course is intended to complement the basic electrical knowledge of Telecommunications technicians/engineers with specialized training in modern DC power systems and components.

Key Features

- DC Power system theory
- DC System sizing
- Site engineering
- Installation and commissioning
- Safety
- 25% hands-on training
- Basic maintenance and troubleshooting techniques
- Checking alarm set-points
- SNMP and MODBUSS

Benefits

On completion of the course students will understand the fundamental design, installation, maintenance and operation of Alpha Cordex DC power systems and will be prepared to work safely and in this environment.

ATL Contact Us

Corporate Headquarters	
Address:	Alpha Technologies Ltd. 7700 Riverfront Gate Burnaby, BC Canada V5J 5M4
Phone:	**Toll Free Canada/USA:** 1-800-667-8743 **International:** 1-604-436-5900
Fax:	604-436-1233
Email:	sales@alpha.ca
Website:	www.alpha.ca

Sales/Account Management	
Provides quotes and bid proposals for customer configured power systems and enclosures. All purchase orders must be sent via fax or email to: Please fax orders to: 604-638-8698 OR email to: orderpo@alpha.ca	
Phone:	**Toll Free Canada/USA:** 1-800-667-8743 **International:** 1-604-436-5900
Email:	sales@alpha.ca
Website:	**To locate your Regional Sales Manager:** www.alpha.ca/wheretobuy

Inside Sales	
Provides pricing and availability for configured systems and spare parts (including breakers, fuses, cables, rectifier accessories, rack accessories, etc.) All sales inquiries – including pricing and availability – from channel partners (VARs and distributors) All purchase orders must be sent via fax or email to: Please fax orders to: 604-638-8698 OR email to: expressorders@alpha.ca	
Phone:	**Toll Free Canada/USA:** 1-800-667-8743 **International:** 1-604-415-7477
Email:	insidesales@alpha.ca

Customer Service/Order Processing & Tracking	
Purchase orders Order Status Order Tracking Order Expedites Freight inquiries Any questions or concerns related to an order	
Phone:	**Toll Free Canada/USA:** 1-800-667-8743 **International:** 1-604-415-7474
Email:	csr@alpha.ca
Website:	**To track your orders online:** http://www.alpha.ca/ordertracking

Service & Support	
Technical support requests and inquiries	
Technical Support:	**Toll-Free North America:** 1-888-462-7487 **International:** +1-604-436-5547 Mon - Fri, 7AM - 5PM PST for regular inquires 24/7 for emergency support **To report a problem online:** www.alpha.ca/report-a-problem
Requests for returns Return status Warranty inquiries	
Returns & Repairs:	**Online RMA Form:** www.alpha.ca/rma

Training Courses	
DC Power Training Courses Custom courses available	
Phone:	**Toll-Free North America:** 1-888-462-7487 **International:** +1-604-436-5547
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