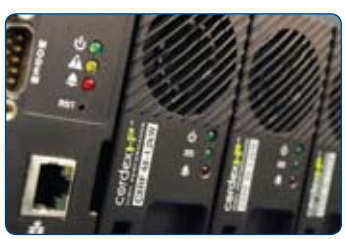
Alpha Power Solutions

TOTAL POWER SOLUTIONS BY ALPHA TECHNOLOGIES LTD.



member of The Group™

Power

Alpha Technologies Ltd.

Company Overview

For the past 30 years, Alpha Technologies has been the industry pioneer and global leader in AC and DC power. Our distinctive excellence is the ability to innovate and deliver optimized solutions for our customers' unique powering challenges. Our wide portfolio of high-quality, feature-rich products can be customized to suit almost any application and installation environment, offering the best performance versus cost of ownership in the industry.

The Alpha Group

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

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

Members of The Alpha Group include Alpha Technologies Ltd., Alpha Technologies Inc., Alpha Energy, Alpha Industrial Power and G.B. Enterprises.

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Standard Solutions

Alpha has over 30 years experience providing ruggedized, fully integrated indoor and outdoor AC and DC power solutions. With multiple options for standardized and custom system integration, Alpha has the ability to provide the ideal system for virtually any power and site installation scenario.

By coupling advanced power technology with an enormous selection of system components, Alpha can easily provide optimized and reliable system solutions up to an impressive 8,000 Amps.

The recent launch of the Cordex™ High Performance 1.2kW rectifier and AMPS80 HP represent Alpha's next generation of power solutions - delivering superior performance and reliability while reducing total cost of ownership and impact on the environment.

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

DC Power Solutions

Alpha's Integrated shelf systems are available for all small power modules providing a complete power solution in a single rack mount package. The systems incorporate a Cordex™ controller, rectifiers and distribution options in a single compact shelf design. Optional accessories such as LVD's, shunts and temperature compensation are common options on most integrated solutions.

For medium to large system applications, Alpha can provide both standard and custom AC and DC system solutions designed to maximize space and cost savings. Systems can be integrated with a wide array of options including various relay rack solutions, custom distribution configurations, multiple voltage output designs and front access solutions.

Cordex™ 650W 48Vdc
Modular Rectifier Shelf Systems

Cordex™ 2.6kW Shelf Power System

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

Cordex 48-650W Rectifier Shelves

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

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

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

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

Shelves

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

23" Front Access Shelf
Dimensions:
mm: ..... 89H x 544W x 307D
inches: ..... 3.5H x 21.42W x 12.0D
(excludes optional fan tray and baffle)
Weight: ..... 16.8kg (37lbs) (fully equipped with four rectifiers)

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

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

Environmental

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

Related Components

Cordex™ rectifier CXRC 48-650W: See page 83
Cordex™ controller CXCI: See page 70
AM plug-in breakers: See page 104
GMT style fuses: See page 105

Cordex™ 1kW 48Vdc
Modular Rectifier Shelf Systems

Cordex™ 4kW Shelf Power System

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

Cordex 48-1kW Rectifier Shelves

19in flush 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 & bullet type breaker distribution
P/N: 030-704-20 L0
Rectifiers: .....4 x CXRC 48-1kW
Controller: .....1 x CXCM
Distribution: .....Integrated plug-in breakers & GMT fuse option

Shelves

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

23"
Dimensions:
mm: .....177H x 543W x 302D
inches: .....6.9H x 21.4W x 11.9D
Weight: 10.2kg (22.5lbs)

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

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

Related Components

Cordex™ rectifier CXRC 48-1kW: See page 84
Cordex™ controller CXCM: See page 71
AM plug-in breakers: See page 104
GMT style fuses: See page 105

Cordex HP™ 1.2kW 48Vdc
Modular Rectifier Shelf Systems

CXRF-HP 48-1.2kW

- Multiple 48V configurations up to 125A for various 48Vdc applications
- High Efficiency design for increased Op-Ex savings
- 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 2RU universal mount (Front Access)
P/N: 030-834-20
Rectifiers: .....4 x CXRF HP 48-1.2kW
Controller: .....1 x CXCM1
Distribution: .....(4) AM plug-in (10) GMT fuse

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

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

Environmental

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

Shelves

2RU Front Access
Dimensions:
mm: .....88H x 439.5W x 305D
inches: .....3.5H x 17.3W x 12.0D
*Note: Rectifier front handle adds additional 12.5mm/0.49" Depth)

Weight:
Shelf: 4.55kg (10.03lbs)
Rectifier 1.23kg (2.72lbs)

1RU rear Access
Dimensions:
mm: .....44H x 439.5W x 305D
inches: .....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 (2.72lbs)
Note: Shelf P/Ns DO NOT include modules or distribution breakers
Dimensions do not include mounting bracket

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

Related Components

877-690-19: .....5-15P (120V) line cord, 2.5m
877-671-19: .....Universal Imc cord, flying leads, 3.5m
747-622-20-000: .....Blank plate
567-837-19: .....Kydex rear cover (1RU only)
036-201-20-000: .....CXCM1 I/O terminal block kit (1RU only)

Cordex HP™ rectifier 48-1.2kW: See page 85
Cordex™ controller CXCM1: See page 72
AM plug-in breakers: See page 104
GMT style fuses: See page 105

CXPS 48-1.2-225
Standard 48Vdc Power System

- Integrated 48V, 225A system package with front access distribution
- High Efficiency design for increased Op-Ex savings
- High Temperature rated fan-cooled design for harsh outdoor installations
- Wide range AC input and IEC line cords for multiple AC services
- Flexible ordering options including configurations with racks and battery trays

CXPS 48-1.2-225

P/N: 053-691-20

Electrical

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

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

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

Performance / Features

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

Shunt:
- Controller: ..... CXCM1 Modular Controller Shunt

Mechanical

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

Weight:
- System: 21.3kg (47lbs)
- Rectifier: ..... 2.8kg (6.2lbs) each

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

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

Related Components

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

Cordex HP™ rectifier 48-1.2kW: See page 85
Cordex™ controller CXCM1: See page 72
AM plug-in breakers: See page 104

CXPS 48-1.8-i
Standard 48Vdc Power System

- Integrated 48V, 150A 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

CXPS 48-1.8-i Power System

P/N: 053-990-20

Electrical

Input:
- Voltage: ..... 176 to 312Vac (nominal)
  90 to 176Vac (de-rated O/P power)
- Current: ..... 14.6A @ 240Vac (per module)
  12.2A @ 120Vac (per module)
- Frequency: ..... 45 to 66Hz
- Efficiency: ..... >91% (50-100% load @ nominal voltage)
- Power factor: ..... >.99

Output:
- Current:
  - System: ..... 150A max @ nominal I/P
    96A max @ 120Vac I/P
  - Rectifier: ..... 37.5A @ 48Vdc (nominal I/P)
    24A @ 48Vdc (115 to 135Vac)
    (de-rated linearly to 18.75A @ 90Vac)
- Power:
  - System: ..... 7200W max @ nominal I/P
    4600W @ 120Vac I/P
  - Rectifier: ..... 1800W max @ nominal I/P
    1150W (115 to 135Vac)
    (de-rated linearly to 900W @ 90Vac)

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 48V-1.8kW 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 310D
- inches: ..... 8.75H x 17.24W x 12.2D
  (-000 configuration - excludes mounting brackets, rear cover, and module handle)

Weight:
- System: 19kg (42lbs)
- Rectifier: ..... 2.8kg (6.2lbs) each

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

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

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

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

Related Components

058-156-20: ..... 23" battery tray expansion kit
(for use with -040 configuration)

058-157-20: ..... 19" battery tray expansion kit
(for use with -031 configuration)

470-347-10: ..... 100A battery breaker

747-503-20: ..... 150A battery breaker

747-504-20: ..... 250A battery breaker

Cordex™ rectifier 48-1.8kW: See page 86
Cordex™ controller CXCI: See page 70
AM plug-in breakers: See page 104

CXPS 48-1.8-M2
Standard 48Vdc Power System

- Integrated 48V, 262A system package with front access distribution
- High temperature rated fan-cooled design for harsh outdoor installations
- Wide range AC input for multiple worldwide AC services
- Modular controller with touch screen display for full local control over system
- Flexible ordering options including configurations with racks and battery trays

CXPS 48-1.8-M2 Power System

P/N: 053-991-20

Electrical

Input:
- Voltage: ..... 176 to 312Vac (nominal)
  90 to 176Vac (de-rated O/P power)
- Current: ..... 14.6A @ 240Vac (per module)
  12.2A @ 120Vac (per module)
- Frequency: ..... 45 to 66Hz
- Efficiency: ..... >91% (50-100% load @ nominal voltage)
- Power factor: ..... >.99

Output:
- Current:
  - System: ..... 262.5A max @ nominal I/P
    168A max @ 120Vac I/P
  - Rectifier: ..... 37.5A @ 48Vdc (nominal I/P)
    24A @ 48Vdc (115 to 135Vac)
    (de-rated linearly to 18.75A @ 90Vac)
- Power:
  - System: ..... 12600W max @ nominal I/P
    8050W @ 120Vac I/P
  - Rectifier: ..... 1800W max @ nominal I/P
    1150W (115 to 135Vac)
    (de-rated linearly to 900W @ 90Vac)

Performance / Features

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

Rectifier: ..... Up to 7x 48V-1.8kW rectifier positions

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

Controller: ..... CXCM2 modular controller

Mechanical

Dimensions:
- mm: ..... 222H x 438W x 310D
- inches: ..... 8.75H x 17.24W x 12.2D
  (-000 configuration - excludes mounting brackets, rear cover, and module handle)

Weight:
- System: 28kg (62lbs)
- Rectifier: ..... 2.8kg (6.2lbs) each

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

Connnections:
- 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)
- CXCM2 input: ..... 3x DB-style cable connections
- Access: ..... Front access after installation

Environmental

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

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

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

Related Components

058-156-20: ..... 23" battery tray expansion kit
(for use with -040 configuration)

058-157-20: ..... 19" battery tray expansion kit
(for use with -031 configuration)

470-347-10: ..... 100A battery breaker

747-503-20: ..... 150A battery breaker

747-504-20: ..... 250A battery breaker

Cordex™ rectifier 48-1.8kW: See page 86
Cordex™ controller CXCM2: See page 73
AM plug-in breakers: See page 104

CXPS 48-1T
Standard 48Vdc System

- Integrated 48V, 375A system package with front access distribution
- High temperature rated fan-cooled design for harsh outdoor installations
- Modular controller with touch screen display for full local control over system
- Flexible ordering options including configurations with racks and battery trays
- Optional rectifier expansion kits for future growth potential

CXPS 48-1T 23"
Rail Mount Power System

P/N: 053-392-20 (with LVD)
P/N: 053-6920-20 (no LVD)

Electrical

Input:
- Voltage: ..... 176 to 320Vac
- Current: ..... 16.8A @ 240Vac nominal (per rectifier module)
- Frequency: ..... 45 to 66Hz
- Power factor: ..... >.99

Output:
- Voltage: ..... 42 to 60Vdc
- Current: ..... System: 375A
  (expandable to 600A with additional CXRF shelf)
  Rectifier: 75A @ 48Vdc
- Power: ..... System: 18.0kW
  (expandable to 28.8kW with additional CXRF shelf)
  Rectifier: 3600W max

Performance / Features

Configurations:
- 053-692-20-000: ..... Base system with 23" mounting
- 053-692-20-010: ..... System mounted in 22RU (½ height) battery mount rack
- 053-692-20-020: ..... System mounted in 44RU zone 4 seismic rack
- 053-692-20-030: ..... System mounted in 44RU Z4 rack with 3x battery trays for 3x 48V strings

Rectifier: ..... Up to 5x 48V-3.6kW rectifier positions
Distribution: ..... 24x AM plug-in breaker positions (no LVD)
18x AM plug-in breaker positions (w/LVD)
10x GMT type fuse positions
Shunt
Low voltage disconnect
Controller: ..... CXCM4 modular controller

Mechanical

Dimensions:
- mm: ..... 488H x 584W x 477D
- inches: ..... 19.25H x 23W x 18.8D
  (-000 configuration - excludes mounting brackets)

Weight: 49.8kg (110lbs)
Mounting: ..... 23" center mount

Connnections:
- Load breaker: ..... Hot: ¼"-20 studs on ⅝" centers
  Return: ¼" holes on ⅝" centers
- GMT fuses: ..... Screw Terminal 1.31mm² to 0.128mm²
  (#16 to #26 AWG)
- Battery terminations: ..... ⅜" holes on 1" centers
  4x sets per polarity
- Rectifier Input: ..... ⅜" holes on 1" centers
- Alarm connections: ..... Screw terminal 1.31mm² to 0.128mm²
  (#16 to #26 AWG)
- Access: ..... Cable: top or bottom
  User: front access after installation

Environmental

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

Related Components

058-716-20: ..... Expansion kit, 48V-3.6kW rectifier shelf (shipped loose only)

Cordex™ rectifier 48-3.6kW: See page 87
Cordex™ controller CXCM4: See page 74
AM plug-in breakers: See page 104
GMT style fuses: See page 105

CXPS 48-2T
Standard 48Vdc System

CXPS 48-2T 23"
Rail Mount Power System

- Integrated 48V, 825A system package with front access distribution
- High temperature rated fan-cooled design for harsh outdoor installations
- Modular controller with touch screen display for full local control over system
- Flexible ordering options including configurations with racks and battery trays
- Optional rectifier expansion kits for future growth potential

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

Electrical

Input:
- Voltage: ..... 176 to 320Vac
- Current: ..... 16.8A @ 240Vac nominal (per rectifier module)
- Frequency: ..... 45 to 66Hz
- Power factor: ..... >.99

Output:
- Voltage: ..... 42 to 60Vdc
- Current: ..... System: 825A
  (expandable to 1200A with additional CXRF shelf)
  Rectifier: 75A @ 48Vdc
- Power: ..... System: 39.6kW
  (expandable to 57.6kW with additional CXRF shelf)
  Rectifier: 3600W max

Performance / Features

Configurations:
- 053-693-20-000 ..... Base system with 23" mounting
- 053-693-20-010 ..... System mounted in 22RU (½ height) battery mount rack
- 053-693-20-020 ..... System mounted in 44RU zone 4 seismic rack
- 053-693-20-030 ..... System mounted in 44RU Z4 rack with 3x battery trays for 3x 48V strings

Rectifier: ..... Up to 11x 48V-3.6kW rectifier positions
Distribution: ..... 48x AM plug-in breaker positions (no LVD)
38x AM plug-in breaker positions (w/LVD)
10x GMT type fuse positions
Shunt
Low voltage disconnect
Controller: ..... CXCM4 modular controller

Mechanical

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

Weight: 70.3kg (155lbs)
Mounting: ..... 23" center mount

Connnections:
- Load breaker: ..... Hot: ¼"-20 studs on ⅝" centers
  Return: ¼" holes on ⅝" centers
- GMT fuses: ..... Screw terminal 1.31mm² to 0.128mm² (#16 to #26 AWG)
- Battery terminations: ..... ⅜" holes on 1" centers
  4x sets per polarity
- Rectifier input: ..... ⅜" holes on 1" centers
- Alarm connections: ..... Screw terminal 1.31mm² to 0.128mm² (#16 to #26 AWG)
- Access: ..... Cable: Top or bottom
  User: front access after installation

Environmental

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

Related Components

058-716-20: ..... Expansion kit, 48V-3.6kW rectifier shelf (shipped loose only)

Cordex™ rectifier 48-3.6kW: See page 87
Cordex™ controller CXCM4: See page 74
AM plug-in breakers: See page 104
GMT style fuses: See page 105

Cordex™ 432kW
Large Power System

- Scalable large 48Vdc power system up to 8000A capacity
- Various distribution configuration options available
- Internal bussing between rectifiers and distribution (no overhead bus requirements)
- Rack mount controller with touch screen display for full local control over system
- Expansion rectifier and distribution bays for future growth potential

Typical 48-108kW System

P/N: 025-999-20

Electrical

AC input: Single phase, 208 to 277Vac
Dual 3 phase, 208 to 240Vac (w/o neutral)
Dual 3 phase, 360 to 480Vac (with neutral)
Rectifier voltage: 208 to 277Vac
Max. bus capacity: 10,000A system
2,000A per bay

Performance / Features

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

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

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

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

Mechanical

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

Environmental

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

Distribution

Fuses:
TPL: 2 position, 61 to 800A breakers
GJ/GJ1P: 1 pole up to 225A, 2 pole 250 to 400A, 3 pole 450 to 700A
Output termination:
TPL fuse: 2 hole ½" dia. on 1¾" centers or 2 hole ⅜" dia. on 1" centers
GJ breaker: 1 pole and 2 pole are ⅜" to 16, 3 pole are 2 hole, ½" dia. on 1¾" centers or ⅜" dia. on 1" centers
Ground bar: Overhead buss ground, 15 sets of 2 hole ½" dia. on 1¾" centers (basic system)

Related Components

Cordex™ rectifier CXRF 48-3.6kW: See page 87
Cordex™ controller CXCR: See page 75
GJ breakers: See page 104
TPL fuses: See page 105

Cordex™ 400W
Modular Rectifier Shelf Systems

Cordex™ 1.6kW Shelf Power System

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

Cordex 24-400W Rectifier Shelves

19/23in 2RU universal mount
Cordex™ 1.6kW shelf power system with CXCI controller & bullet breaker distribution
P/N: 030-763-20
Rectifiers: .....4 x CXRC 24-400W
Controller: .....1 x CXCI
Distribution: .....(4) AM bullet type breakers

19/23in 2RU universal mount
Cordex™ 2kW bulk power system with CXCI controller
P/N: 030-773-20
Rectifiers: .....5 x CXRC 24-400W
Controller: .....1 x CXCI
Distribution: .....Bulk power for external distribution panel

Shelves

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

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

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

Environmental

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

Related Components

Cordex™ rectifier CXRC 24-400W: See page 88
Cordex™ controller CXCI: See page 70
AM plug-in breakers: See page 104

CXPS 24-2T
Standard 24Vdc System

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

CXPS 24-2T
23" Rail Mount Power System

P/N: 053-390-20

Electrical

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

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

Performance / Features

Configurations:
- 053-390-20-000 ..... Base system with 23" mounting
- 053-390-20-010 ..... System mounted in 22RU (½ height) battery mount rack
- 053-390-20-020 ..... System mounted in 44RU Zone 4 seismic rack
- 053-390-20-030 ..... System mounted in 44RU Z4 rack with 3x battery trays for 6x 24V strings

Rectifier: ..... Up to 11x 24V-3.1kW rectifier positions
Distribution: ..... 38x AM plug-in breaker positions
10x GMT type fuse positions
Shunt
Low voltage disconnect
Controller: ..... CXCM4 modular controller

Mechanical

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

Weight: 70.3kg (155lbs)
Mounting: ..... 23" center mount

Connnections:
- Load breaker: ..... Hot: ¼"-20 studs on ⅝" centers
  Return: ¼" holes on ⅝" centers
- GMT fuses: ..... Screw Terminal 1.31mm² to 0.128mm² (#16 to #26 AWG)
- Battery terminations: ..... ⅜" holes on 1" centers
  4x sets per polarity
- Rectifier input: ..... ⅜" holes on 1" centers
- Alarm connections: ..... Screw terminal 1.31mm² to 0.128mm² (#16 to #26 AWG)
- Access: ..... Cable: top or bottom
  User: front access after installation

Environmental

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

Related Components

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

Cordex™ rectifier 24-3.1kW: See page 89
Cordex™ controller CXCM4: See page 74
AM plug-in breakers: See page 104
GMT style fuses: See page 105

CXPS 24-4T
Standard 24Vdc System

CXPS 24-4T
Power System

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

P/N: 053-391-20

Electrical

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

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

Performance / Features

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

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

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

Controller: ..... CXCM4 modular controller

Mechanical

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

Weight: 172kg (379lbs)

Mounting: ..... 23" center mount

Connnections:
- Load breaker: ..... Hot: ¼"-20 studs on ⅝" centers
  Return: ¼" holes on ⅝" centers
- GMT fuses: ..... Screw terminal 1.31mm² to 0.128mm²
  (#16 to #26 AWG)
- Battery terminations: ..... ⅜" holes on 1" centers
  5x Sets per polarity
- Rectifier input: ..... ⅜" holes on 1" centers
- Alarm connections: ..... Screw terminal 1.31mm² to 0.128mm²
  (#16 to #26 AWG)
- Access: ..... Cable: top or bottom
  User: front access after installation

Environmental

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

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

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

Related Components

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

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

Cordex™ rectifier 24-3.1kW: See page 89
Cordex™ controller CXCM4: See page 74
AM plug-in breakers: See page 104
GMT style fuses: See page 105

Cordex™ 250W
Modular Rectifier Shelf Systems

Cordex™ 1kW Shelf Power System

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

Cordex 12-250W Rectifier Shelves

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

Shelves

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

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

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

Environmental

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

Related Components

Cordex™ rectifier CXRC 12-250W: See page 90
Cordex™ controller CXCI: See page 70
AM plug-in breakers: See page 104

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

Cordex™ 125-3.3kW system

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

Electrical

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

Phase: ..... 1 or 3
Frequency: ..... 45 to 66Hz
Power factor: ..... >0.99
Efficiency: ..... >93% (50 to 100% load)
Output voltage: ..... 90 to 160Vdc
Current: ..... 8.8A per module @ 125Vdc,
5A per module @ 220Vdc,
up to 3 modules per shelf
Load regulation: ..... Static <+0.5%
Line regulation: ..... Static <+0.1%
Transient response: ..... <+2% for 10 to 100% load step.
10ms recovery time.
Wide band noise: ..... <10mVrms
<80mVp-p
Insulation: ..... 2.5kVac input-earth
3kVac input-output
2kVac output-earth
0.5kVac signals-earth

Performance / Features

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

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

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

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

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

AC Input (not a service entrance):
- Single phase: ..... 1 x 2-pole 10KAIC (30KAIC option)
- Three phase: ..... 1 x 3-pole delta connection 10KAIC
  1 x 3-pole wye connection 10KAIC

Mechanical

Charger enclosure: ..... Wall or rack mount
Dimensions:
- inches: ..... 12.2H x 17.1W x 11.9D
- mm: ..... 309H x 434W x 302D

Weight: ..... 12.59kg (27.76lbs)*
Enclosure: ..... NEMA 1 (charcoal finish)

Environmental

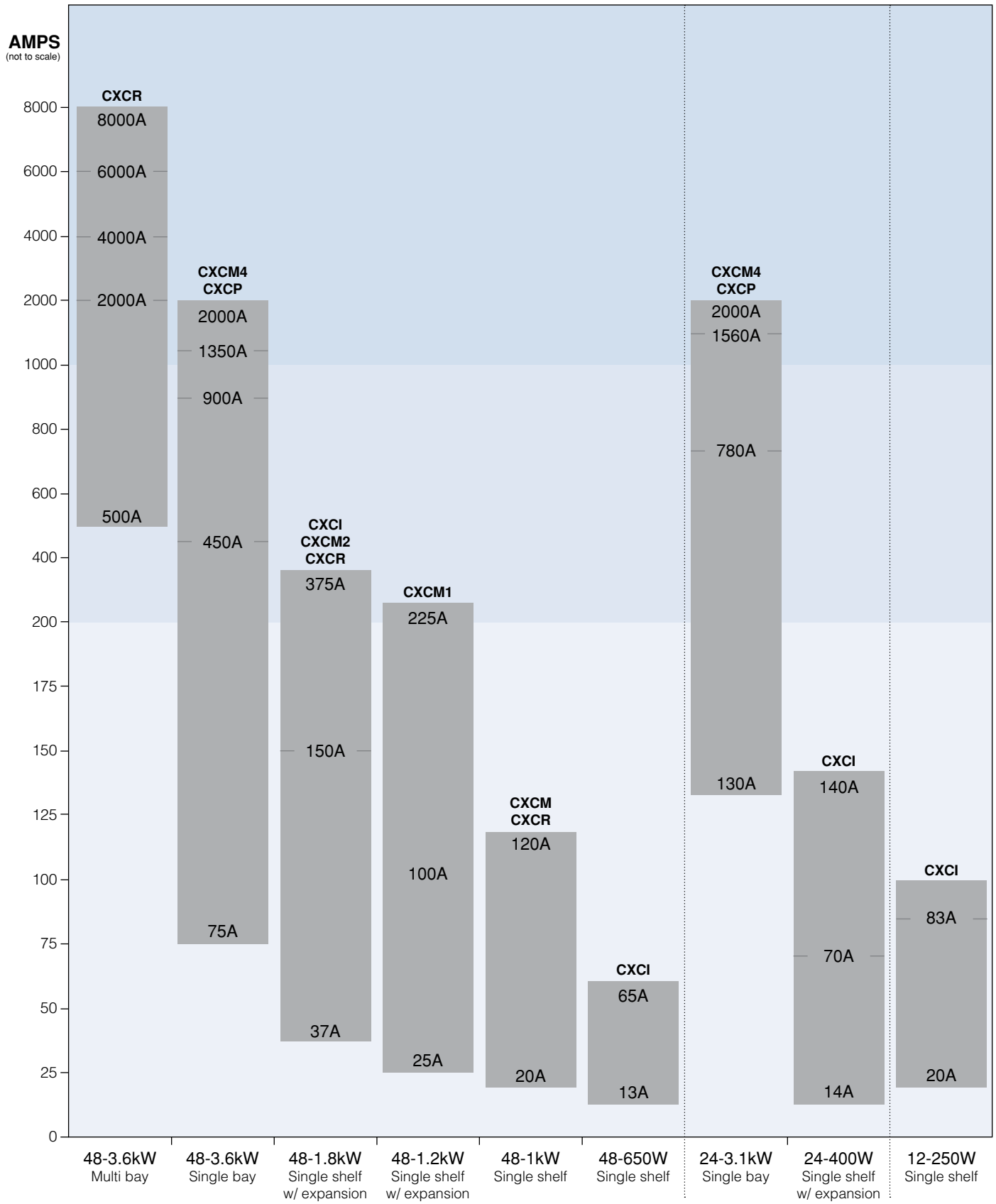
Temperature range:
- Operating: ..... -40 to 50˚C (-40 to 122˚F)
- Extended: ..... Rectifier de-rated to 600W @ 65˚C (149˚F)

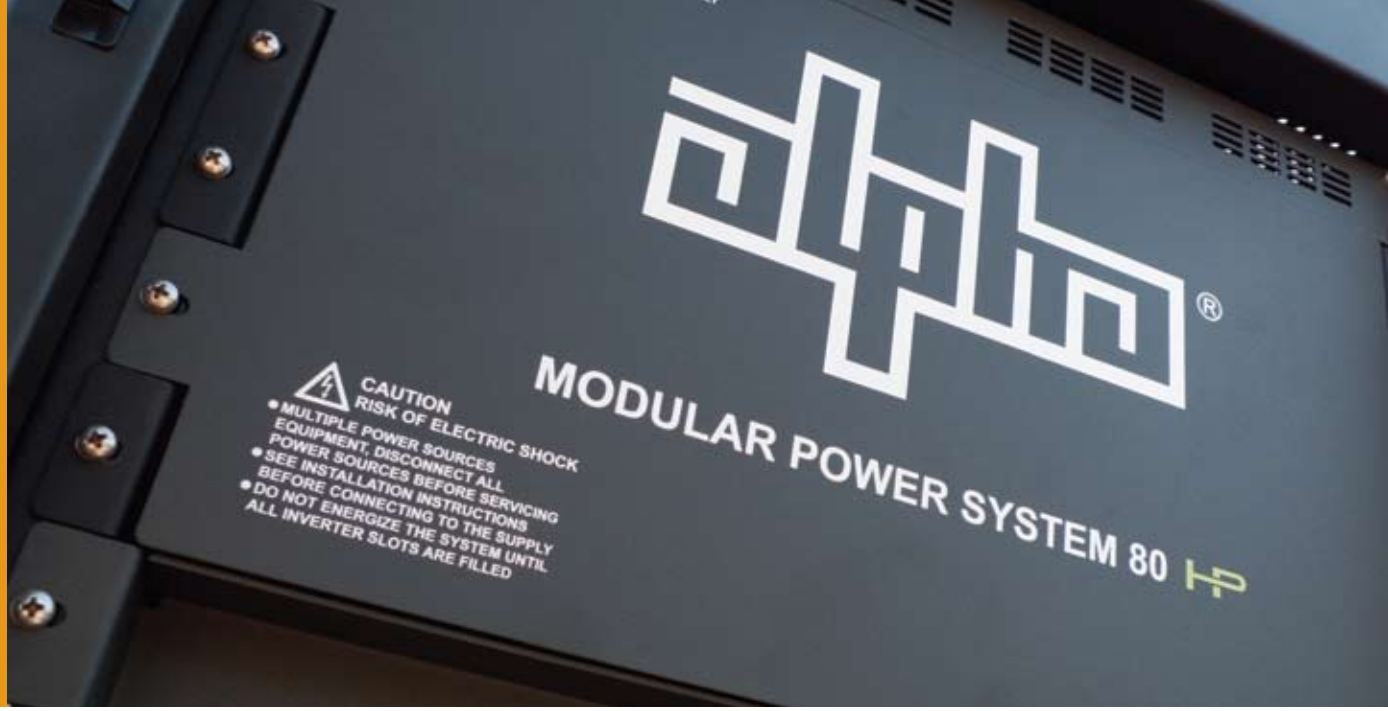
Humidity: ..... 0 to 95% RH non-condensing
Cooling: ..... Natural convection
Heat dissipation: ..... <900 BTU per hour/system

Agency Compliance

Safety: ..... CSA C22.2 No. 60950-00 3rd edition
CE
EMC: ..... ICES-003 Class A
FCC Part 15, Class A, FCC Part 68
EN 55022 Class AA (CISPR 22)
EN 61000-4-2 ESD
EN 61000-4-3 Radiated Immunity
EN 61000-4-4 EFRT/Burst
EN 61000-4-6 Conducted Immunity

*Rectifier module not included system weight


AMPS
(not to scale)
8000
6000
4000
2000
1000
800
600
400
200
175
150
125
100
75
50
25
0
CXCR
8000A
6000A
4000A
2000A
500A
CXCM4
CXCP
2000A
1350A
900A
450A
75A
CXCI
CXCM2
CXCR
375A
150A
37A
CXCM1
225A
100A
25A
CXCM
CXCR
120A
20A
CXCI
65A
13A
CXCM4
CXCP
2000A
1560A
780A
130A
CXCI
140A
70A
14A
CXCI
83A
20A
48-3.6kW
Multi bay
48-3.6kW
Single bay
48-1.8kW
Single shelf
w/ expansion
48-1.2kW
Single shelf
w/ expansion
48-1kW
Single shelf
48-650W
Single shelf
24-3.1kW
Single bay
24-400W
Single shelf
w/ expansion
12-250W
Single shelf



Inverters and Hybrid Systems

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

The Alpha Modular Power System 80HP (AMPS80 HP) offers high performance AC or hybrid AC/ DC power backup to critical loads in central offices, switching stations, cable headends, and datacenters. The system offers '5 nines' reliability, up to 94% power efficiency, and optimal power density through a scalable, modular platform with integrated, intelligent system control.

AMPS80 HP is offered in 3-phase, 2-phase and single-phase configurations to power up to 75kVA loads utilizing 2.5kVA inverter modules. Optional Cordex™ 1.8kW rectifier modules may also be added on the same rack to create a hybrid AC/DC power system. A smart unified controller with integrated Ethernet/SNMP interface monitors and manages both the inverter and rectifier modules through a web based GUI and local LCD touch screen.

The INEX is a fully integrated inverter system specifically designed to backup critical AC loads. Designed to provide reliability and flexibility, the system may be configured to provide N+1 redundancy. 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.

AMPS80 HP
Inverter/Hybrid AC-DC System


AMPS80 HP

- Alpha Modular Power System 80HP Inverter/Hybrid AC-DC System
- High performance AC or hybrid AC/DC backup power system offering 99.999% availability for mission critical indoor applications
- 94% Efficiency, 15 year Design Life and MTBF (Mean Time Between Failures) greater than 200,000 hours results in class-leading TCO (Total Cost of Ownership)
- Intelligent system controller with integrated SNMP for local and remote management of AC & DC power modules, batteries, and other peripherals
- Hot swappable 2.5kVA/2.0kW inverter modules & optional 1.8kW rectifier modules offer total flexibility, scalability and low MTTR (Mean Time To Repair)
- Small footprint system offers up to 75kVA/60kW in a single 19" box bay rack, freeing up valuable rack and floor space

Consult your Alpha representative for P/N configurations

Standard Features

- Unified system controller with integrated SNMP communications
- Top AC & DC feed access; bottom DC feed access (All user connections are front access)
- AC input & 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)
Sides:.....No clearance required
Top:.....30cm (12in)

Environmental

Temperature:
Operating (full load):.....-20 to 40°C (-4 to 104°F)
Storage:.....-40 to 70°C (-40 to 158°F)
Relative humidity:.....Up to 95%, non-condensing
Operating altitude:.....Up to 2,000m (6,562ft) above sea level

Options

- Up to 8 x 1.8kW rectifier modules
- Integrated 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

AMPS80 HP
Inverter/Hybrid AC-DC System

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	Twin Sine Inverter (TSI) technology; each inverter module has DC input & AC input			
Static switch	Not required; each module has its own static switch			
Efficiency	94% AC-to-AC; 90% DC-to-AC (from 50 to 100% full resistive load)			
Waveform	Pure sine wave			
Output power factor	0.8 (can run capacitive & inductive loads)			
Transfer time	Zero transfer time			
Warranty	2 year standard (1 and 3 year optional extensions)			
Inverter Module AC Output				
Power rating	2,500VA/2,000W			
Voltage range (AC)	90 – 140V			
Voltage accuracy	±2%			
Frequency	60Hz (same as input frequency)			
Inverter frequency accuracy	0.03%			
Input power factor	>99%			
THD (resistive load)	<1.5%			
Transient load recovery time	0.4ms			
Soft start time	20s			
Maximum crest factor at nominal power	3.5			
Short circuit overload capacity	10 x I_n for 20msec (AC-to-AC mode)			
Short term overload capacity	150% for 5 seconds			
Permanent overload capacity	110%			
Synchronization range	57 – 63Hz			
Inverter Module DC Output				
Nominal voltage	48Vdc			
Voltage range (max)	40 – 60Vdc (User Adjustable)			
Max. DC Input Current				
@48Vdc	1375A	550A	734A	366A
@40Vdc	1700A	680A	900A	450A
Voltage ripple	<2mV/<38 dbrnc			
Unified System Controller with Integrated SNMP				
Control & monitoring	Configure, control and monitor inverter & rectifier modules via Internet Explorer 7 onwards			
Display	LCD touch-screen display (160 x 160 pixels) OK/Major/Minor 3-Color LED display Web based GUI via ethernet			
Communication ports	RJ45 ethernet port RS232 Port (Front)			

INEX™ System
48V Modular Inverter 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.

INEX™ System
48V Modular Inverter System

Inverter Module

The INEX inverter module provides pure sine wave AC power output for critical telecommunications equipment. Adopting N+1 redundancy design, the INEX inverter can operate up to 24 units in parallel. A 1U height design allows the module to be installed onto a standard ETSI 300mm Rack.

- Hot swappable replacement in shelf
- DSP design for higher system reliability
- Smart fan speed control
- N+1 redundancy system, load sharing difference <5%
- -48Vdc Telecom system application
- Wide operation temperature range, -20 to 70˚C (-4 to 158˚F)

STS Module

STS-50A

STS-100A

The INEX STS (Static Transfer Switch) module increases system reliability by automatic power transfer between the inverter output and the AC mains. By setting up the priority of operation mode, users can change the system status of “on line mode” or “off line mode”. The on line mode will keep the input power provided by the inverter line and when the inverter fails, the line will switch to AC utility line. In off line mode, the system power is always connected to the AC utility line and will switch to inverter power line when AC utility fails. The transfer time is less than a quarter cycle which prevents power interruption. The reliable performance of INEX STS module provides maximum protection to the connected telecommunication equipment against possible damage caused by the system power failure.

- Universal input range
- Back-feed protection
- Redundant fan design
- Operation priority setup through control module
- Fast transfer time, typically less than ¼ cycle
- Wide operation temperature range, -20 to 70˚C
- No-cross connect
- Optional maintenance bypass switch function

Controller Module

The INEX controller module allows users to monitor the system status in real time. Its superior design enables users to manage the inverter and STS module ‘status’ including voltage, current, frequency, capacity and temperature. Users can easily manage the inverter and STS module ‘settings’ including voltage, frequency, redundancy (for inverter module), and priority (STS module). The controller module can also record the alarm history which can help to understand the operating status while maintaining the system or making further adjustments to improve system performance.

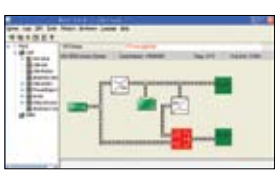
- Relay contact output for customized alarms
- Hot swappable design
- Real time clock embedded
- Comprehensive LCD & LED for status display
- Audible alarm function

Communication Interface

The communication interface includes several options for wider applications which facilitates the remote managing to the system. The standard ports include relay contacts, RS-232, RS-485 and USB. Relay contacts provide five programmable settings to display customized information. RS-232 & USB ports provide the serial connection to the PC for software monitoring. RS-485 provides a long distance connection for direct monitoring.

- Relay contacts
- RS-232
- RS-485
- USB

WinPower Monitoring Software



WinPower is a monitoring software which supports either a stand alone computer or network connected computers.

- Real time monitoring of each module in the inverter system
- Panoramic views of all the related information; utility power, system status, and STS status
- Auto search function with any inverter power modules in LAN
- Password security protection
- Comprehensive installation (and uninstallation) process

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: 1000VA/800W, 1500VA/1200W
- Waveform: Pure sine wave
- Power factor: 0.8
- Nominal output voltage: 110/115/120Vac, 208/220/230/240Vac
- Voltage variation: Max ±2%
- Output frequency: 50/60Hz
- Crest factor: 3:1
- THD: <3%, linear load
<5%, non-linear load
- Efficiency: Min 88%
- Isolation AC-enclosure: Basic isolation (Pri-Gnd) 2121Vdc/1min
- Dynamic response: <±10%
- Over load protection: 1.5*Inom >20s
1.25*Inom temperature controlled

STS Module

Input:
- Over voltage threshold: Adjustable between
127 to 138Vac for 120Vac systems, the default value is 132Vac
233 to 252Vac for 220Vac systems, the default value is 242Vac
- Under voltage threshold: Adjustable between
100 to 114Vac for 120Vac systems, the default value is 108Vac
176 to 209Vac for 220Vac systems, the default value is 198Vac
- Backfeed protection: Comply with safety requirement
- Redundant power: Startup power-on by priority
- Design: Source or alternative

Output:
- Nominal output voltage: Same as utility or the output of inverter modules
- Permissible frequency area: Max. +/-2.5%
(inverter synchronization)
- Transfer time: Typical ¼ cycle
- Rated power: 50A for 110/115/120Vac
& 208/220/230/240Vac
- Operation methods: Inverter priority/mains priority

Environmental

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

Controller Module

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

Human interface:
- LCD: Resolution (line X array)
4 X 16 charactor
- 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: 2.5kg (5.5lbs)

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-232×1: 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

UPS Solutions for outdoor and harsh environments

With over 30 years of experience in the globlal outdoor market, Alpha is the leader in providing a complete line of rugged AC powering solutions. This includes hardened outdoor enclosures, uninterruptible power supply (UPS) modules, specialty batteries, accessories and generators that can be custom integrated to meet the application.

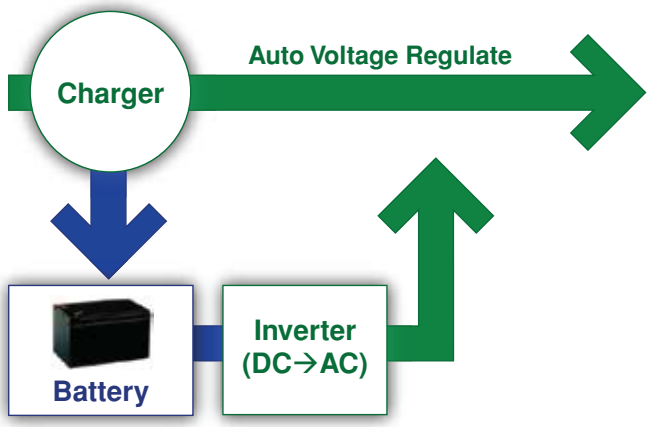
A truly rugged UPS system has many unique characteristics including conformal coated printed circuit boards (PCBs) which protect against exposure to moisture and dust and carefully selected components to operate reliably in extreme temperatures. In addition, products and solutions are designed to meet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

UPS Topologies

Diagrams below will help you understand the different topologies used in our UPS products.

Line Interactive

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



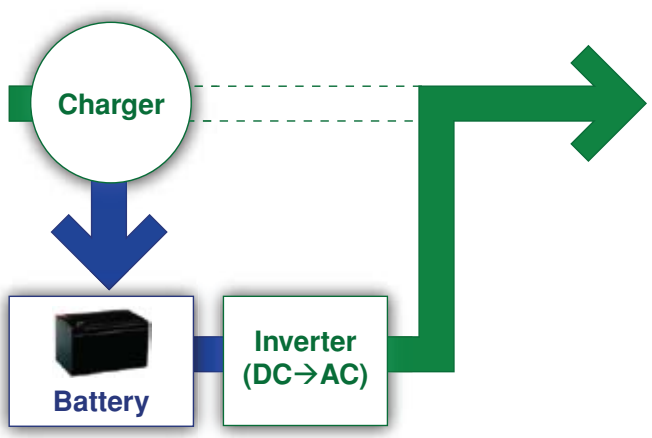
Advantages of line-interactive topology

- Automatic Voltage Regulation (AVR)
- Lower electricity consumption (less costly to operate) – More efficient because less power conversion is performed when acceptable AC input is present.
- Higher reliability – Lower component count and lower operating temperatures.

Double conversion

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

Reducing battery service life and the cost associated with it can offset the advantage of the lower initial purchase and operating costs of a line-interactive UPS thus making the overall cost similar. Situations that might call for a double-conversion on-line UPS are those that require power factor correction (PFC), small physical size, or some types of medical equipment or instrumentation.

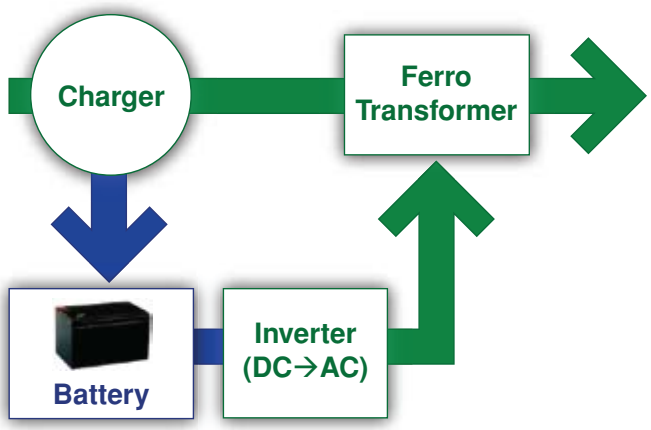


Advantages of double-conversion topology

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

Controlled Ferroresonant

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



Advantages of controlled ferroresonant topology

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

UPS Selection Guide

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?

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

What are the environmental conditions?

Indoor: Controlled environment, air conditioned, dust free
Outdoor: Non-controlled environment: snow, rain, elevation, humidity, etc.
Minimum ambient temperature surrounding the UPS
Maximum ambient temperature surrounding the UPS

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

What are the power requirements?

Volt-amps (VA) or Watts required by load
Input voltage to UPS and output voltage(s) to load
Frequency (Hz) 50 or 60
Type of loads: Motor loads, inductive loads

How much backup time is required?

The amount of time in hours or minutes the UPS will operate on batteries when the utility power fails
The expected frquency of utility power failures: eg., once/year, twice/month

How will the UPS be mounted?

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

What are the input/output configuration requirements?

Input plug type or terminal block
Output receptacle type(s) or terminal block

Are any accessories required?

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

What warranty/service needs are required?

Is extended warranty required? Periodic or special servicing needs?

What quantities are needed?

Number of units required and when

Alpha FXM 650
UPS Module

Alpha FXM 650

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

Consult your Alpha representative for P/N configurations

Electrical

North America

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

International

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

Mechanical

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

Agency Compliance

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

*CE applies to 230 Vac version only

Alpha FXM 1100
UPS Module

Alpha FXM 1100

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

Consult your Alpha representative for P/N configurations

Electrical

North America

Battery string voltage:.....48Vdc
Nominal voltage: 120Vac
Nominal frequency:.....Auto-sensing
Input:
  Current:.....9.7A nominal
  Voltage: .....85 to 175Vac
Output:
  Current:.....9.2A nominal
  Voltage regulation: .....+/- 10% over input voltage range
  Power at 55°C:.....1100W/VA

International

Battery string voltage:.....48Vdc
Nominal voltage: 230Vac
Nominal frequency:.....Auto-sensing
Input:
  Current:.....8.0A nominal
  Voltage range: .....150 to 328Vac
Output:
  Current:.....5.1A nominal
  Voltage regulation .....+/- 10% over input voltage range
  Power at 55°C:.....1100W/VA

Mechanical

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

Agency Compliance

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

*CE applies to 230 Vac version only

Alpha FXM 2000
UPS Module

Alpha FXM 2000

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

Consult your Alpha representative for P/N configurations

Electrical

North America

Battery string voltage:.....48Vdc
Nominal voltage:.....120Vac
Nominal frequency:.....Auto-sensing
Input:
  Current:.....17.5A nominal
  Voltage:.....85 to 150Vac
Output:
  Current:.....16.7A nominal
  Voltage regulation:.....+/- 10% over input voltage range
  Power at 50°C:.....2000W/VA

International

Battery string voltage:.....48Vdc
Nominal voltage:.....230Vac
Nominal frequency:.....Auto-sensing
Input:
  Current:.....9.15A nominal
  Voltage range:.....150 to 281Vac
Output:
  Current:.....8.7A nominal
  Voltage regulation.....+/- 10% over input voltage range
  Power at 50°C:.....2000W/VA

Mechanical

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

Agency Compliance

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

*CE applies to 230 Vac version only

Alpha Micro Secure 100
UPS

Alpha Micro Secure 100

- All weather protection with durable outdoor NEMA 3R rated plastic enclosure
- Enhanced battery life with wide-range Automatic Voltage Regulation
- Local or remote monitoring and control through RS-232 port or (optional) SNMP Ethernet interface
- Tracking and controlling of key functions through independently programmable relays
- Simplified troubleshooting through event and alarm logging with time and date stamping
- Maximum mounting flexibility for accommodation of space requirements[1]

1. Mounting brackets sold separately

Consult your Alpha representative for P/N configurations

Electrical

North America

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

International

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

Performance / Features

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

*Using 4 x 9AH batteries @ 25°C.

Mechanical

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

Agency Compliance

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

**CE applies to 230 Vac version only

Alpha Micro 300
UPS

- Clean, uninterruptible backup power ensures your system will remain up and running during power outages
- Wide range Automatic Voltage Regulation without going to batteries extends battery life, even during periods of surge or sag in voltage from utility power
- External communications via RS-232 port or (optional) Ethernet SNMP interface provides local or remote monitoring control
- Independently programmable control and report relays allow tracking and controlling of key functions
- Event and alarm logging with time and date stamping simplifies and accelerates troubleshooting
- A wide operating temperature range of -40 to 74°C (-40 to 165°F)[1] is suitable for most extreme operating environments
- Temperature compensated battery charging protects batteries from over charging at extreme temperatures

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

Alpha Micro 1000 shown
(display not available)

Consult your Alpha representative for P/N configurations

Electrical

North America

Battery string voltage:.....24Vdc
Input:
Nominal voltage: 120Vac
Nominal frequency:.....60Hz
Current:.....2.6A nominal
Voltage range: .....85 to 175Vac
Output:
Voltage: 120Vac
Current:.....2.5A nominal
Voltage regulation: .....+/- 10% over input voltage range
Power @ 50°C:.....300W/VA

International

Battery string voltage:.....24Vdc
Input:
Nominal voltage: 230Vac
Nominal frequency:.....50Hz
Current:.....1.4A nominal
Voltage range: .....150 to 328Vac
Output:
Voltage: 230Vac
Current:.....1.3A nominal
Voltage regulation: .....+/- 10% over input voltage range
Power @ 50°C:.....300W/VA

Performance / Features

Run time*:.....2 x 50Ah batteries - 2 hrs 12 mins

*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 (without batteries)		19.7kg (43.4lbs)
	**Alpha Micro XL**		
	Dimensions	mm	776H x 358W x 294D
		inches	30.6H x 14.1W x 11.6D
	Weight (without batteries)		19.7kg (49.8lbs)
	**Alpha Micro XL3**		
	Dimensions	mm	1330H x 358W x 294D
		inches	52.4H x 14.1W x 11.6D
	Weight (without batteries)		22.6kg (69.2lbs)

Agency Compliance

Electrical safety:.....UL1778, CSA 22.2 No. 107.3, EN50091-1-2, EN60950
Marks: .....$_{c}$CSA$_{US}$, CE**
EMI:.....Level A FCC, CISPR22, EN55022
NEMA:.....3R

**CE applies to 230Vac version only

Alpha Micro 1000
UPS

- Clean, uninterruptible backup power ensures your system will remain up and running during power outages
- Wide range Automatic Voltage Regulation without going to batteries extends battery life, even during periods of surge or sag in voltage from utility power
- External communications via RS-232 port or (optional) Ethernet SNMP interface provides local or remote monitoring control
- Independently programmable control and report relays allow tracking and controlling of key functions
- User-friendly LCD display allows "at-a-glance" monitoring and troubleshooting
- 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)[1] is suitable for most extreme operating environments
- Temperature compensated battery charging protects batteries from over charging at extreme temperatures

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

Consult your Alpha representative for P/N configurations

Electrical

North America

Battery string voltage:.....48Vdc
Input:
Nominal voltage: 120Vac
Nominal frequency:.....60Hz
Current:.....8.8A nominal
Voltage range: .....85 to 175Vac
Output:
Current:.....8.3A nominal
Voltage regulation: .....+/- 10% over input voltage range
Power @ 50°C:.....1000W/VA

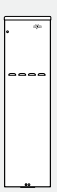
International

Battery string voltage:.....48Vdc
Input:
Nominal voltage: 230Vac
Nominal frequency:.....50Hz
Current:.....4.6A nominal
Voltage range: .....150 to 328Vac
Output:
Voltage: 230Vac
Current:.....4.3A nominal
Voltage regulation: .....+/- 10% over input voltage range
Power @ 50°C:.....1000W/VA

Performance / Features

Run time*:.....2 x 50Ah batteries - 2 hrs 12 mins
*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 (without batteries)		19.7kg (43.4lbs)
	**Alpha Micro XL**		
	Dimensions	mm	776H x 358W x 294D
		inches	30.6H x 14.1W x 11.6D
	Weight (without batteries)		19.7kg (49.8lbs)
	**Alpha Micro XL3**		
	Dimensions	mm	1330H x 358W x 294D
		inches	52.4H x 14.1W x 11.6D
	Weight (without batteries)		22.6kg (69.2lbs)

Agency Compliance

Electrical safety:.....UL1778, CSA 22.2 No. 107.3, EN50091-1-2, EN60950
Marks: .....$_{C}$CSA$_{US}$, CE**
EMI:.....Level A FCC, CISPR22, EN55022
NEMA:.....3R

**CE applies to 230Vac version only

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

Consult your Alpha representative for P/N configurations

Electrical

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

Output:
- Waveform:..... Pure sine wave
- Voltage regulation: ..... ±1%
- Typical voltage THD: ..... <5% 1kVA to 5kVA

Inverter frequency stability: ..... ±0.1%
Spike attenuation: ..... 2000 to 1

Environmental

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

Communications

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

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

Intelligent Interface Device (I2D): Front panel LCD readout provides vital UPS system information at the touch of a key.

Application Specific Models

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

Plug and receptacle diagram

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

Warranty

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

Agency Compliance

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

Nominal Specifications

Model number:		CFR 1000 CFR 1000 E	CFR 1500 CFR 1500 E CFR 1500 NT	CFR 2000 CFR 2000 E CFR 2000 NT	CFR 2500 CFR 2500 E CFR 2500 NT	CFR 3000 CFR 3000 E CFR 3000 NT
Output power rating		1000VA/750W	1500VA/1000W	2000VA/1334W	2500VA/1667W	3000VA/2000W
60Hz models (CFR, CFR-NT & CFR-M)						
Input voltage (Vac) nominal		120	120/208/240	120/208/240	120/208/240	120/208/240
Output voltage (Vac) nominal		120	120/208/240	120/208/240	120/208/240	120/208/240
50Hz nodels (CFR-E)						
Input/Output voltage (Vac) nominal		230	230	230	230	230
Typical efficiency - AC/AC 100% load		90%	90%	90%	90%	90%
Typical heat output - line mode		284 BTU/h	427 BTU/h	398 BTU/h	636 BTU/h	758 BTU/h
Mechanical						
Dimensions	inches	10H x 8.5W x 20D	21H x 8.5W x 22.5D	21H x 8.5W x 22.5D	21H x 8.5W x 22.5D	21H x 8.5W x 29.5D
	mm	254H x 216W x 508D	533H x 216W x 571D	533H x 216W x 571D	533H x 216W x 571D	533H x 216W x 749D
60Hz weight		42kg (92lbs)	69kg (151lbs)	78kg (171lbs)	84kg (185lbs)	128kg (283lbs)
60Hz ship weight		44kg (97lbs)	73kg (162lbs)	83kg (182lbs)	91kg (200lbs)	142kg (312lbs)
50Hz weight		42kg (93lbs)	74kg (163lbs)	82kg (181lbs)	86kg (190lbs)	142kg (313lbs)
50Hz ship weight		44kg (98lbs)	79kg (174lbs)	87kg (192lbs)	93kg (205lbs)	151kg (332lbs)
Internal battery runtime 100%*		12min	18min	15min	10min	27min
Internal battery recharge time (to 80% of capacity)		5hrs typical	5hrs typical	5hrs typical	5hrs typical	5hrs typical
Extended battery runtime options*						
A. External Battery Pack		EBP 24A	EBP 48A	EBP 48A	EBP 48A	EBP 48A
Total runtime**		32min	1hr 39min	1hr 10min	52min	1hr 15min
B. External Battery Pack		EBP 24C	EBP 48E	EBP 48E	EBP 48E	EBP 48E
Total runtime**		2hrs 12min	3hrs 45min	2hrs 48min	2hrs 10min	2hrs 30min
C. External Battery Pack		EBP 24E				
Total runtime**		5hrs 12min				
60Hz power connector options†						
Input: CFR, CFR-C, CFR-M, CFR-RM models		5-15P	5-15P T. B. L5-15P	5-20P T. B. L5-20P	5-30P L5-30P L6-30P T. B.	5-30P L5-30P L6-30P Terminal Block
CFR-NT models		N/A	L6-30R	L6-30R	L6-30R	L6-30
Output: CFR, CFR-C, CFR-M, CFR-RM models		5-15R L5-15R	5-15R 5-20R 6-20R L5-15R L5-20R L5-30R L6-20R 5-30R L6-30R T. B.	5-15R 5-20R 6-20R L5-15R L5-20R L5-30R L6-20R 5-30R L6-30R T. B.	5-15R 5-20R 6-20R L5-15R L5-20R L5-30R L6-20R 5-30R L6-30R T. B.	5-15R 5-20R 6-20R L5-15R L5-20R L5-30R L6-20R 5-30R L6-30R Terminal Block
CFR-NT models		N/A	5-15R 2-L6-30R	5-15R 2-L6-30R	5-15R 2-L6-30R	5-15R 2-L6-30R
50Hz power connector options†						
Input /Output: CFR-E models		British Australian Schuko	British Australian Schuko	British Australian Schuko	British Australian Schuko T.B.	British Australian Schuko T.B.

* Battery runtimes are calculated at 100% rated loads and will vary according to battery age, loads, temperature and other factors.
** Total runtime include the internal batteries and the External Battery Pack (EBP) at 100% load.
*** Contact factory for 5kVA configurations.
† Refer to Plug and Receptacle Diagram: See page 54

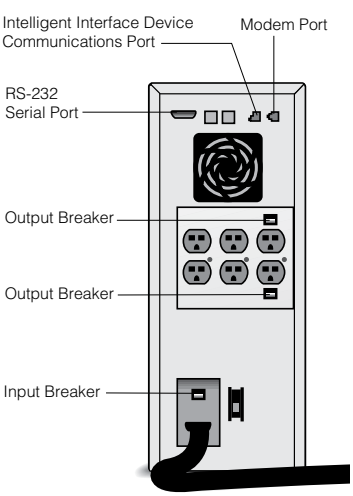
- Maximum power protection for complete isolation and uninterruptible power, assuring the ongoing performance of sensitive medical equipment
- Meets demanding UL 60601-1 medical safety standards, allowing use in most medical and healthcare environments
- Low current leakage supports patient vicinity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

Output Power Connector Configuration Options

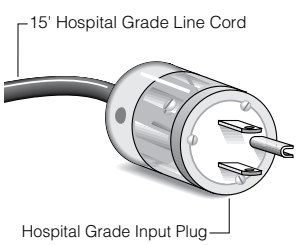
1) Any combination of 3 or less duplex receptacles.
2) Any combination of 2 or less single receptacles.
3) Any duplex receptacle with any single receptacle.
4) Single terminal block.
(Other Configurations may be available)

Agency Compliance

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



AlphaMED back panel



Power Connector Options

Input: Hospital Grade NEMA STD		
5-15P	5-15P	5-20P
L5-15P	5-20P	6-15P
	6-15P	6-20P
	6-20P	

Output: Hospital Grade NEMA STD			
5-15R	5-15R	5-20R	6-20R
L5-15R	5-15R	5-20R	6-20R

Nominal Specifications

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

* Factory configured

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

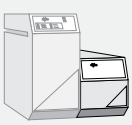
*** Total runtime include the internal batteries and the External Battery Pack (EBP).

EBP Options

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

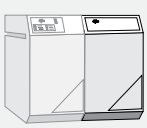
Available for CFR 1500, 2500, 3000

Battery pack 48V



EBP 48A
Dimensions:
inches: ... 10.5H x 8.5W x 10.5D
mm: ..... 267H x 216W x 267D
Weight: 58kg (127lbs)
Capacity: 33Ah

EBP 48E
Dimensions:
inches: ... 21.5H x 8.5W x 21.5D
mm: ..... 546H x 216W x 546D
Weight: 141kg (312lbs)
Capacity: 88Ah



EBP 1275-48R
Dimensions:
inches: .... 30.3H x 22.0W x 31.5D
mm: ..... 770H x 660W x 800D
Weight: 411kg (905lbs)
Capacity: 264Ah

ALI Elite
Indoor UPS Solutions

ALI Elite Tower configuration

- 1000VA to 3000VA models
- Line interactive, pure sine wave technology
- High speed microprocessor controlled
- Advanced Automatic Voltage Regulation
- Smart battery management
- Hot swappable batteries
- Optional XL models available for longer run times

Electrical

AC Input
Voltage: ..... 120V nominal
Voltage range: ..... ±25%
Frequency: ..... 50/60Hz ±5% (auto sensing)

AC Output
Voltage (selectable):..... 100/110/120V
Frequency: ..... 50 or 60Hz ±0.5% when on battery
Regulation: ..... Increase of 15% if input voltage is -9 to -25% from nominal
Decrease of 15% if input is 9 to 25% from nominal
Spike protection: ..... 320 Joules, 2ms
EMI/RFI filtering:..... 10dB at 0.15MHz, 50dB at 30Mhz
Overload capacity:..... 110% for 20sec, 125% for 5sec
Transfer time:..... 2 to 4ms, including detection time
Waveform:..... Sine wave

Battery
Recharge time:..... <5hrs to 90% recharge of internal batteries only
Type:..... Valve Regulated Lead Acid (VRLA)
No extended battery packs
(available on XL models only)

Communication Interface

Front panel indicators: ..... LED display – load level and battery capacity
Audible alarm: ..... On battery – Slow beep
Low battery – rapid beep
Overload – continuous
Communications: ..... RS-232 with optional external SNMP

Environmental

Operating temperature: .... 0 to 40°C
Storage temperature:..... -20 to 48°C
Altitude: ..... 3500m above sea level
Humidity: ..... 0 to 95% non-condensing

Agency Compliance

Safety: ..... UL, CSA

Warranty

UPS Module and battery: Competitive warranties included. Contact your sales representative for further details.

Nominal Specifications

Tower		**Model**	**ALI Elite 1000T**	**ALI Elite 1500T**	**ALI Elite 2000T**	**ALI Elite 3000T**
		P/N	**017-747-110**	**017-747-115**	**017-747-120**	**017-747-130**
Rack mount		**Model**	**ALI Elite 1000RM**	**ALI Elite 1500RM**	**ALI Elite 2000RM**	**ALI Elite 3000RM**
		P/N	**017-747-61**	**017-747-65**	**017-747-62**	**017-747-63**
Capacity (VA/W)			1000VA/600W	1500VA/900W	2000VA/1200W	3000VA/1800W
Input plug			NEMA 5-15P	NEMA 5-15P	NEMA L5-20P	NEMA L5-30P
Input protection			Fuse	Fuse	Breaker 20A	Breaker 30A
Audible noise			<40dBA @ 1m	<40dBA @ 1m	<40dBA @ 1m	<40dBA @ 1m
Receptacles						
Tower			4 NEMA 5-15R	6 NEMA 5-15R	6 NEMA 5-20R	4 NEMA 5-15R, 1 NEMA 5-30R
Rack mount			4 NEMA 5-15R	4 NEMA 5-15R	4 NEMA 5-20R	4 NEMA 5-15R, 1 NEMA 5-30R
Battery						
DC voltage			24V	36V	48V	48V
Battery runtimes* Tower and Rack mount						
Runtime @ 100% load			3min	3min	3min	7min
Runtime @ 50% load			8min	9min	9min	21min
Mechanical						
Tower	Dimensions	inches	5.5W x 17.2D x 8.3H	6.7W x 17.7D x 8.9H	6.7W x 17.7D x 8.9H	6.7W x 22.8D x 16.9H
		mm	140W x 436D x 210H	170W x 450D x 226H	170W x 450D x 226H	170W x 580D x 430H
	Weight		15kg (33.0lbs)	25kg (55.1lbs)	30kg (66.1lbs)	36kg (80lbs)
	Approx. ship weight		16kg (35.0lbs)	27kg (59.5lbs)	32kg (70.5lbs)	38kg (83.7lbs)
Rack mount	Dimensions	inches	16.9W x 15.0D x 5.1H	16.9W x 15.0D x 5.1H	16.9W x 15.0D x 5.1	16.9W x 22.1D x 7.0H
		mm	429.3W x 381D x 130H	429.3W x 381D x 130H	429.3W x 381D x 130	429.3W x 560D x 178H
	Weight		20kg (44lbs)	26kg (57.3lbs)	28kg (61.7lbs)	34kg (75lbs)
	Approx. ship weight		22kg (48lbs)	28.8kg (63.4lbs)	31.1kg (68.5lbs)	36kg (79.3lbs)

*Rounded to the nearest minute

ALI Elite tower configuration

ALI Elite rack configuration

ALI Elite XL
Indoor UPS Solutions

ALI Elite XL

- All the same features and benefits of the ALI Elite with the capability of longer run times
- ALI Elite Extended Run Time Battery Packs add runtime

Electrical

AC Input
- Voltage: ..... 120V nominal
- Voltage range: ..... ±25%
- Frequency: ..... 50/60 Hz ±5% (auto sensing)

AC Output
- Voltage (selectable):..... 100/110/120V
- Frequency: ..... 50 or 60Hz ±0.5% when on battery
- Regulation: ..... ±10% nominal
- Spike protection: ..... 320 Joules, 2ms
- EMI/RFI filtering:..... 10dB at 0.15MHz, 50dB at 30mHz
- Overload capacity:..... 110% for 20sec, 125% for 5sec
- Transfer time:..... 2 to 4ms, including detection time
- Waveform:..... Sine wave

Battery
- Recharge time:..... <5hrs to 90% recharge of internal batteries only
- Type: ..... Valve Regulated Lead Acid (VRLA)
  Extended battery connectors included
  Extended battery packs available

Communication Interface

Front panel indicators: ..... LED display – load level and battery capacity
Audible alarm: ..... On battery – slow beep
Low battery – rapid beep
Overload – continuous
Communications: ..... RS-232 with optional ethernet/SNMP

Environment

Operating temperature: .... 0 to 40°C
Storage temperature:..... -20 to 48°C
Altitude: ..... 3500m above sea level
Humidity: ..... 0 to 95% non-condensing

Agency Compliance

Safety: ..... UL, CSA

Warranty

UPS Module and battery:.. Competitive warranties included. Contact your sales representative for further details.

Nominal Specifications

Tower	**Model**	**ALI Elite 1000TXL**	**ALI Elite 1500TXL**	**ALI Elite 2000TXL**	**ALI Elite 3000TXL**
	P/N	**017-747-210**	**017-747-215**	**017-747-220**	**017-747-230**
Rack mount	**Model**	**ALI Elite 1000RMXL**	**ALI Elite 1500RMXL**	**ALI Elite 2000RMXL**	**ALI Elite 3000RMXL**
	P/N	**017-747-81**	**017-747-85**	**017-747-82**	**017-747-83**
Capacity VA/W		1000VA/600W	1500VA/900W	2000VA/1200W	3000VA/1800W
Input plug		NEMA 5-15P	NEMA 5-15P	NEMA L5-20P	NEMA L5-30P
Input protection		Fuse	Fuse	Breaker	Breaker
Audible noise		<40dBA @ 1m	<45dBA @ 1m	<45dBA @ 1m	<45dBA @ 1m
Receptacles					
Tower		6 NEMA 5-15R	6 NEMA 5-15R	6 NEMA 5-20R	4 NEMA 5-15R, 1 NEMA 5-30R
Rack mount		6 NEMA 5-15R	6 NEMA 5-15R	6 NEMA 5-20R	4 NEMA 5-15R, 1 NEMA 5-30R

Nominal Specifications

Battery						
DC voltage			24V	36V	48V	48V
Mechanical						
Tower	Dimensions	inches	8.9H x 6.7W x 17.7D	16.9H x 6.7W x 18.9D	16.9H x 6.7W x 18.9	16.9H x 6.7W x 21.6D
		mm	226.1H x 170.2W x 449.6D	429.3H x 170.2W x 480.1D	429.3H x 170.2W x 480.1D	429.3H x 170.2W x 548.6D
	Weight		30kg (66lbs)	46kg (94.8lbs)	50kg (110.2lbs)	57kg (125.7lbs)
	Approx. ship weight		32kg (70.5lbs)	49kg (108lbs)	53kg (116lbs)	60kg (132lbs)
Rack mount	Dimensions	inches	5.1H x 16.9W x 22.0D	5.1H x 16.9W x 22.0D	5.1H x 16.9W x 22.0D	7.0H x 16.9W x 22.0D
		mm	129.5H x 429.3W x 558.2D	129.5H x 429.3W x 558.2D	129.5H x 429.3W x 558.2D	177.8H x 429.3W x 558.2D
	Weight		19kg (41.9lbs)	24kg (52.9lbs)	27kg (59.5lbs)	47kg (103.6lbs)
	Approx. ship weight		21kg (46.2lbs)	26kg (57.3lbs)	29kg (63.7lbs)	49kg (108lbs)

Battery pack	**Model**	**ALIBP 1000T**	**ALIBP1500T**	**ALIBP2/3000T**
	P/N	**033-747-07**	**033-747-10**	**033-747-20**
Dimensions	inches	8.5H x 6.7W x 18.9D	8.5H x 6.7W x 18.9D	8.5H x 6.7W x 18.9D
	mm	215.9H x 170.2W x 480.1D	215.9H x 170.2W x 480.1D	215.9H x 170.2W x 480.1D
Weight		31.5kg (69.4lbs)	25.5kg (56.2lbs)	31.5kg (69.4lbs)
Approx. ship weight		33.5kg (73.9lbs)	27.5kg (60.6lbs)	33.5kg (73.9lbs)

Battery pack	**Model**	**ALIBP 1000RM**	**ALIBP1500RM**	**ALIBP2/3000RM**
	P/N	**033-747-08**	**033-747-12**	**033-747-22**
Dimensions	inches	16.9W x 15.7D x 5.1H	16.9W x 15.7D x 5.1H	16.9W x 15.7D x 5.1H
	mm	429.3W x 398.8D x 129.5H	429.3W x 398.8D x 129.5H	429.3W x 398.8D x 129.5H
Weight		29.65kg (64.5lbs)	29.65kg (64.5lbs)	29.65kg (64.5lbs)
Approx. ship weight		32.95kg (72.6lbs)	32.95kg (72.6lbs)	32.95kg (72.6lbs)

Battery Runtimes*

Model		**ALI Elite 1000 TXL/RMXL**	**ALI Elite 1500 TXL/RMXL**	**ALI Elite 2000 TXL/RMXL**	**ALI Elite 3000 TXL/RMXL**
Tower at 50% Load	UPS	26min	44min	44min	24min
	1 EBP	169min	111min	111min	64min
	2 EBP	307min	176min	176min	111min
Tower at 100% Load	UPS	10min	16min	16min	8min
	1 EBP	77min	47min	47min	26min
	2 EBP	147min	83min	83min	47min
Rack at 50% Load	UPS	26min	13min	13min	14min
	1 EBP	144min	93min	70min	48min
	2 EBP	277min	184min	131min	90min
Rack at 100% Load	UPS	10min	5min	5min	5min
	1 EBP	68min	41min	30min	20min
	2 EBP	131min	85min	58min	40min

*Rounded to the nearest minute

Pinnacle Plus
Indoor UPS Solutions

Pinnacle Plus tower configuration

- 1000VA to 3000VA models to meet your power needs
- True online, double conversion operation (zero transfer time)
- Power factor correction: minimize energy consumption
- Optional Ethernet SNMP communications interface: monitor from anywhere
- Internal Static Bypass: no extra parts to buy for complete operation
- Hot swappable batteries: no downtime

Electrical

AC Input:

Voltage range:	80 to 144V at full load, 60 to 144V at 40% load (120V Units)
Frequency:	50/60Hz ±5% (auto sensing)

AC Output:

Voltage (selectable):	100/110/115/120/127V (PIN 1000 to 3K)
Frequency:	50 or 60Hz ±0.5% when on battery
Receptacle segments:	2 - software controllable
Voltage THD, Linear load:	<3%
Crest factor:	3:1
Overload capacity:	125% for 1min, 150% for 10sec
Transfer time:	0ms

Battery:

Recharge time:	<4hrs to 90% recharge on internal battery
Type:	Valve Regulated Lead Acid (VRLA) Extended battery connection included. Extended battery packs available

Interface

Front panel indicators:	LCD display/input/output volts, frequency, load level, battery capacity, online/eco mode
Audible alarm:	On Battery - 5 second interval UPS fault - continuous
Communications:	RS-232, communications expansion slot, USB standard (Options: AS400 Card, UPS LAN Card)

Environment

Operating temperature:	0 to 40°C
Storage temperature:	-20 to 50°C
Altitude:	3500m above sea level
Humidity:	0 to 95%, non-condensing
Audible noise:	<40dBA at 1m

Agency Compliance

Safety:	UL, CSA
EMC (EMS/EMI):	IEC 61000-4. FCC Part 15, CISPR22
High efficiency mode:	>95% efficient when selected

Pinnacle Plus tower configuration

Pinnacle Plus rack configuration

Nominal Specifications

Tower		Model	PINNACLE Plus 1000T	PINNACLE Plus 1500T	PINNACLE Plus 2000T	PINNACLE Plus 3000T
		P/N	017-751-10	017-751-15	017-751-20	017-751-30
Rack mount 2U		Model	PINNACLE Plus 1000RM	PINNACLE Plus 1500RM	PINNACLE Plus 2000RM	PINNACLE Plus 3000RM
		P/N	017-751-122	017-751-17	017-751-22	071-751-32
Capacity			1000VA/700W	1500VA/1050W	2000VA/1400W	3000VA/2100W
Input plug			NEMA 5-15P	NEMA 5-15P	NEMA L5-20P	NEMA L5-30P
Input protection			Circuit breaker 12A	Circuit breaker 15A	Circuit breaker 20A	Circuit breaker 30A
Receptacles						
Tower			6 NEMA 5-15R	6 NEMA 5-15R	10 NEMA 5-20R, 1NEMA L5-20R	10 NEMA 5-15R, 1 NEMA L5-30R
Rack mount			6 NEMA 5-15R	6 NEMA 5-15R	2 NEMA 5-20R, 1 NEMA L5-20R	2 NEMA 5-15R, 1 NEMA L5-30R
Battery						
DC voltage			36V	36V	72V	72V
Mechanical						
Tower	Dimensions	inches	9.4H x 6W x 16.5D	9.4H x 6W x 16.5D	14.2H x 8.9W x 16.7D	14.2H x 8.9W x 16.7D
		mm	238.8H x 152.4W x 419.1D	238.8H x 152.4W x 419.1D	360.7H x 226.1W x 424.2D	360.7H x 226.1W x 424.2D
	Net weight		17.1kg (35.3lbs)	17.7kg (37.5lbs)	33.8kg (68.3lbs)	35.6kg (72.8lbs)
	Approx. ship weight		18.9kg (40lbs)	19.5kg (41.8lbs)	36kg (73.9lbs)	38kg (78.1lbs)
Rack mount	Dimensions	inches	3.3H x 16.9W x 16.7D	3.3H x 16.9W x 16.7D	3.3H x 16.9W x 25D	3.3H x 16.9W x 25D
		mm	83.8H x 429.3W x 424.2D	83.8H x 429.3W x 424.2D	83.8H x 429.3W x 609.6D	83.8H x 429.3W x 609.6D
	Net weight		18.7kg (37.5lbs)	19.1kg (39.7lbs)	33.6kg (70.6lbs)	34.3kg (72.8lbs)
	Approx. ship weight		21.6kg (42.5lbs)	21.7kg (44.2lbs)	36.7kg (74.4lbs)	38.3kg (78.5lbs)

Battery runtimes*

Model		PINNACLE Plus 1000T	PINNACLE Plus 1500T	PINNACLE Plus 2000T	PINNACLE Plus 3000T
		PINNACLE Plus 1000RM	PINNACLE Plus 1500RM	PINNACLE Plus 2000RM	PINNACLE Plus 3000RM
Tower at 50% load	UPS	15min	11min	15min	11min
	1 EBP	118min	72min	63min	38min
	2 EBP	240min	148min	118min	72min
Tower at 100% load	UPS	6min	4min	6min	4min
	1 EBP	56min	32min	29min	16min
	2 EBP	112min	70min	55min	33min
Rack at 50% load	UPS	15min	11min	15min	11min
	1 EBP	118min	72min	63min	38min
	2 EBP	240min	148min	118min	72min
Rack at 100% load	UPS	6min	4min	6min	4min
	1 EBP	56min	32min	29min	16min
	2 EBP	112min	70min	55min	33min

*Rounded to the nearest minute

Pinnacle Plus High Power
Indoor UPS Solutions

Pinnacle Plus High Power tower configuration

- 6000, 10,000 and 12,000VA models to meet every power need
- True online, double conversion operation (zero transfer time)
- Internal Static Bypass: no extra parts to buy for complete operation
- Power factor correction: minimize energy consumption
- Optional Ethernet SNMP communications interface: monitor from anywhere
- Hot swappable batteries: no downtime

Electrical

AC Input:
- Voltage range: ..... 180 to 276Vac
- Frequency: ..... 50/60Hz ±5% (auto sensing)

AC Output:
- Voltage (selectable): 200/208/220/230/240
- Frequency: ..... 50 or 60Hz ±0.5% when on battery
- Receptacle segments: ..... 2 - software controllable
- Voltage THD, Linear load: ..... <3%
- Crest factor: 3:1
- Overload capacity: ..... 125% for 1min, 150% for 10sec
- Transfer time: 0ms

Extended Battery:
- Recharge time: ..... <4hrs to 90% recharge on internal battery
- Type: ..... Valve Regulated Lead Acid (VRLA)
  Extended battery connection included
  Extended battery packs available

Interface

Front panel indicators: ..... LCD display/input/output volts, frequency, load level, battery capacity, online/eco mode
Audible alarm: ..... On battery - 5 second interval
UPS fault - continuous
Communications: ..... RS-232, communications expansion slot, USB standard
(Options: AS400 Card, UPS LAN Card)

Environment

Temperature:
- Operating: ..... 0 to 40°C
- Storage: ..... -20 to 50°C

Altitude: ..... 3500m above sea level
Humidity: ..... 0 to 95%, non-condensing
Audible noise: ..... <40dBA at 1m

Agency Compliance

Safety: ..... UL, CSA
EMC (EMS/EMI): ..... IEC 61000-4. FCC Part 15, CISPR22
High efficiency mode: ..... >95% efficient when selected

Nominal Specifications

Tower	Model	PINNACLE Plus 6000T	PINNACLE Plus 10000T	PINNACLE Plus 12000T
	P/N	**017-751-400**	**017-751-300**	**017-751-500**
Capacity		6000VA/4200W	10000VA/7000W	12000VA/8400W
Input plug		Terminal Block	Terminal Block	Terminal Block
Input protection		Circuit Breaker	Circuit Breaker	Circuit Breaker
Receptacles				
Tower		Terminal Block	Terminal Block	Terminal Block
Battery				
DC voltage		240V	240V	240V
Mechanical				
Dimensions	inches	22.4H x 10.1W x 23.2D	28.2H x 10.1W x 27.2D	34.6H x 13.5W x 27.2D
	mm	699.4H x 257.8W x 699.8D	729.4H x 324.4W x 739.2D	903H x 342W x 690D
Net weight		95kg (209lbs)	151kg (332lbs)	198kg (435lbs)
Approx. ship weight		Contact Alpha	Contact Alpha	Contact Alpha
Battery runtimes				
Tower at 50% load	UPS	17min	8min	17min
Tower at 100% load	UPS	7min	2min	7min

Extended Run Time Battery Pack Specifications

Battery pack		PINBP6000T	PINBP10000/12000T
P/N		**033-751-400**	**033-751-311**
Dimensions	inches	10.2W x 27.4D x 22.4H	13.5W x 24.1D x 25.9H / 13.5W x 24.5D x 25.96H
	mm	258W x 697D x 570H	344W x 613D x 657H / 344W x 623D x 657H
Weight		Contact Alpha	
Approx. ship weight		Contact Alpha	

Galaxy 5000
Three Phase UPS

- IGBT technology supplies clean, stable power* to sensitive loads
- Connect up to 6 units in parallel: add redundancy or grow with your power requirements
- Allows connection to two separate input sources for increased availability
- Built in static and maintenance bypass for seamless transfer to utility for maintenance or in the event of heavy overload

Consult your Alpha representative for P/N configurations

Performance Three Phase UPS with adaptability to meet the unique requirements of small to medium datacenters, buildings and facilities

High Power Availability

The Galaxy 5000 has been designed for continuous operation
- Fault tolerance with built-in 100% rated bypass static switch
- Redundant components for greater reliability
- High overload capacity to improve downstream discrimination
- Extended battery backup times available

Flexible and Upgradeable

The Galaxy 5000 adapts to your changing needs
- Expandable power ranges
- Parallel up to 6 modules for higher capacity or redundancy
- Easy integration with networking and monitoring systems
- A choice of backup times from 5 minutes to 8 hours
- Compatible with inductive and leading power factor loads
- Field upgradeable from single to parallel

Low total cost of ownership

The Galaxy 5000 helps to minimize your infrastructure costs
- Small footprint
- Power factor corrected input prevents the need for oversizing cables, circuit breakers and generator
- Efficiency in on-line double conversion mode up to 93.5%

Nominal Specifications

Rated power	40kVA/36KW	50kVA/45KW	60kVA/54KW	80kVA/72KW	100kVA/90KW	130kVA/117KW
Normal AC input						
Input voltage (V)	480V Core, 3 Wire + G (220V, 208V, 600V w/ Aux Transfomer 4 Wire + G)					
Frequency	60Hz +/-5%					
Power factor	<0.99					
Current distortion (THDI)	<5%					
Bypass AC input						
Bypass overload	10x nominal current for 1 cycle					
Load output						
Output voltage	480V Core, 3 Wire + G (220V, 208V, 600V w/ Aux Transfomer 4 Wire + G)					
Frequency	60Hz					
Voltage regulation	+/-1.0% balance load, +/-2.5% unbalanced load					
Voltage transient response	+/-5% for 100% step load, +/-1% for loss or return of AC input					
Voltage recovery time	Within 1% of nominal within 1 cycle					
Voltage distortion	<1% L-L and L-N for non-linear loads (<2% max)					
Inverter overload	150% for 1 min, 125% for 10min					
Heat rejection (BTU) @ 480V	9248	11560	13872	18496	19607	25489
Overall efficiency						
Double conversion mode	Up to 94%					
Environmental						
Storage temperature	-20 to 45°C (-4 to 113°F)					
Operating temperature	UPS: 0 to 40°C (32 to 104°F), Battery: 25°C (77°F)					
Operating altitude	1000 m					
Mechanical						
Dimensions	28W x 33.42D x 75H inches				28W x 33.42D x 75H inches	
Weight	882lbs				1146lbs	
Matching maintenance bypass	28W x 33.42D x 75H inches					
Transformer cabinet	28W x 33.42D x 75H inches					
Distribution cabinet	42W x 33.42D x 75H inches					
Top entry cabinet	14W x 33.42D x 75H inches					
Battery cabinet	26W x 33.42D x 75H inches					
Battery cabinet	32W x 33.42D x 75H inches					
Battery cabinet	48W x 33.42D x 75H inches					
Parallel system bypass cabinet (480V only)	28 or 42W x 33.42D x 75H inches					

Galaxy 3000
Three Phase UPS

Galaxy 3000

- Power ranges 10, 15, 20 and 30kVA for medium power backup requirements
- True online technology provides a pure clean output
- Network-based power management for flexible, multi-system monitoring and confrol
- Input Power Factor Correction (PFC) minimizes operating cost

Nominal Specifications

Output power rating	**10kVA**	**15kVA**	**20kVA**	**30kVA**
Input				
Voltage	208/220/480/600V	208/220/480/600V	208/220/480/600V	208/220/480/600V
Frequency	60Hz (-25 to 8%)	60Hz (-25 to 8%)	60Hz (-25 to 8%)	60Hz (-25 to 8%)
Power factor	>0.99	>0.99	>0.99	>0.99
Current distortion (THD)	>3%	>3%	>3%	>3%
Current (A @ 208V)	26	46	61	91
Breaker (@ 208)	40	60	80	125
Output				
Voltage	208V (220/480/600)	208V (220/480/600)	208V (220/480/600)	208V (220/480/600)
Frequency	60Hz (±1 to 4% selectable)	60Hz (±1 to 4% selectable)	60Hz (±1 to 4% selectable)	60Hz (±1 to 4% selectable)
Transient response	±3% for 0 to 100% to 0%	±3% for 0 to 100% to 0%	±3% for 0 to 100% to 0%	±3% for 0 to 100% to 0%
Voltage distortion THD	<3% L-L and L-N	<3% L-L and L-N	<3% L-L and L-N	<3% L-L and L-N
Inverter overload	120% for 1min	120% for 1min	120% for 1min	120% for 1min
Bypass overload	10x nominal current	10x nominal current	10x nominal current	10x nominal current
Output current (A @ 208V)	28	42	56	83
Heat rejection (max. BTUs)	4100	6100	8200	12200

Nominal Specifications

Model		10kVA	15kVA	20kVA	30kVA
Batteries					
Backup time (minutes)[1]		11/39/60	7/22/35/55	15/24/38	8/12/21
Mechanical specifications					
Standard cabinet	inches	32.8W x 62.4H x 35.5D	32.8W x 62.4H x 35.5D	32.8W x 62.4H x 35.5D	32.8W x 62.4H x 35.5D
	cm	83.8W x 158.5H x 90.2D	83.8W x 158.5H x 90.2D	83.8W x 158.5H x 90.2D	83.8W x 158.5H x 90.2D
	Weight[2]	0.94kg (2.065lbs)	0.94kg (2.065lbs)	0.94kg (2.065lbs)	0.94kg (2.065lbs)
Micro cabinet[3]	inches	23W x 48.5H x 33.5D	23 W x 48.5 H x 33.5 D		
	cm	58.4W x 123.2H x 90.2D	58.4W x 123.2H x 90.2D		
	Weight	0.94kg (2.065lbs)	0.94kg (2.065lbs)		
Auxiliary cabinets Maintenance bypass cabinet	inches	23W x 62.4H x 35.5D	23W x 62.4H x 35.5D	23W x 62.4H x 35.5D	23W x 62.4H x 35.5D
	cm	58.4W x 158.5H x 90.2D	58.4W x 158.5H x 90.2D	58.4W x 158.5H x 90.2D	58.4W x 158.5H x 90.2D
Auxiliary cabinets Output voltage transformer	inches	23W x 62.4H x 35.5D	23W x 62.4H x 35.5D	23W x 62.4H x 35.5D	23W x 62.4H x 35.5D
	cm	58.4W x 158.5H x 90.2D	58.4W x 158.5H x 90.2D	58.4W x 158.5H x 90.2D	58.4W x 158.5H x 90.2D
Auxiliary cabinets Distribution cabinet (24 to 42 pole)	inches	23W x 62.4H x 35.5D	23W x 62.4H x 35.5D	23W x 62.4H x 35.5D	23W x 62.4H x 35.5D
	cm	58.4W x 158.5H x 90.2D	58.4W x 158.5H x 90.2D	58.4W x 158.5H x 90.2D	58.4W x 158.5H x 90.2D
	Weight	353.8kg (780lbs)	353.8kg (780lbs)	353.8kg (780lbs)	353.8kg (780lbs)
Agency Compliance					
UL 1778, cUL, FCC Class A parts, 15 sub part J Class A, IEC 1000 level 4, IEEE C62.41-B3, NEC, ISO 9001					
Performance / Features					
• Input distribution management • Digital power quality management system (PWM/IGBT inverter) • Step load voltage stabilization • Intelligent battery management system • Fault tolerant architecture • Scalable architecture (10 and 20kVA models) • No extra cabinet for isolation transformer • Integrated battery bank • Low audible noise fans (<53dBA)			• Casters with leveling feet • Network based software for multi-server control • Dry contact I/O card • SNMP manageable • 4 color graphic display with multilingual user interface • Bottom or top entry • Integrated maintenance bypass • Four communications ports • 12 month warranty		
Optional features					
• Matching power distribution unit (84 circuits) • EIA232/EIA485 serial interface • Ethernet/SNMP network connection kit			• Dual input • External maintenance bypass • Input isolation transformer		
Higher powered 208V systems available - contact factory for details					

1. 11/7min battery times only applicable for micro cabinet
2. Weight will vary based on battery runtime and input volt options
3. Micro Cabinet only available in 208/208V. External maintenance bypass distribution options not available with micro cabinet

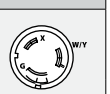
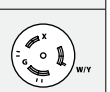
Electrical Receptacles

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

Below are diagrams to help identify plugs and receptacles for your electrical applications

NEMA configurations for plugs and receptacles

Non-locking plugs and receptacles	**15 Ampere**		**20 Ampere**		**30 Ampere**		**50 Ampere**	
	Receptacle	**Plug**	**Receptacle**	**Plug**	**Receptacle**	**Plug**	**Receptacle**	**Plug**
125V	 5-15R	 5-15P	 5-20R	 5-20P	 5-30R	 5-30P	 5-50R	 5-50P
Alpha P/N	531-003-10 531-002-10 531-013-10	530-001-10	531-006-10	530-003-10	531-009-10	530-005-10	531-011-10	530-007-10
For Canadian customers only	 5-20R	EEMAC Configuration						
Alpha P/N	531-005-10							
250V	 6-15R	 6-15P	 6-20R	 6-20P	 6-30R	 6-30P	 6-50R	 6-50P
Alpha P/N	531-004-10	530-002-10	531-008-10	530-004-10	531-010-10	530-006-10	531-012-10	530-008-10
For Canadian customers only	 6-20R	EEMAC Configuration						
Alpha P/N	531-007-10							

Locking plugs and receptacles	**15 Ampere**		**20 Ampere**		**30 Ampere**		**50 Ampere**	
	Receptacle	**Plug**	**Receptacle**	**Plug**	**Receptacle**	**Plug**	**Receptacle**	**Plug**
125V	 L5-15R	 L5-15P	 L5-20R	 L5-20P	 L5-30R	 L5-30P	  (Not NEMA config)	
Alpha P/N	531-201-10	530-201-10	531-203-10	530-204-10	531-206-10	530-207-10	531-208-10	530-209-10
250V	 L6-15R	 L6-15P	 L6-20R	 L6-20P	 L6-30R	 L6-30P	  (Not NEMA config)	
Alpha P/N	531-202-10	530-202-10 531-203-10	531-205-10	530-206-10	531-207-10	530-208-10	531-209-10	530-210-10
125V/250V	 L14-20R	 L14-20P						
Alpha P/N		530-205-10						

Converter Systems

Alpha provides standard DC-DC converter system solutions designed to maximize space and cost savings.

Integrated 24-48V system solutions are available to support a variety of applications including legacy cellular equipment or enhance a network with CSM and UMTS overlays. Standard solutions integrate advanced CXC Cordex™ controllers and front access distribution for maximum site flexibility and configuration.

Alpha's CSM36 and CSM46 series converters are reliable and field proven options for remote network powering. Using a high DC voltage to transmit power over long distances using an existing 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 remote powering converters are perfect for FTTx, FITL (Fiber In The Loop), xDSL, and many other applications.

Whether to enable dual voltage system support, or providing network powering services, Argus converters provide a cost effective and reliable option for DC power systems.

CSM36
-48Vdc to +/-190Vdc Converter

CSM35 19" converter shelf

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

P/N: 012-552-20

Electrical

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

Performance / Features

Indicators: .....Power on
DC input OK
Converter fail alarm major
Converter fail alarm minor
Current limit
Protection:.....Power limiting
Input/output fuses
Input inrush current limiting
Output transient and OSP
Input high and low voltage shutdown
Current limit/short circuit fold back
Thermal shutdown
Input transient
5mA ground fault interrupt option

Mechanical

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

Environmental

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

Shelves

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

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

Top air baffle P/N: Shelf list option 96

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

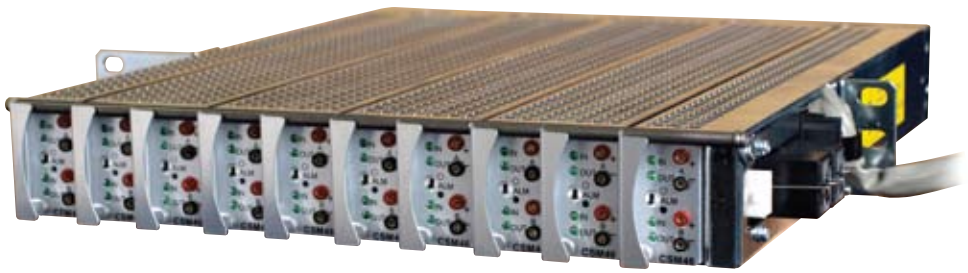
19" shelf (12 modules)
Dimensions:
mm:.....132H x 432W x 314D
inches: .....5.2H x 17W x 12.36D
Weight: .....11.4kg (25lbs) fully equipped

Analog supervisory module
Alarm relays: .....Form C major
Form C minor
LED:.....System ok (green)
Minor alarm (yellow)
Major alarm (red)

Agency Compliance

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

CSM46
+/-190Vdc to -48Vdc Converter



CSM46 10-Module shelf

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

P/N: 012-554-20

Electrical

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

Performance / Features

Indicators:
Converter A: ..... I/P OK (green LED)
Converter A: ..... O/P OK (green LED)
Converter B: ..... I/P OK (green LED)
Converter B: ..... O/P OK (green LED)
Test points:
Converter A: ..... I/P voltage
Converter B: ..... I/P voltage
Protection: ..... Input fuses
Input current limit
Input transient portection
Input high and low voltage shutdown
Thermal shutdown
Output or'ing diodes
Output OVP
Reverse polarity protection
Miscellaneous: ..... Alarm masking switch for disabling shelf level alarming

Mechanical

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

Environmental

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

Shelves

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

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

Performance / Features
Access: ..... Front access
Connections:
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
CE IEC/EN 60950
EMI: ..... Class A radiated
GR-1089 issue 3 (applicable sections)

CXPS 24-48-i
24 to 48V DC-DC Converter System

CXPS 24-48-i Power System

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

P/N: 053-997-20

Electrical

Input:
- Voltage: ..... +21 to +30Vdc
  90 to 176Vac (de-rated O/P power)
- Current:
  - System: ..... Feed A: <188A @ +24V input (216A max)
    Feed B: <188A @ +24V input (216A max)
  - Converter: ..... <94A @ +24V input (108A max)
- Efficiency: ..... >88% (50-100% load @ nominal voltage)

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

Performance / Features

Configurations:
- 053-997-20-000: ..... Base system with 19/23" universal mounting

Converter: ..... Up to 4x CXDF 24-48/2kW converter positions
Distribution: ..... 18x load breaker positions (mid-trip, plug-in style)
Shunt:
- Controller: ..... CXCi integrated Controller

Mechanical

Dimensions:
- mm: ..... 222H x 438W x 310D
- inches: ..... 8.75H x 17.24W x 12.2D
  (-000 configuration - excludes mounting brackets, rear cover, and module handle)

Weight:
- System: 19kg (42lbs)
- Rectifier: ..... 2.8kg (6.2lbs) each
- Mounting: ..... 19/23" universal mount (center or flush)

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

Related Components

Cordex CXDF 24-48/2kW: See page 100
Cordex controller CXCI: See page 70
AM plug-in breakers (load): See page 104

FTTx

Fiber to the home is emerging as the 21st Century infrastructure for the information economy. According to the latest Render Report, the number of US homes receiving video, Internet or voice service over direct fiber optic connections redoubled over the past 12 months, after doubling the year before. This number is expected to double again by the spring of 2010.

The Alpha Group offers a complete portfolio of fiber to the home powering options with the FlexPoint line of 12Vdc single-family solutions (SFU), the FlexNet line of 48Vdc multiple dwelling (MDU), and the small office home office (SOHO) power supplies. All of Alpha's powering solutions are engineered to perform reliably in the most demanding environmental conditions while optimizing battery life and performance.

FlexNet™ FMPS
Multipurpose Power Supply


FlexNet FMPS

- Fiber-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
- Battery heater option 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

FlexNet FMPS, 120V Line cord, 150W, 48Vdc out, -40°C (-40°F)
P/N: 010-592-20-050

FlexNet FMPS, FTTX Multipurpose PS, 120V line cord, 150W
P/N: 010-592-20-052

FlexNet FMPS, FTTX Multipurpose PS, 120V line cord, -40°C (-40°F)
P/N: 010-592-20-053

Electrical

AC input voltage:.....90 to 320Vac
AC input 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
Operational
Output power:.....150W continuous - 170W, 10 sec max.
Output voltage:.....48 to 58Vdc w/AC power
42 to 58Vdc with battery
Output current:.....3.1A typical (crowbar limited beyond 5A DC)
Output 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 valve regulated lead acid (VRLA) (batteries sold separately)

Mechanical

FMPS
Dimensions:
in:.....14W x 23.75H x 5.5D
cm:.....35.6W x 60.3H x 14D
Weight:.....11.3kg (25lbs)

FMPS + shipping carton
Dimensions:
in:.....17W x 28.5H x 11.75D
cm:.....35.6W x 60.3H x 14D
Weight:.....13.6kg (30lbs)

Environment

Operating:
With heater option: .....-40 to 46°C (-40 to 115°F) plus solar loading
0 to 95% RH non-condensing
Without heater option: ....-10 to 46°C (14 to 115°F) plus solar loading
0 to 95% RH non-condensing
0 to 10000ft (0 to 3000m) elevation
Storage:.....-15 to 85°C (-5 to 185°F)
0 to 95% RH non-condensing
0 to 50000ft (0 to 15000m) elevation

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

Warranty

3 year repair or replace

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

FlexPoint™ 1230

1230 Series Indoor 12Vdc 30W UPS

- Telecommunications grade power system provides 30W of 12Vdc primary and standby power for FTTx activities
- Customer replaceable, hot swappable 7.2Ah or optional 12Ah battery
- Emergency battery reserve for greater E911 availability
- Battery management system provides optimum service life and runtime
- Local visual and audible status indicators and remote alarm interface
- Coax F-style and packet cable interface options

1230 Series Indoor 12Vdc 30W UPS

Consult your Alpha representative for P/N configurations

Electrical

AC input voltage:.....120Vac 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
Operational
Output power:.....30W max continuous (ONT load)
Output voltage:.....12Vdc Nominal (battery voltage upon loss of AC)
Output power loading:.....Following GR-909 telephone lines in various states, e.g., ringing, off-hook, on-hook, data, and video operation requirements
Auxiliary input voltage:.....10.5 to 16.5Vdc

Performance / Features

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

Models

FP1230-01A:.....120Vac 3-conductor NEMA 5-15 power cord
FP1230-02B:.....240Vac 3-conductor schuko input power cord
FP1230-02C:.....240Vac 3-conductor United Kingdom input power cord
FP1230-02D:.....240Vac 3-conductor Australia/New Zealand input power cord
FP1230F-01A: .....120Vac 3-conductor NEMA 5-15 power cord F connector

Supporting Options

AX-STDBAT-7:.....Battery 7.2AH AGM, 1 year warranty
AX-LONGBAT-7:.....Battery 7.2AH AGM, 3 year warranty
AX-STDBAT-12:.....Battery 12AH AGM, 1 year warranty
FP1230-CVR:.....FlexPoint 1230 12AH battery cover with strap
FP1230-HK:.....FlexPoint 1230 heater Kit
FTTH-CBL:.....ONT hook-up cable, 2x16AWG and 5x24AWG, CMX UL listed
AUX-CBL:.....Cable, auxiliary power plug 3.0m Long

Mechanical

Dimensions:
in:.....8.75W x 7.75H x 3.0D
cm:.....22.4W x 17.7H x 7.62D
Weight:.....1.4kg (3lbs)
Battery 7.2Ah: 2.6kg (5.7lbs)
Battery 12Ah: 3.8kg (8.4lbs)

Environment

Storage temperature:.....-40 to 46°C (-40 to 115°F)
Operating temperature:
Without heater: .....-20 to 46°C (-4 to 115°F)
With heater: .....-30 to 46°C (-22 to 115°F)
Note: Operating temperatures based on AX-LONGBAT-7
Humidity:.....0 to 95%
Elevation operation max: ..10,000ft (3,000m) de-rate at 2°C per 1,000ft above 6,000ft
Elevation storage max: 50,000ft (15,000m)

User Interface

DC output:.....Removable screw terminal plug accepts seven (2) 16AWG and (7) 24AWG wires
Coax F connector POS center
(no remote alarms supported)
Auxiliary DC input: .....3.5mm (OD), 1.3mm (Pin, positive) coaxial barrel connector
AC input:.....IEC320/C6 receptacle
Line cord: .....NEMA 1-15 to IEC 320 C5
(other cords available upon request)

Visual Indicators

System: .....Green LED, power is available at the output (AC, battery or auxiliary)
Battery:.....Green LED, battery discharging to 25% SOC (main or auxiliary)
Green flash, At 25% SOC (main battery) the indicator begins to flash
Replace battery:.....Red LED, battery not present or failed self test
Auxiliary power source:.....Green LED, valid auxiliary power source 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

Silence alarm: .....Suppresses the audible alarm for 24 hours
Battery emergency use:....Accesses reserve battery capacity

Warranty

FlexPoint 1230: .....3 years repair or replace
Batteries available: .....1-year or 3-year

Agency Compliance

System: .....FCC part 15 Class B, CSA-NRTL\C (CSA60950), CE, C-Tick, RoHS to EU 2002/95/EC, Seismic zone 4 rated per GR-63

FlexPoint™ AX Series
FTTP ONT UPS System

FTTP ONT UPS System

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

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

Environment

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

Warranty

Electronics: ..... 2 years
Battery–standard: ..... 1 years
Battery–long life: ..... 3 years

Agency Compliance

Home converter: ..... UL-listed system, FCC part 15, Class B, EN55022, class B
Power ring: ..... UL-recognized components
Power ring converter: ..... UL-recognized components
BBPS modules: ..... CSA

FlexPoint UPS runtimes (mins) over temperature

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

Module Descriptions

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

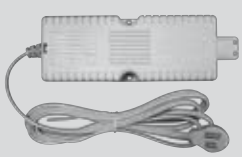
320A Continuous, 400A Rated

- 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
in:.....4.75H x 7.0Dia
Weight:.....0.68kg (1.5lbs)

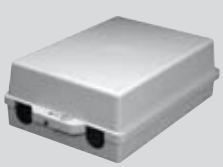
Power-Ring Converter

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
in:.....8.0H x 2.0W x 2.0D
Weight:.....0.32kg (0.7lbs)



Home Converter

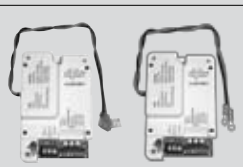
Contains highly-reliable environmentally-hardened 120Vac to 12Vdc converter circuitry in a wall mount housing. Comes with a two-conductor AC line cord and should be mounted in locations sheltered from rain or snow. Outputs 24W and 11.6Vdc as a stand-alone module or supports 30W and 11.6 to 16Vdc battery backup power supply (BBPS) module output.
AX30-12D-HC — P/N: 010-318-10-39
Dimensions:
mm:.....209H x 70W x 38D
in:.....8.25H x 2.75W x 1.5D
Weight:.....0.32kg (0.7lbs)



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: 031-264-10-021
Dimensions:
mm:.....203H x 230W x 102D
in:.....8.0H x 9.0W x 4.0D
Weight:.....68kg (1.5lbs)

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



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

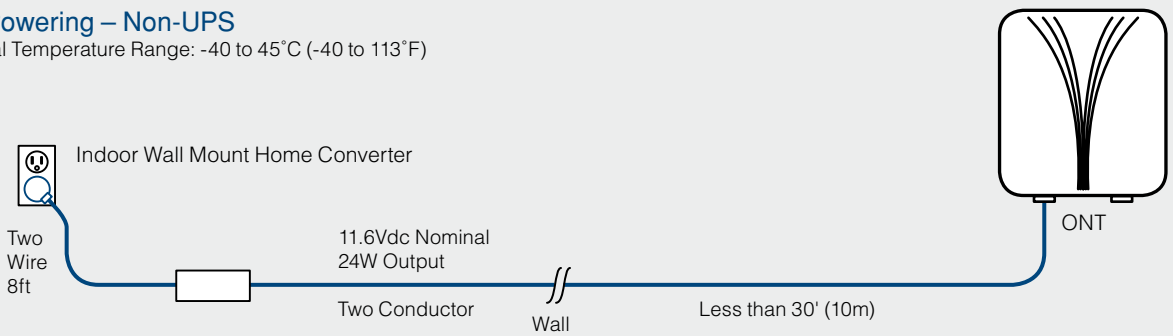
The FlexPoint AX battery modules use maintenance-free sealed-lead acid.
AX-STDBAT-7 — P/N: 181-318-10 Standard-life 7.2AH AGM battery, 1-year warranty
AX-LONGBAT-7 — P/N: 181-319-10 Long-life 7.2AH AGM battery, 3-year warranty
Weight:.....2.27kg (5lbs)

AX-STDBAT-17 — P/N: 181-345-10 Standard Life 17AH AGM Battery, 1-year warranty
Weight:.....5.9kg (13lbs)

Applications

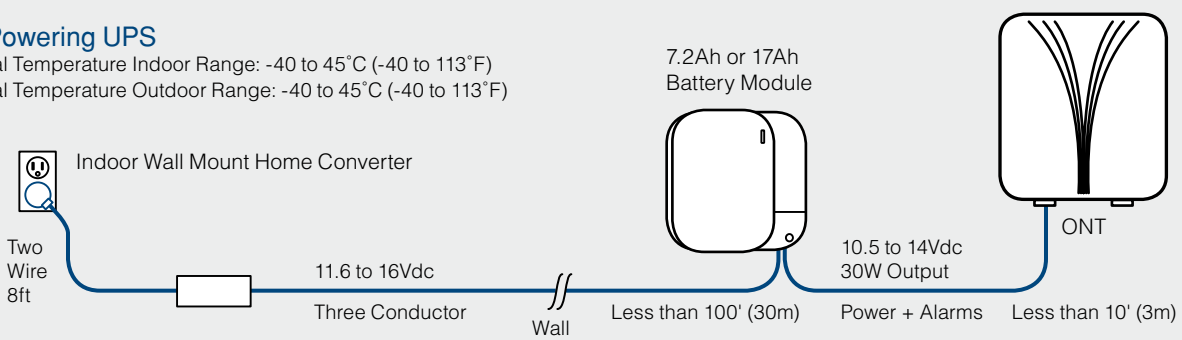
Indoor Powering – Non-UPS

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



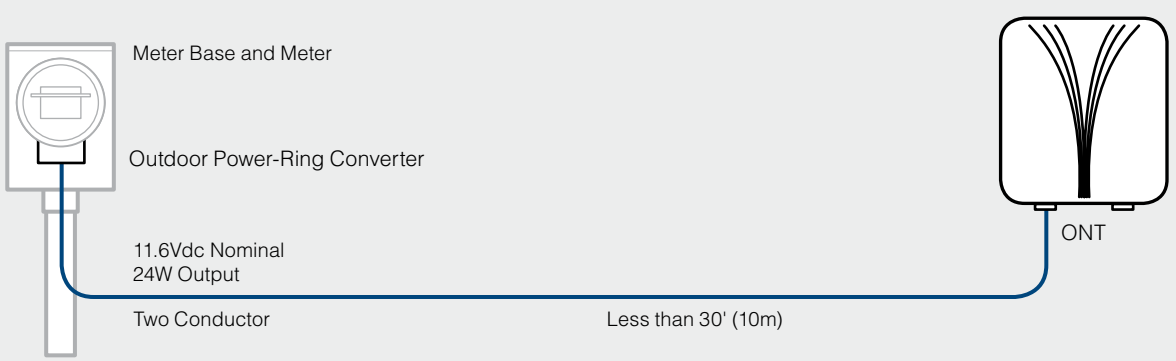
Indoor Powering UPS

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



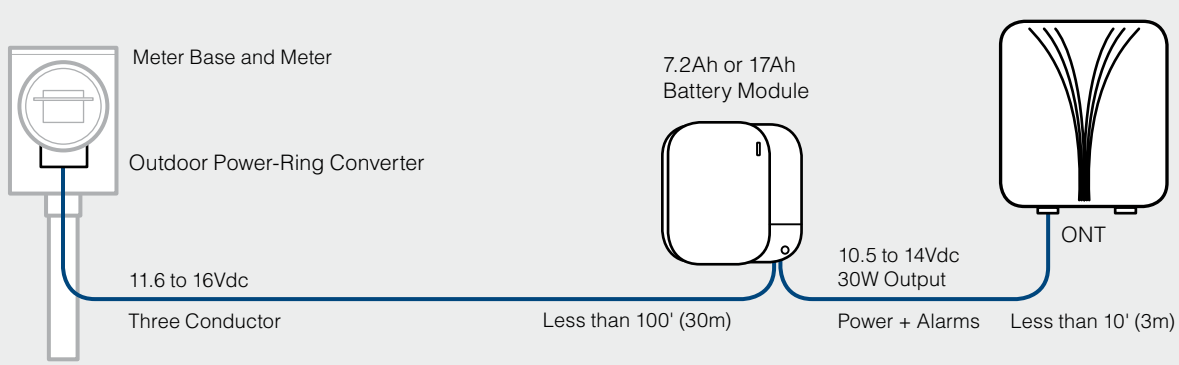
Outdoor Powering – Non-UPS

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

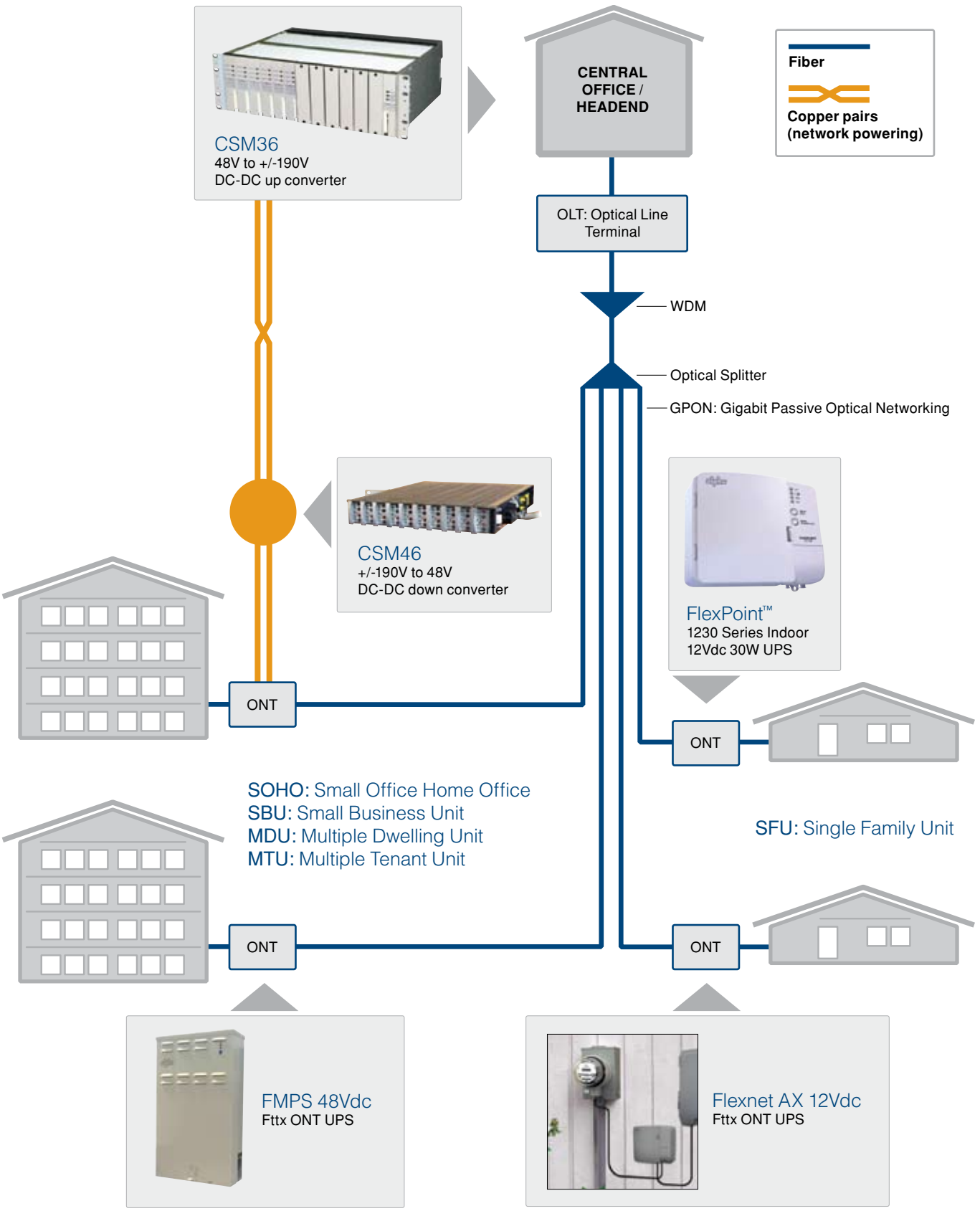


Outdoor Powering UPS

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



FTTx
Architecture Overview



Controllers & Communications

Whether it's a UPS being programmed for time of day operation at the installation site or a rectifier plant being monitored remotely via SNMP, Alpha offers a wide array of feature-rich controllers and communications options, based on the powerful industry-leading Cordex™ Controller logic.

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

As part of Alpha's continuing efforts to deliver the highest value in powering solutions, regular software upgrades are provided to our customers at no additional charge.

Controllers

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

A graphic LCD display with state-of-the-art touch-screen interface allows simple and convenient set up, control and monitoring of Cordex™ rectifiers. Innovative IP technology allows complete configuration and monitoring from any location via the Internet using a standard web browser.

Cordex™ CXC controllers come standard with several advanced battery management features to allow for significant savings of capital and operational expenses. Additional features include user definable alarms with custom algorithms, digital and analog input monitoring, data logging, integrated SNMP and highly reliable CAN bus communications. Software upgrades are easily downloaded and provided free of charge.

Main

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

Battery Management

- **Temperature compensated float voltage:** Increases voltage with temperatures below 25°C (77°F) and decreases charge voltage above 25°C (77°F), maximizes life and capacity of battery and prevents thermal 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
- **Dynamic charge current control:** Limits battery recharge current to a fixed value, helps to prevent thermal runway
- **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 prediction:** Based on current battery capacity and system load
- **Battery logging:** Retain up to (40) records of battery statistics and events

Maintenance

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

Cordex™ CXCI
System Controller

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

CXCI

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

Electrical

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

Performance / Features

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

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

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

Mechanical

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

Environmental

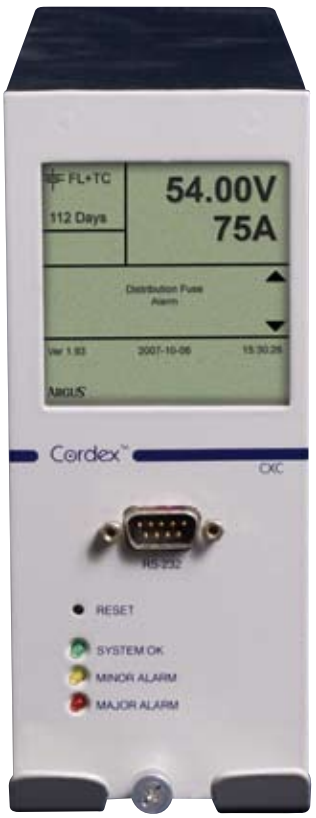
Temperature: ..... -40 to 65°C (-40 to 149°F)
Humidity: ..... 0 to 95% RH non-condensing

Agency Compliance

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

CXCI controller with Cordex™ CXRF 48-1.8kW

Cordex™ CXCM
System Controller



CXCM

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

P/N: 018-557-20

Performance / Features

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

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

Controller I/O:
- Voltage inputs:.....1+1 internal
- Temperature inputs: 2
- Current inputs:.....1
- Bi voltage inputs:.....1
- Digital inputs:.....3 (2+1 internal on some models)
- Relay outputs:.....8

Mechanical

Mounting: .....Modular controller for 1kW rectifier shelves

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

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

Environmental

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

Agency Compliance

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

EMC: .....ETSI 300 386

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

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

Cordex™ CXCM1
System Controller

CXCM1

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

P/N: 018-598-20

Electrical

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

Performance / Features

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

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

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

Environmental

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

Agency Compliance

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

Cordex™ CXCM2
System Controller

CXCM2

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

P/N: 018-573-20

Electrical

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

Performance / Features

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

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

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

Mechanical

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

Environmental

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

Agency Compliance

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

EMC: .....ETSI 300 386

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

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

Cordex™ CXCM4
System Controller

CXCM4

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

P/N: 018-574-20

Performance / Features

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

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

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

Mechanical

Dimensions:
- mm: ..... 177H x 87W x 257D
- inches: ..... 7.0H x 3.4W x 10.1D

Weight: 1.8kg (3.9lbs)
Mounting: ..... Modular controller for 3.1kW and 3.6kW shelves

Environmental

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

Agency Compliance

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

EMC: ..... ETSI 300 386

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

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

Cordex™ CXCR/CXCP
System Controller

CXCR Rack Mount Controller

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

P/N: 018-557-20

Performance / Features

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

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

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

Mechanical

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

CXCP/R (excludes mounting brackets)

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

Weight: 6.2kg (13.8lbs)

Environmental

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

Agency Compliance

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

EMC: .....ETSI 300 386

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

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

Cordex™ CXCR 125/220V
System Controller

CXCR 125/220V
Rack Mount Controller

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

P/N: 018-570-20

Performance / Features

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

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

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

Mechanical

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

CXCR 125/220V (excludes mounting brackets)
Dimensions:
- mm:.....131H x 431W x 100D
- inches:.....5.1H x 16.9W x 3.9D

Weight:.....6.2kg (13.8lbs)

Environmental

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

Agency Compliance

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

EMC: .....ETSI 300 386

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

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

Model	CXCM	CXCM1	CXCM2	CXCM4
Specifications				
Screen	Full graphic LCD 160 x 160 pixels	Basic current / Volts display only	Full graphic LCD 160 x 160 pixels	Full graphic LCD 160 x 160 pixels
Inputs				
Analog	2V, 2T, 1C, 1BIV	1V, 1C, 2T	1V, 2T, 2C, 4BIV	2V, 2T, 4C, 2BIV
Digital	3	2	6	4
Alarm relay outputs	8 Form C	4 Form C	6 Form C	8 Form C
Dimensions				
mm	177H x 74W x 255D	41.4H x 84.4W x 256.8D	86.4H x 128W x 247D	177H x 87W x 257D
inches	6.9H x 2.9W x 10D	1.63H x 334W x 10.11D	3.4H x 5W x 9.7D	7H x 3.4W x 10.1D

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

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

Cordex™ 4R/8D ADIO
CXC Smart Peripheral

4R/8D ADIO

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

P/N: 018-590-20

Electrical

Power supply:
Voltage: .....9V to 60Vac
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's: .....Power on (green)
Module acquired (green)

Connections:
Power supply:.....Terminal block (#16 to 26AWG)
Digital input: .....Terminal block (#16 to 26AWG)
Relay output: .....Terminal block (#16 to 26AWG)
CAN In/Out:.....RJ12 offset connector

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
Wall mount shelf:.....030-764-20

Agency Compliance

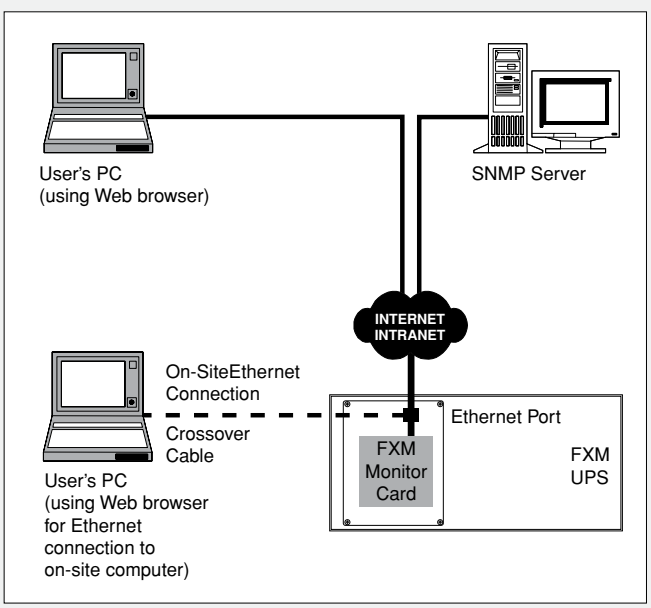
Unit is designed to meet the following standards

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


4R/8D ADIO

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

For greater effectiveness, control and communication over your UPS system, choose the Ethernet/SNMP card option that is available for our Alpha FXM, Alpha Micro and Alpha Micro Secure products. The Ethernet/SNMP card is factory installed allowing for communication with the Alpha UPS remotely through a web based interface. The Ethernet/SNMP card is powered by the UPS batteries eliminating the need for an external power source. The communication card is capable of providing notifications to four different email addresses and to devices such as your PC, a mobile phone or PDA. Outgoing notifications can be customized with selectable severity levels and triggered by events, faults and/or alarms.



Alpha UPS Monitor

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

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

Power Modules

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

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

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

Cordex™ Rectifiers

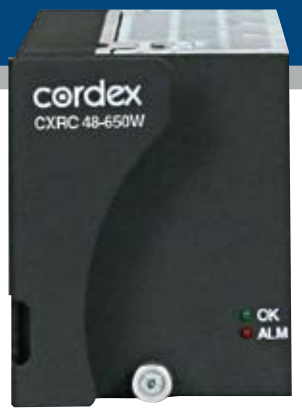
Cordex rectifiers are available in a wide array of power sizes from 250 to 3600W per module, offering the most compact and cost effective power system design. Multiple DC output and AC input options are available to provide an ideal solution for most telecommunications and utility applications.

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

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



CXRC 48-650W

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: ..... >91% (1% loss for 120Vac model)
Output voltage: ..... 42 to 58Vdc
Output current: ..... 12A @ 54Vdc (13.5A max)
Load regulation: ..... Static <±0.5%
Dynamic <±2% for 50 to 100% 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: ..... <1mV

Performance / Features

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

Mechanical

Dimensions:
- mm: ..... 88.4H x 71.6W x 242D
- inches: ..... 3.4H x 2.8W x 9.5D

Weight: 1.4kg (3lbs)

Environmental

Temperature:
- Operation: ..... -40 to 50°C (-40 to 122°F)
(power de-rated up to 70°C/158°F)
- Storage: ..... -40 to 85°C (-40 to 185°F)

Humidity: ..... 0 to 95% RH non-condensing
Elevation: ..... -500 to 3000m (-1640 to 9840ft)
Heat dissipation: ..... <94 BTU per hour

Agency Compliance

The Cordex™ 650W is designed to meet the following:

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

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

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

Cordex™ 1kW
48Vdc Modular Switched Mode Rectifier


CXRC 48-1kW

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

P/N: 010-566-20

Electrical

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

Input frequency: ..... 45 to 66Hz
Power factor: ..... >0.99
Efficiency: ..... >92%
Power output: ..... 1000W continuous/module
Output voltage: ..... 42 to 60Vdc
Output current: ..... 18.5A @ 54Vdc (20.8A max)
Load regulation: ..... <±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: ..... Float and equalize voltage
(via CXC Controller) Battery test voltage
High and low voltage alarms
High voltage shutdown
Current limit
Start delay timers
Slope %

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

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

The Cordex™ 1kW is designed to meet the following:

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

EMC: ..... ETSI 300 386
- Emissions: ..... CFR47 (FCC) Part 15 Class B
  ICES-03 Class B
  EN55022 (CISPR 22) Class B
  C-Tick (Australia)
  EN 61000-3-2
  EN 61000-3-3
- Immunity: ..... EN 61000-4-2
  EN 61000-4-3
  EN 61000-4-4
  EN 61000-4-5
  EN 61000-4-6
  EN 61000-4-11
  ANSI/IEEE C62.41 Cat B3
  EN 61000-4-11
  ANSI/IEEE C62.41 Cat B3

Cordex HP 1.2kW

48Vdc Modular Switched Mode Rectifier

- >93% efficiency for increased Op-Ex Savings and reduced 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

CXRF 48-1.2kW

P/N: 010-619-20

Electrical

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

Input current:
- Nominal: ..... 7.4A max
- 90 to 132Vac: ..... 6A max

Input frequency: ..... 45 to 70Hz
Power factor: ..... >99%
THD: ..... <5% @ nominal input voltage
Efficiency: ..... >93% 40%-100% load (nominal AC input)
>90% 40%-100% load (120Vac input)
Output voltage: ..... 42 to 58Vdc
Output power:
- Nominal AC input: 1200W
- 110 to 132Vac: ..... 600W (de-rated linearly to 491W @ 90Vac)

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

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

Line regulation:
- Static: ..... <±0.1%
- Dynamic: ..... <±1% for any change within rated limits

Wide band noise: ..... <30mVrms
<150mVp-p
Psophometric noise: ..... <2mV

Performance / Features

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

Mechanical

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

Weight: 1.23kg (2.7lbs)

Environmental

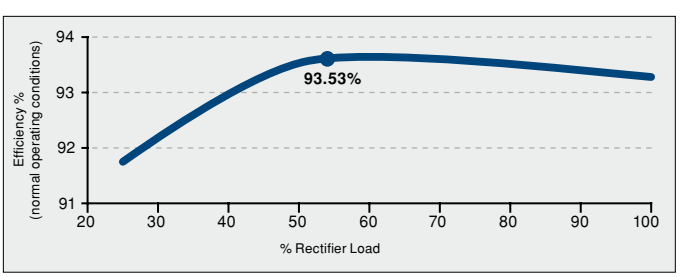
Temperature:
- Operation: ..... -40 to 65°C (-40 to 149°F)
(power derated up to 80°C/176°F)
- Storage: ..... -40 to 85°C (-40 to 185°F)

Humidity: ..... 0 to 95% RH non-condensing
Elevation: ..... -500 to 3000m (-1640 to 9840ft)
Heat dissipation: ..... <308 BTU per hour

Agency Compliance

The Cordex HP 1.2kW is certified and/or designed to meet the following:
Safety: ..... CSA C22.2 No 60950-1-03
CE marked
EMC: ..... ETSI 300 386
Emissions: ..... CFR47 (FCC) Part 15 Class B
ICES-03 Class B
EN55022 (CISPR 22) Class B
C-tick (Australia)
EN 61000-3-2
EN 61000-3-3
Immunity: ..... EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6 EN 61000-4-11
ANSI/IEEE C62.41 Cat B3
NEBS / Telcordia: GR-1089-CORE
GR-63-CORE

Cordex™ CXRF-HP 1.2kW Efficiency



Cordex™ 1.8kW
48Vdc Modular Switched Mode Rectifier

Cordex™ 48-1.8kW

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

P/N: 010-580-20

Electrical

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

Input frequency: ..... 45 to 66Hz
Power factor: ..... >0.99 (50 to 100% load)
THD: ..... <5%
Efficiency: ..... >91%
Output voltage: ..... 42 to 60Vdc
Output current: ..... 37.5A @ 48Vdc (nominal I/p)
24A @ 48Vdc (115 to 135Vac)
(de-rated linearly to 18.75A @ 90Vac)
Output power: ..... 1800W continuous @ nominal I/p
1150W (115 to 135Vac)
(de-rated linearly to 900W @ 90Vac)
Load regulation: ..... <±0.5% (static)
Line regulation: ..... <±0.1% (static)
Transient response: ..... ±2% for 50 to 100% load step,
2ms recovery time

Noise:
- Voice band: ..... <32dBrnC
- Wide band: ..... <30mV RMS (10kHz to 10MHz)
<150mV pk to pk (10kHz to 100MHz)

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

Performance / Features

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

Mechanical

Dimensions:
- mm: ..... 84H x 100W x 235D
- inches: ..... 3.3H x 3.94W x 9.25D

Weight: 2.8kg (6.2lbs)

Environmental

Temperature:
- Standard: ..... -40 to 65°C (-40 to 149°F)
- Storage: ..... -40 to 85°C (-40 to 185°F)

Humidity: ..... 0 to 95% RH non-condensing
Elevation: ..... -500 to 2800m (-1640 to 9186ft)
Heat dissipation: ..... <608 BTU per hour

Shelves

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

19/23" shelf
Dimensions:
- mm: ..... 89H x 438W x 310D
- inches: ..... 3.5H x 17.2W x 12.2D

Weight: 8.5kg (19lbs)
Mounting: ..... 19" flush or center mount
23" center mount only

23" shelf
Dimensions:
- mm: ..... 89H x 541W x 310D
- inches: ..... 3.5H x 21.3W x 12.2D

Weight: 10kg (22lbs)
Mounting: ..... 23" flush or center mount

Connections:
- Input: ..... Terminal blocks
Mini-fit connectors (23" only)
- Output: ..... Bus adapters with ⅜" on 1" center holes
- Chassis ground: ..... ¼" studs on ⅝" centers
- CAN communication: ..... RJ12 offset

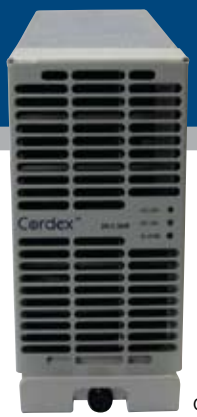
Agency Compliance

The Cordex™ 1.8kW is designed to meet the following:

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

EMC: ..... ETSI 300 386
- Emissions: ..... CFR47 (FCC) Part 15 Class B
ICES-03 Class B
EN55022 (CISPR 22) Class B
C-Tick (Australia)
EN 61000-3-2
EN 61000-3-3
- Immunity: ..... EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-11
ANSI/IEEE C62.41 Cat B3

Cordex™ 3.6kW
48Vdc Modular Switched Mode Rectifier



CXRF 24-3.1kW

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

P/N: 010-567-20

Electrical

3.6kW Rectifier Module(s)

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

Input frequency: ..... 45 to 66Hz
Power factor: ..... >0.99 (50 to 100% load)
THD: ..... <5%
Efficiency: ..... >92%
Output voltage: ..... 42 to 60Vdc
Output power: ..... 3600W continuous/module
Float voltage: ..... 48 to 58Vdc
Output current: ..... 66A @ 54Vdc (75A max 48V)
Load regulation: ..... <±0.5% (static)
Line regulation: ..... <±0.1% (static)
Transient response: ..... ±2% for 50 to 100% load step, 2ms recovery time

Noise:
- Voice band: ..... <32dBrnC
- Wide band: ..... <30mV RMS (10kHz to 10MHz)
  <150mV pk to pk (10kHz to 100MHz)

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

Performance / Features

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

Mechanical

Dimensions:
- mm: ..... 160H x 87W x 300D
- inches: ..... 6.3H x 3.4W x 11.8D

Weight: 4.6kg (10lbs)

Environmental

Temperature:
- Standard: ..... -40 to 65°C (-40 to 149°F)
- Storage: ..... -40 to 85°C (-40 to 185°F)

Humidity: ..... 0 to 95% RH non-condensing
Elevation: ..... -500 to 4000m (-1640 to 13120ft)
Heat dissipation: ..... <1176 BTU per hour

Agency Compliance

Safety: ..... CSA C22.2 No 60950-1-03
UL 60950-1 1st edition
CE marked
IEC/EN 60950-1
EMC: ..... ETSI 300 386
Emissions: ..... CFR47 (FCC) Part 15 Class B
ICES-03 Class B
EN55022 (CISPR 22) Class B
C-Tick (Australia)
EN 61000-3-2
EN 61000-3-3
Immunity: ..... EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-11
ANSI/IEEE C62.41 Cat B3
NEBS: ..... GR-1089 CORE
GR-69 CORE

Cordex™ 400W

24Vdc Modular Switched Mode Rectifier

CXRC 24-400W

- 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: .....>90%
Power output: .....400W (max)
Output voltage: .....20 to 29Vdc
Output current: .....14A (current limited)
Load regulation: .....Static <±0.5%
Dynamic <±2% for 50 to 100% 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: .....<1mV

Performance / Features

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

Cooling: .....Natural convection

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

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

Mechanical

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

Environmental

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

Agency Compliance

The Cordex™ 400W is designed to meet the following:

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

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

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

Cordex™ 3.1kW
24Vdc Modular Switched Mode Rectifier

CXRF 24-3.1kW

- Available in 130A @ 24Vdc or 75A @ 48Vdc
- High power density, over 21kW per 23" shelf
- Power limiting and wide range AC input
- High efficiency and power factor correction
- Hot swappable, 4RU ultra compact design

P/N: 010-572-20

Electrical

3.1kW Rectifier Module(s)

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

Input frequency: ..... 45 to 70Hz
Power factor: ..... >0.99 (50 to 100% load)
THD: ..... <5%
Efficiency: ..... >90%
Output voltage: ..... 21 to 29Vdc
Output power: ..... 3100W continuous/module
Output current: ..... 115A @ 27Vdc (130A max. 24V)
Load regulation: ..... <±0.5% (static)
Line regulation: ..... <±0.1% (static)
Transient response: ..... ±2% for 50 to 100% load step, 2ms recovery time

Noise:
- Voice band: ..... <32dBrnC
- Wide band: ..... <30mV RMS (10kHz to 10MHz)
  <150mV pk to pk (10kHz to 100MHz)

Psophometric: ..... <1.0mV
Acoustic: ..... <60dBa @ 1m (3ft)

Performance / Features

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

Mechanical

Dimensions:
- mm: ..... 160H x 87W x 300D
- inches: ..... 6.3H x 3.4W x 11.8D

Weight: 4.6kg (10lbs)

Environmental

Temperature:
- Standard: ..... -40 to 65°C (-40 to 149°F)
- Storage: ..... -40 to 85°C (-40 to 185°F)

Humidity: ..... 0 to 95% RH non-condensing
Elevation: ..... -500 to 4000m (-1640 to 13120ft)
Heat dissipation: ..... <1176 per hour

Agency Compliance

Safety: ..... CSA C22.2 No 60950-1-03
UL 60950-1 1st edition
CE marked
IEC/EN 60950-1
EMC: ..... ETSI 300 386
Emissions: ..... CFR47 (FCC) Part 15 Class B
ICES-03 Class B
EN55022 (CISPR 22) Class B
C-Tick (Australia)
EN 61000-3-2
EN 61000-3-3
Immunity: ..... EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-11
ANSI/IEEE C62.41 Cat B3
NEBS: ..... GR-1089 CORE
GR-69 CORE

Cordex™ 250W

12Vdc Modular Switched Mode Rectifier

CXRC 12-250W

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

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

Mechanical

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

Environmental

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

Agency Compliance

The Cordex™ 250W is designed to meet the following:

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

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

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

Cordex™ 1.1kW

125Vdc Modular Switched Mode Rectifier

CXRC 125-1.1kW

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

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

Mechanical

Dimensions:
- mm: ..... 177H x 71W x 250D
- inches: ..... 6.9H x 2.8W x 9.8D

Weight: 2.9kg (6.4lbs)

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: ..... RJ 12 offset

Agency Compliance

The Cordex™ 1.1kW is designed to meet the following:

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

EMC: ..... ETSI 300 386
- Emissions: ..... CFR47 (FCC) Part 15 Class A
ICES-03 Class A
EN55022 (CISPR 22) Class A
C-Tick (Australia)
EN 61000-3-2
EN 61000-3-3
- Immunity: ..... EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-11
ANSI/IEEE C62.41 Cat B3

Cordex™ 1.1kW
220Vdc Modular Switched Mode Rectifier

CXRC 220-1.1kW

- 5A output @ 220Vdc
- Power limiting and wide range AC input
- 93% efficiency with power factor correction
- Convection cooled
- Hot swappable, 4RU ultra compact design

P/N: 010-569-20

Electrical

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

Input frequency: ..... 45 to 66Hz
Power output: ..... 1100W continuous/module
Power factor: ..... >0.99 (input current)
THD: ..... <5%
Efficiency: ..... >93%
Output voltage: ..... 180 to 320Vdc
Output current: ..... 5A @ 220Vdc (5.5A max)
Load regulation: ..... Static <±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: ..... Float and equalize voltage
(via CXC controller) Battery test voltage
High and low voltage alarms
High voltage shutdown
Current limit
Start delay time
Slope %

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

Mechanical

Dimensions:
- mm: ..... 177H x 71W x 250D
- inches: ..... 6.9H x 2.8W x 9.8D

Weight: 2.9kg (6.4lbs)

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: ..... RJ 12 offset

Agency Compliance

The Cordex™ 1.1kW is designed to meet the following:

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

EMC: ..... ETSI 300 386
- Emissions: ..... CFR47 (FCC) Part 15 Class A
ICES-03 Class A
EN55022 (CISPR 22) Class A
C-Tick (Australia)
EN 61000-3-2
EN 61000-3-3
- Immunity: ..... EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-11
ANSI/IEEE C62.41 Cat B3

Cordex™ 4.4kW
Modular Switched Mode Rectifier

CXRF 4.4kW

- Available in 35A @ 125Vdc or 20A @ 220Vdc
- High power density, over 26kW per 23" shelf
- Power limiting and wide range AC input
- 92% efficiency and power factor correction
- Hot swappable, 4RU ultra compact design

125V P/N: 010-589-20, 220V P/N: 010-588-20

Electrical

Input voltage:
- Nominal: ..... 208 to 240Vac
- Operating: ..... 187 to 312Vac
- Extended: ..... 187 to 90Vac (de-rated)

Input frequency: ..... 45 to 70Hz
Power: ..... 4400W continuous/module
Power factor: ..... >0.99 (50 to 100% load)
THD: ..... <5%
Efficiency: ..... >92%
Output voltage:
- 125V module: ..... 90 to 160Vdc
- 220V module: ..... 180 to 320Vdc

Output current:
- 125Vdc module: ..... 35A@ 125Vdc (40A @ 110Vdc max)
- 220Vdc module: ..... 20A @ 220Vdc

Load regulation: ..... Static <±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: ..... Float voltage
(via CXC controller) Equalize voltage
High & low voltage alarms
High voltage shutdown
Current limit
Slope
Start delay
Protection: ..... Current limit/short circuit
Start delay
Input/output fuses
Output high voltage shutdown
Power limiting
Thermal foldback/shutdown
Input transient
AC low line foldback shutdown

Mechanical

Dimensions:
- mm: ..... 160H x 87W x 300D
- inches: ..... 6.3H x 3.4W x 11.8D

Weight: 4.65kg (10.57lbs)

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
IEC/EN 60950-1

EMC:
- Emissions: ..... CFR47 (FCC) Part 15 Class A
ICES-03 Class A
EN55022 (CISPR 22) Class A
C-Tick (Australia)
EN 61000-3-2
EN 61000-3-3
- Immunity: ..... EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
EN 61000-4-11
ANSI/IEEE C62.41 Cat B3

Inverters

Alpha's inverter modules and standalone inverters offer high reliability, high power efficiency and optimal power density. Alpha Inverter Module 2500 (AIM2500) and INEX 1000 and 1500 are hot swappable modules, installed in AMPS80 HP and INEX inverter systems respectively, while INVERTER 2000 is a standalone inverter.

Up to 30 x AIM2500 inverter modules may be configured in an AMPS80 HP system to support critical AC loads up 75kVA/60kW.

Up to 24 INEX inverter modules may be paralleled in various configurations to support critical AC loads.

Alpha Inverter Module 2500

For installation in AMPS80 HP

AIM 2500

- Hot swappable 2.5kVA/2.0kW inverter module allows optimal scalability & flexibility
- Utilizes Twin Sine Inverter (TSI) technology – each inverter has DC input and AC input and & AC output, offering 94% efficiency in AC to AC mode
- Each module with internal static switch, eliminates the need for external static switch – hence no single point of failure
- Up to 4 high power density modules may be installed inside a 19" box bay shelf
- Up to 30 inverter modules per 75kVA system

AIM 2500 P/N: 014-201-20

Electrical

Power rating:	2500VA/2000W
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:	0.4 ms
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
DC output nominal voltage:	48Vdc
DC voltage range (max):	40 – 60Vdc (user adjustable)

Mechanical

Dimensions:	
mm:	88.9H x 102W x435D
inches:	3.5H x4W 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

Agency Compliance

Safety:	UL 60950
Immunity:	EN 61000-4
Emissions:	EN 55022 (Class A)
RoHS:	Compliant

INEX 1000, 1500
For installation in INEX System

INEX 1000

- Pure sine wave
- Hot swappable replacement in shelf
- High efficiency >88%
- DSP design for higher system reliability
- Lower audible noise <55dBA
- Smart fan speed control
- N+1 redundancy system, load sharing difference <5%
- High power density
- CAN bus interface embedded
- -48Vdc Telecom system application
- Wide operation temperature range, -20 to 70°C (-4 to 158°F)

Consult your Alpha representative for P/N configurations

Electrical

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: 1000VA/800W
  1500VA/1200W
- Waveform: ..... Pure sine wave
- Power factor: 0.8
- Nominal output voltage: . 110/115/120Vac
  208/220/230/240Vac
- Voltage variation: ..... Max ±2%
- Output frequency: 50/60Hz
- Crest factor: 3:1
- THD: ..... <3%, linear load
  <5%, non-linear load
- Efficiency: ..... Min 88%
- Isolation AC-enclosure: .. Basic isolation (Pri-Gnd) 2121Vdc/1min
- Dynamic response: ..... <±10%
- Over load protection: ..... 1.5*Inom >20s
  1.25*Inom temperature controlled

Mechanical

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

Weight: 2.5kg (5.5lbs)

Environmental

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

Agency Compliance

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

INVERTER 2000
Standalone Telecom Inverter

Inverter 2000

- Powerful 2000VA/2000W standalone module
- High quality pure sine wave output
- Remarkable overload capability: 120% overload continuously, 200% overload for up to 5 seconds
- Stand out Efficiency, up to 91%
- Built-in auto transfer switch (ATS) for increased reliability
- LCD display for real time status monitoring and setting module parameters

120Vac (NEMA outlets) P/N: 014-129-10
230Vac (IEC outlets) P/N: 014-130-10

Electrical

DC Input:
- Nominal voltage: 48Vdc
- Operating range: ..... 40 to 58Vdc
- Under/Over voltage warning threshold: 45/58Vdc
- Under/Over voltage threshold: 40/60Vdc
- Inrush current: ..... <2 x Irated
- Isolation
  - DC-enclosure: ..... 707Vdc (varistors and filter capacitor removed)/1min
- Input protection: ..... Reverse polarity protection
- Psophometric noise voltage: ..... ≤1.0mV ITU-T O.41 (16.66~6000Hz)
- Wide band noise: ..... <1.0mVps of (25Hz~5KHz) <20mVrms (25Hz~20KHz)
- Peak to peak noise: ..... 150mV up to 100MHz

AC Input:
- Voltage range: ..... 110/115/120Vac: 89 to 138Vac 208/220/230/240Vac: 176 to 276Vac
- Over voltage threshold: 138/276Vac
- Under voltage threshold: 89/176Vac
- Frequency range: ..... 50/60Hz, ±2.5%
- Back-feed protection: ..... Compliant with safety requirements
- 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
- Frequency variation: ..... Max ±0.5%
- Frequency setting: ..... Manually, field selectable
- Crest factor: 3:1
- THD: ..... <3% for linear load, <5% for non-linear load
- Capacitive/inductive load: ..... –1.0 to +1.0 without exceeding permissible distortion for resistive load
- Efficiency: ..... >90.5% @ full load and nominal DC input >91.5% max
- Current limitation: ..... Electronic current limitation at overloads and short circuits.
- Isolation AC-enclosure: .. Basic isolation (Pri-Gnd) 2121Vdc/1min
- Isolation AC-DC: ..... Reinforced isolation (Pri-Sec) 4242Vdc/1min
- Surge protection: ..... EN61000-4-5. Telcordia GR-1089 Core ANSI C62.41-IEEE, STD 587-1980
- Dynamic response: ..... <±10%, according to IEC 62040-3 class 1
- Overload protection: ..... 1.2 x Inom permanent overload capacity @ 30°C
  1.5 x Inom ≥10s
  2.0 x Inom ≥5s

INVERTER 2000
Standalone Telecom Inverter

The INVERTER 2000 is a standalone DC~AC inverter system for Telecom power applications. Featuring improved efficiency, better over-load performance and compact design, the INVERTER 2000 is the solution of choice for a variety of telecom network applications. Measuring 1RU height, 19" width; it is compatible with 19" or 23" rack mounting while the built-in ATS function increases reliability by automatically switching between inverter output and other AC sources, providing extra backup for Uninterruptible power.

Mechanical

Dimensions:
- mm: 43.8H x 440W x 360D
- inches: 1.72H x 17.3W x 14.2D

Weight: 7.1kg (15.7lbss)

DC connections: 2 pole M6 studs for 2 hole compression lugs on .625" centers

AC connections

120Vac model:
- Input: #12x3C cord, 20A 125Vac with 5-20P (T-Blade plug)
- Output: 2 x NEMA 5-20R outlets, 20A 125Vac

230Vac model:
- Input: WS-044-7 receptacle, 16A 250Vac
- Output: 2 x IEC C13 outlets, 10A 250Vac

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 hours as per Telcordia SR-232

Converters

Argus 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 are available options for DC systems to provide support for various applications and markets including wireless. Whether intended to support legacy cellular equipment, or enhance a network with GSM and UMTS overlays, Argus converters allow flexibility with powering approaches, allowing users to maintain a single voltage battery system.

CXDF 24-48/2kW
Cordex™ Series DC-DC Converters

- Support small to medium 24Vdc loads from legacy 48V power system
- High power density modular design, up to 2kW output per module
- Advanced monitoring and control capability including remote accessibility
- Internal low voltage shutdown for cost effective integration into existing systems

CXDF 24-48/2kW Converter Module

P/N: 012-526-20

Electrical

Input voltage: .....21 to 30Vdc
Input current: .....Up to 94A @ 24V
Efficiency: .....>88%
Input noise:
  Voice band: .....<32dBrnC
  Wide band: .....<10mV RMS to 10MHz
  <150mVp-p to 100MHz
Output power: .....2000W max @ -54V
Output voltage: .....-54Vdc nominal
Output current: .....37A max
Regulation: .....-1% +/-0.1% load (static)
  +/- 0.1% line (static)
Output noise:
  Voice band: .....<38dBrnC
  Wide band: .....<10mV RMS to 10MHz
  <150mVp-p to 100MHz
Acoustic noise: .....<60dBa @ 1m (3ft)

Performance / Features

Indicators: .....Input ok LED (green)
  Output ok LED (green)
  Module fail LED (red)
Adjustments: .....Via CXC controller
Protection: .....Input fuse
  Input inrush current limit
  Output fuse
  Over temperature limiting
  Input high and low voltage shutdown
  Current limit/short circuit protection
Miscellaneous: .....Control and monitoring via CXC controller
  (requires v1.96 min)
  Low voltage cutoff (LVD)

Mechanical

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

Environmental

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

Shelves

24-48V 5-Mod 23" shelf P/N: 030-900-20
24-48V 4-Mod 19" shelf P/N: 030-839-20

Mechanical

24-48V 5-Mod 23" shelf dimensions:
  mm: .....89H x 584W x 304D
  in: .....3.5H x 23.0W x 12.0D
Weight: 10.4kg (23.0lbs)

24-48V 4-Mod 19" shelf dimensions:
  mm: .....89H x 438W x 310D
  in: .....3.5H x 17.2W x 12.2D
Weight: 85kg (19lbs)

Performance / Features

CAN bus communication
Optional integrated CXCI controller
+/- Input busbar integration with standard 3.1kW systems (S-mod shelf)

Related Components

External Options:
  567-808-19: .....Kydex cover, 23" CXDF shelf
  567-809-19: .....Kydex cover, 19" CXDF shelf

Agency Compliance

Safety: .....CSA/UL C22.2 60950 (NRTL)
  CE IEC/EN 60950
EMI: .....Class A radiated
  Class A conducted
  EN 6100-4-2, -3, -4, -6
  GR-1089 (where applicable)


CXDF 24-48/2kW 23", 5-module shelf

CXDF 48-24/2kW

Cordex™ Series DC-DC Converters

- Support small to medium 48Vdc loads from legacy 24V power system
- High power density modular design, up to 2kW output per module
- Advanced monitoring and control capability including remote accessibility
- Internal low voltage shutdown for cost effective integration into existing systems

CXDF 48-24/2kW Converter Module

P/N: 012-527-20

Electrical

Input voltage: .....-42 to -60Vdc
Input current:.....<48A @ 48V (55A max)
Efficiency:.....>88% (50 to 100% load)
Input noise:
  Voice band: .....<32dBrnC
  Wide band: .....<10mV RMS to 10MHz
  <150mVp-p to 100MHz
Output power:.....2000W max @ 27Vdc (1.8kW @ 24Vdc)
Output voltage:.....27Vdc nominal
Output current:.....74A max @ 27Vdc
Regulation:.....-1% +/-0.1% load (static)
  +/- 0.1% line (static)
Output noise:
  Voice band: .....<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 CXC controller
Protection:.....Input fuse
  Input inrush current limit
  Output fuse
  Over temperature limiting
  Input high and low voltage shutdown
  Current limit/short circuit protection
Miscellaneous:..... Control and monitoring via CXC controller (requires v1.96 min)
  Low voltage cutoff (LVD)

Mechanical

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

Environmental

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

Shelves

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

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

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

Agency Compliance

Safety:.....CSA/UL C22.2 60950 (NRTL)
  CE IEC/EN 60950
EMI:.....Class A radiated
  Class A conducted
  EN 6100-4-2, -3, -4, -6
  GR-1089 (where applicable)

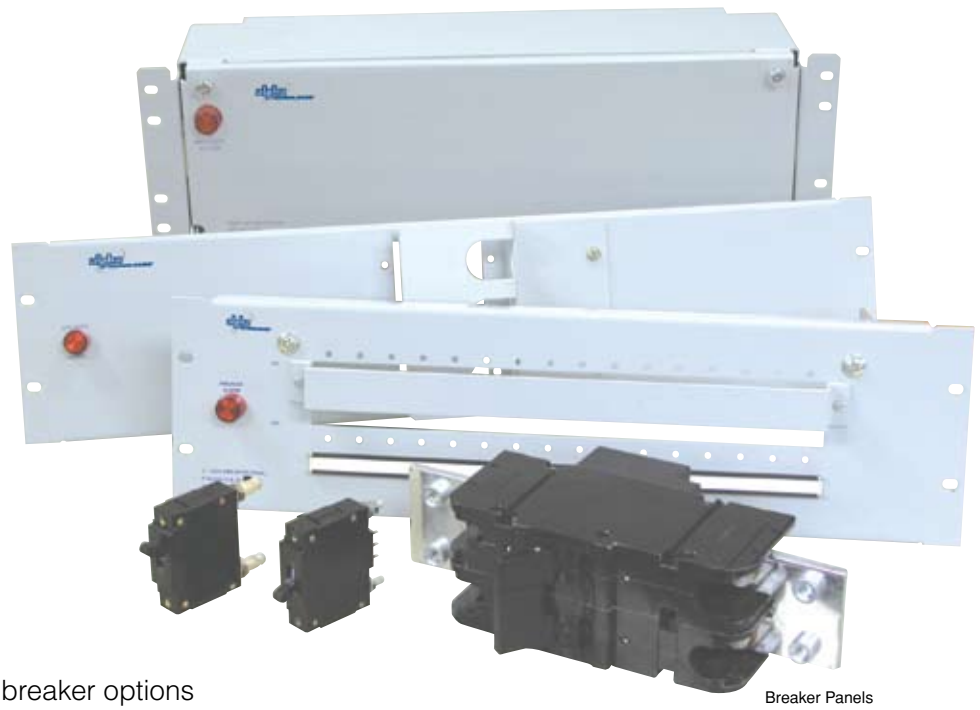
Distribution

Alpha offers a wide variety of breaker and fuse panels for distributing power to critical loads. Panels are available in various sizes, output voltages and use industry standard breakers and fuses.

Multiple loose panel options are available for either expanding existing site distribution requirements, or for developing custom power systems to specific customer 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.

Breaker Panels
Stand-Alone DC Distribution



Breaker Panels

- AM bolt-in, AM plug-in and GJ breaker options
- 19" and 23" rack mount models
- 12, 24 or 48V configurations
- Rear access and front access options
- Designed for flexible and custom DC distribution

Breaker Panel Options

P/N	020-107-20	020-588-20	020-589-20	020-671-20	020-675-20	020-534-20	020-578-20
Breakers	AM bolt-in	AM plug-in	AM plug-in	AM plug-in	AM plug-in	GJ	GJ
Positions	16/22	16	20	24	18	3	4
Capacity	550A	400A	400A	600A	600A		
Mounting	19/23"	19"	23"	23"	19"	19/23"	23"
RU	3	5	5	3	3	3	4

Fuse Panels
Stand-Alone DC Distribution


Fuse Panels

- GMT and TPL fuse panel options
- TPS fuse options using fuse mount breaker cartridges
- 19" and 23" rack mount models
- 12, 24 or 48V configurations
- Designed for flexible and custom DC distribution

Breaker Panel Options

P/N	020-103-20	020-005-20	020-597-20	020-588-20	020-589-20	020-671-20	020-675-20
Breakers	GMT	GMT	TPL	TPS*	TPS*	TPS*	TPS*
Positions	32	20	2	16	20	24	18
Capacity	60A	90A	1200A	400A	400A	600A	600A
Mounting	19/23"	19/23"	23"	19"	23"	23"	19"
RU	1	1	5	5	5	3	3
*Requires AM plug-in breaker cartridge for TPS fuse mount (520-059-10)							

Vista Distribution Centers
Universal Distribution Centers

Vista Two Tier UDC

- Various modular distribution configurations
- Complete front access
- Integrated Cordex™ system controller
- Integrated shunt and LVD options
- AM plug-in breaker, GJ breaker and GMT fuse options

Vista UDC Options

Model	Single tier	Two tier	Four tier
P/N	**020-645-20**	**020-646-20**	**020-635-20**
Breakers	AM plug-in	AM plug-in	AM plug-in
Positions	20-24	40-48	80-96
Capacity	600A	1200A	2000A
Mounting	23"	23"	23"
RU	7	9	17

Modular Distribution Tier Options

Single voltage	24 position AM plug-in 20 position AM plug-in w/ 600A LVD 3 position GJ 3 position GJ w/ 600A LVD
Dual voltage	12x primary & 10x secondary (AM plug-in) 16x primary & 6x secondary (AM plug-in) 8x primary (w/ LVD) & 10x secondary (AM plug-in) 12x primary (w/ LVD) & 6x secondary (AM plug-in)

Note: Consult factory for NEBS L3 certified system solutions using Vista UDC's

Related Components

Cordex™ controller CXCP:..See page 75
AM plug-in breakers:.....See page 104
GMT style fuses: .....See page 105

DCP03
Universal Distribution Center

DCP03 300A Distribution Center

- Up to 18 breaker positions
- Optional battery breaker disconnects
- Shunt and LVD options
- Universal 19/23" rack mount
- Compact 3RU high design
- Integrated controller I/O for 1.8kW rectifiers

P/N: 020-702-20

Electrical

Voltage: .....24Vdc or 48Vdc (list option configurable)
Current: .....300A DC max

Mechanical

Dimensions (excludes mounting brackets):
mm:.....133H x 432W x 318D
in:.....5.23H x 17.25W x 12.5D
Mounting: .....19/23", flush/center mount
Weight: 11.6kg (25.6lbs)

Connnections:
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 0.128mm^2 (#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" 1.8kW shelf (qty 2x req'd)
614-841-13:.....Bus bar for UDC & two 19" 1.8kW shelves (qty 2x req'd)
037-202-20:.....Kydex cover kit; for UDC & single 19/23" 1.8kW shelf
037-207-20: .....Kydex cover kit; for UDC & two 19" 1.8kW shelves
567-815-19: .....Kydex cover kit; for standalone UDC

DCP03 rear view

Distribution Panel Overview
DC Distribution Options

	P/N	Fuse position	Fuse type	Breaker position	Breaker type	Capacity	Mounting	Front access	RU	Additional options
Stand alone breaker / fuse panels	**020-107-20**	0		16/22	AM bolt-in	550A	19/23"	No	3	Gnd bar
	020-588-20	16*	TPS*	16	AM plug-in	400A	19/23"	Yes	5	Gnd bar, LVD
	020-589-20	20*	TPS*	20	AM plug-in	400A	23"	Yes	5	Gnd bar, LVD
	020-671-20	24*	TPS*	24	AM plug-in	600A	23"	No	3	
	020-675-20	18*	TPS*	18	AM plug-in	600A	19/23"	No	3	
	020-534-20	0		3	GJ bolt-in		19/23"	No	3	
	020-578-20	0		4	GJ bolt-in		23"	No	4	
	020-103-20	32	GMT	0		60A	19/23"	No	1	Gnd bar
	020-005-20	20	GMT	0		90A	19/23"	No	1	Gnd bar
	020-597-20	2	TPL	0		1200A	23"	No	4	Shunt
Universal Distribution Centers	**020-702-20**	18*	TPS*	18	AM plug-in	300A	19/23"	Yes	3	Controller I/O, LVD, Shunt, Batt breakers
	020-645-20	20-24*	TPS*	20-24	AM plug-in**	800A	23"	Yes	7	Controller, LVD, Shunt
		10	GMT							
	020-646-20	40-48*	TPS*	40-48	AM plug-in**	1000A	23"	Yes	9	Controller, LVD, Shunt
		10	GMT							
	020-635-20	80-96*	TPS*	80-96	AM plug-in**	2000A	23"	Yes	17	Controller, LVD, Shunt
		10	GMT							

Notes
*TPS fuses with AM plug-in breaker cartridges may be used as alternate to breakers
** Compatible with multiple pole AM plug-in breakers (110 to 250A)

Breakers

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)
470-000-12	700 Amp (3-Pole)

AM Series, Plug-In Style Breakers	
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
470-000-44	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
470-346-10	60 Amp, Series-Trip
470-370-10	65 Amp, Series-Trip
470-313-10	70 Amp, Mid-Trip
470-000-46	80 Amp, Mid-Trip
470-315-10	90 Amp, Mid-Trip
470-316-10	100 Amp, Mid-Trip
470-347-10	100 Amp, Series-Trip
747-220-20	110 Amp, Mid-Trip (2-Pole)
747-147-20	125 Amp, Mid-Trip (2-Pole)
747-148-20	150 Amp, Mid-Trip (2-Pole)
747-149-20	175 Amp, Mid-Trip (3-Pole)
747-150-20	200 Amp, Mid-Trip (3-Pole)
747-200-20	225 Amp, Mid-Trip (3-Pole)
747-221-20	250 Amp, Mid-Trip (3-Pole)

Fuses

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 (AM plug-in breaker)

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 its total power solutions package. These switches allow for power to be seamlessly migrated between utility/line to battery backup or generator.

Portable generator transfer switches sense for available generator power and transfer that power to charge the batteries and power the load as soon as it is available.

Alone or combined with an optional rack mount kit, the Universal Automatic Transfer Switch (UATS) and Universal Generator Transfer Switch (UGTS) can also be configured with a variety of output options such as surge arrestors, EMI filters and custom plates – contact your Alpha representative for details. Optional wall mount kits also available.

Automatic Transfer Switch

UATS

- 120V/30A
- 230V/16A

Alpha's Automatic Transfer Switch acts as a fail-safe device by switching the critical load to the utility line should a fault occur in the UPS. The ATS ensures that clean power is always provided to the critical load, ensuring that your mission-critical equipment always remains running in the event of an outage. This transfer switch also includes a standard manual bypass switch which eliminates costly equipment downtime while servicing the UPS or replacing the batteries.

Automatic Generator Transfer Switch

UGTS

- 120V/30A
- 230V/16A

Alpha's Universal Automatic Generator Transfer Switch automatically transfers the input to the UPS from the utility line to a portable

AC generator. The UGTS allows the generator to recharge the batteries and ensure your applications remain in operation during extended power outages. For manually connecting or disconnecting a generator, a standard switch is included.

Alpha Maintenance Bypass Switch

Alpha Maintenance Bypass Switch

- 120V
- 230V Option not available

Alpha's Maintenance Bypass Switch allows the user to manually bypass the UPS system for service or routine maintenance.

Rack Mount Options

Other Mounting Options

- Wall mount kit – P/N: 740-756-21
- Rack mount kit – P/N: 593-364-P4

Enclosures

From the smallest Multi-Mount Outdoor Enclosure (MMOE) to the largest Large Format Battery Enclosure (Te44) the Alpha enclosure product line provides a full range of rugged cabinet solutions for any application, including secure indoor.

Designed and tested to meet the highest industry operating standards, all Alpha outdoor enclosures are equipped with control systems that maintain temperatures well within the specified operating ranges of internally mounted equipment. Each enclosure maintains a clean and dry environment that uses both open and closed loop HVAC technologies.

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 entrance ports and many other options and features.

When an Alpha outdoor enclosure and power products are combined as a system, the result is an optimally designed, highly-reliable and efficient outdoor power plant that provides easy installation and long term operation in a single outdoor cabinet design.

MMOE - Traffic
Outdoor Enclosure

Shown with Alpha FXM 2000, Alpha transfer switches and AlphaCell™ batteries

- Alpha Multi Mount Outdoor Enclosure - Traffic
- Rugged, outdoor rated (NEMA 3R) enclosure
- Various mounting to provide a flexible solution for space constrained traffic applications
- Large sun shield, thermostat controlled fan, and louvered vents ensure reliable operation in high temperatures
- 180° stainless steel piano hinged door with two locking open positions makes installation and maintenance easy and convenient
- Three-point latching mechanism with Corbin Type 2 lock for maximum security
- Designed for outdoor or secure indoor 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:.....Powdercoat
Equipment space:.....EIA standard 19", 7RU space with one battery shelf
Cable entrance:.....Bottom of enclosure: 1 x 3" diameter knock-out (2½" trade size) 4 x 1.125" diameter knock-out (¾" trade size)

Hardware

Hinge type:.....Stainless steel piano hinge
Door prop:.....¼" aluminum rod, 2 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)
Door installed louvers:.....Equipped with washable filter
Audible noise:.....46db at 1m (3ft) (when enclosure fan is on)

Enclosure Options

Mounting:.....Pole, host, wall, or pedestal (please specify if pole used is concrete at time of order)

System Specifications

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

NEMA rating:.....3R

Warranty

10 year warranty (subject to terms and conditions)

MMOE - Telecom
Outdoor Enclosure

Alpha Multi Mount Outdoor Enclosure

- Alpha Multi Mount Outdoor Enclosure - Telecom
- Rugged, outdoor rated (NEMA 3R and NEBS GR -13) enclosure offering various mounting options
- Large sun shield, thermostatically controlled fan, and louvered vents ensure reliable operation in high temperatures
- 180° stainless steel piano hinged door with two locking open positions making installation and maintenance easy and convenient
- Designed for outdoor or secure indoor 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 coat finish
Equipment space: EIA standard 19", 7RU space with one battery shelf
Cable entrance: Bottom of enclosure: 1 x 3" diameter knock-out (2½" trade size) 4 x 1.125" diameter knock-out (¾" trade size)

Hardware Specifications

Hinge type: Stainless steel piano hinge
Door prop: ¼" aluminum rod, 2 positions
Door latch: Bellcore 216 compression lock with pad lock bracket

HVAC Specifications

Cooling: Thermostat controlled 48Vdc fan, 100 cfm or better, ON at 49°C (120°F) Off at 32°C (89°F)
Door installed louvers: Equipped with splash baffle

Enclosure options

Mounting: Pole, host, wall, or pedestal (please specify if pole used is concrete at time of order)

System Specifications

System Options
- Alpha AC distribution panel
- Alpha universal automatic transfer switch
- Alpha universal generator transfer switch
- AlphaGuard battery balancer
- Battery heater mats
- Transient voltage surge suppression device

Agency Compliance

Telcordia: GR-13-CORE
NEMA rating: 3R

AOES6
Outdoor Enclosure

- Alpha Outdoor Enclosure Side Mount 6
- Traffic grade aluminum enclosure protects battery backup power systems from outdoor elements
- Large sun shield, thermostatically controlled fan, and louvered vents ensure reliable operation in high temperatures
- Independently programmable dry contact relays allow tracking and controlling of key functions
- 180° stainless steel piano hinged door with two locking open positions making installation and maintenance easy and convenient
- Three-point latching mechanism with Corbin Type 2 lock or optional Best lock for maximum security
- Designed for outdoor or secure indoor applications

Shown with Alpha UPS module, transfer switches, and AlphaCell batteries.

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
- mm: 1220H x 420W x 420D
- inches: 48.1H x 16.5W x 16.5D

Weight: 75kg (165lbs)
Construction: High strength corrosion resistant aluminum
Finish: Powdercoat

Hardware

Hinge type: Stainless steel piano hinge
Door prop: ¼" aluminum rod, 2 positions
Handle: Stainless steel handle for extended life and improved look
Door latch: 3 point latch with integrated Corbin Type 2 lock or optional best lock for maximum security

HVAC

Cooling: Thermostat controlled fans with filters
Other: Bug screen protected top vent

Installation

Access: Removable bottom shelf or easy wiring access

Enclosure Options

Mounting: Side mount (standard) - designed to mount to the side of most traffic enclosure cabinets
Stand alone (optional ground mount pedestal)

System Specifications

System Options
- Generator support: locking generator access door and L5-30 F1 plug
- Alpha universal automatic transfer switch
- Alpha universal generator transfer switch
- AlphaGuard battery balancer
- Battery heater mats
- "On Battery" indicator light
- Door activated interior light
- Tilt switch
- Tamper switch
- Ground mount kit

Agency Compliance

CSA/UL, CE: UL50/CSA
NEMA rating: 3R

AOES10
Outdoor Enclosure

- Alpha Outdoor Enclosure Side Mount 10
- Designed to Caltrans specification for systems requiring Caltrans approved product
- Additional shelf allows for customer furnished equipment inside the enclosure
- Large battery space allows for up to four BCI Group 31 batteries for the longest runtime in a Caltrans enclosure
- Large sun shield, thermostatically controlled fan, and louvered vents ensure reliable operation in high temperatures
- 180° stainless steel piano hinged door with two open positions makes installation and maintenance easy and convenient
- Three-point latching mechanism with integrated Corbin Type 2 lock for maximum security
- Designed for outdoor or secure indoor applications

Alpha Outdoor Enclosure
Side Mount 10

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm:.....1422H x 724W x 334D
inches:.....56H x 28W x 13.2D
Weight:.....52.16kg (115lbs) no options
Construction:.....High strength corrosion resistant aluminum
Finish:.....Aluminum

Hardware

Hinge type:.....Stainless steel piano hinge
Door prop:.....¼" aluminum rod, 2 positions
Handle:.....Stainless steel handle for extended life and improved look
Door latch:.....3 point latch with integrated Corbin Type 2 lock or optional best lock for maximum security
Equipment shelves:.....4 equipment shelves

HVAC

Cooling:.....Thermostat controlled 48Vdc fan, 100 cfm or better, ON at 49°C (120°F) Off at 32°C (89°F)
Other:.....Bug screen protected top vent
Door installed louvers:.....Equipped with washable filter
Audible noise:.....46db at 1m (3ft) (when enclosure fan is on)

Installation

Access:.....Removable bottom shelf or easy wiring access

Enclosure Options

Mounting:.....Side mount (standard) - designed to mount to the side of most traffic enclosure cabinets
Stand alone

System Specifications

System Options

- Generator support: locking generator access door and L5-30 F1 plug with manual switch
- Alpha universal automatic transfer switch
- Alpha universal generator transfer switch
- AlphaGuard battery balancer
- Battery heater mats
- Transient voltage surge suppression device
- "On Battery" indicator light
- Door activated interior light
- Tilt switch
- Tamper switch
- Ground mount kit
- Best lock
- Natural aluminum or powder coat finish

Agency Compliance

CSA/UL, CE:.....UL50/CSA
NEMA rating:.....3R

Warranty

10 year warranty (subject to terms and conditions)

Flextra Z Series
Outdoor Enclosure

- Extreme conditions enclosure
- Meets Telcordia Seismic Zone-4 standard
- NEMA 3R outdoor rated enclosure
- Simple, flexible options for pole, wall, ground or pedestal installations
- Designed for outdoor or secure indoor applications
- Wide temperature range -40 to 50˚C

Flextra Z Series

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm:.....956H x 788W x 407D
inches:.....37H x 31W x 16D
Weight:.....368kg (812lbs)
Note: Weight depends on internal battery selection

Construction:.....High strength corrosion resistant aluminum
Finish:.....Powdercoat

Hardware

Handle:.....Lockable enclosure
Battery trays (qty.):.....2 (8 battery)

Enclosure Options

Mounting:.....Multiple mounting configurations

System Specifications

System Options
- Input/output surge protection
- Intelligent back/boost operation for greater protection
- Hot swappable UPS and batteries
- Noise suppression, FCC Class B.

Agency Compliance

CSA/UL, CE:.....NRTL/CSA/CE
Telcordia:.....Telcordia zone 4 approved with battery retention bar
Telcordia salt fog tested, 14 day operational
Telcordia approved door restraint

Flextra P Series
Outdoor Enclosure

- Designed for outdoor or secure indoor applications
- Universal Mount enclosure
- Aluminum welded construction
- Pole mounting brackets included
- Removable, lockable doors and easy open lids
- Durable, powder coat finish
- Slide trays for batteries

Flextra P Series

Consult your Alpha representative for P/N configurations

Mechanical

P4

Dimensions:
- mm: 629H x 768W x 406D
- inches: 24.75H x 30.25W x 16.0D

Weight: 26kg (57lbs)

P6

Dimensions:
- mm: 933H x 615W x 355D
- inches: 36.75H x 24.25W x 14.0D

Weight: 31kg (68lbs)

P8

Dimensions:
- mm: 937H x 768W x 406D
- inches: 36.88H x 30.25W x 16.0D

Weight: 55kg (121lbs)

Construction: High strength corrosion resistant aluminum
Finish: Powdercoat

Hardware

Battery trays (qty.):
- P4: 1 (4 batteries)
- P6: 2 (6 batteries)
- P8: 2 (8 batteries wider enclosure)

Door/lid: Completely removable
Micellaneous: Door prop rod
120V 20A or 240V 15A breaker
Duplex quad
Remove indicator light

Enclosure Options

Mounting: Universal mounting
Pole mount bracket included

System Specifications

General Specifications

Output Voltage Range: Duplex/quad output

System Options

- Battery heater mats
- Storm hood
- Enclosure cooling fan
- Internal service entrance
- Factory installed breaker box

P4

P6

P8

Tempest Te25
20" General Purpose Enclosure


Tempest Te25

- Designed for outdoor or secure indoor applications
- Easily transportable
- Durable aluminum construction
- Pedestal, wall, pole or rack mount
- Compact footprint

P/N: 029-003-20

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
Cable entrance:.....Knockouts located in bottom and back 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 control filtered and fan cooled
Door installed louvers:.....Equipped with washable/replaceable filter
Exhaust through rear louver
Audible noise:.....<45dBa

Environmental

Temperature:
Operating:.....-40°C to 46°C
Storage:.....-40°C to 85°C

Installation

Access:.....Rear louver can be removed for equipment installation

Maintenance

Front access after installation filter access on front door

Enclosure options

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

System Specifications (as shown)

- 48Vdc Cordex rectifier shelf c/w DC distribution
- 4 x 92Ahr batteries
- External 8 position AC distribution with 30A generator connector and manual transfer switch
- Alarm terminal block
- Ground bar

General Specifications
Input voltage range N/A:...120/240Vac
Voltage:.....-48Vdc
Current:.....40A (n+1)

System Options
Consult factory for custom system solutions

Agency Compliance

CSA/UL:.....C22.2 No. 60950
Telcordia:.....Designed to meet zone 4 requirements
NEMA rating:.....Type 3R (CSAC22.2 No 94-M91)

Tempest Te25xh
36" General Purpose Enclosure


Tempest Te25xh

- Designed for outdoor or secure indoor applications
- Easily transportable
- Durable aluminum construction
- Pedestal, wall, pole or rack mount
- Compact footprint

P/N: 029-006-20

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: 20RU
Cable entrance: Knockouts located in bottom and back 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.): 1

HVAC

Cooling: Thermostat control filtered and fan cooled
Door installed louvers: Equipped with washable/replaceable filter. Exhaust through rear louver
Audible noise: <45dBa

Environmental

Temperature:
- Operating: -40°C to 46°C
- Storage: -40°C to 85°C

Installation

Access: Rear louver can be removed for equipment installation

Maintenance

Front access after installation filter access on front door

Enclosure options

Mounting: Wall mount, pole mount, pedestal mount, rack mount
HVAC options: Heat exchanger 33W/°C
2000 BTU air conditioner or fan filtered ambient cooling

System Specifications (as shown)

- 48Vdc Cordex rectifier shelf c/w DC distribution
- 4 x 92Ahr batteries
- External 8 position AC distribution with 30A generator connector and manual transfer switch
- 8 position GMT fuse panel
- Fan filtered ambient cooled
- Alarm terminal block
- Ground bar

General Specifications
Input voltage range N/A: 120/240Vac
Voltage: -48Vdc
Current: 40A (n+1)

System options
Consult factory for custom system solutions

Agency Compliance

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

Tempest Te17
44" General Purpose Enclosure

Tempest Te17
(shown with 5000
BTU air conditioner,
bottom compartment,
and solar shield)

- Designed for outdoor or secure indoor applications
- Easily transportable
- Durable welded aluminum construction
- Variety of configurations possible with 23RU of space
- Compact footprint

P/N: 030-729-20

Mechanical

Dimensions (including riser):
mm:.....1473H x 762W x 711D
inches:.....58H x 30W x 28D
Weight:.....204kg (450lbs)
Construction:.....High strength corrosion resistant aluminum
Finish:.....Powdercoat
Equipment space:.....23RU
Cable entrance:.....Knockouts located in riser and bottom of enclosure
Equipment rails:.....23"

Hardware

Hinge type:.....Piano style hinge
Door latch:.....2 x padlockable ¼ turn socket pin-head key
Battery trays (qty.):.....Configuration dependent - 8RU per front terminal battery shelf

HVAC

Cooling:.....3500 BTU air conditioner
Heating:.....550W heater option
EVS:.....DC fan powered EVS (Emergency Ventilation System) option

Environmental

Temperature:
Operating:.....-40 to 46°C
Storage:.....-40 to 85°C

Installation

Access:.....Removable enclosure rear panel and removable lower compartment panels

Maintenance

Front access after installation

Enclosure Options

Mounting:.....Pad or platform mount
HVAC options:.....Heat exchanger 33W/°C, 3500 BTU air conditioner or fan filtered ambient cooling

System Specifications (as shown)

- 24Vdc Cordex rectifier shelf c/w DC distribution
- Internal 8 position AC panel
- Air conditioner and heater
- EVS (Emergency ventilation system)
- Customer specific equipment layout
- Alarm terminal block
- Ground bar

General Specifications

Input voltage range N/A:...120/240Vac
Voltage:.....24Vdc
Current:.....64A (n+1)

System options

Consult factory for custom system solutions

Agency Compliance

CSA/UL:.....C22.2 No. 60950
Telcordia:.....Designed to meet zone 4 requirements
NEMA rating:.....Type 3R (CSAC22.2 No 94-M91)

Tempest Te17
(shown configured to
customer specification)

Tempest Te45
72" Single Compartment Power Enclosure


Tempest Te45

- Designed for single or multiple enclosure applications
- Durable welded aluminum construction
- Variety of configurations possible with 39RU of space
- Compact footprint
- GR-487 compliant
- Designed for outdoor or secure indoor applications

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
- mm: 1829 x 762W x 762D
- inches: 72H x 30W x 30D

Weight: 273kg (600lbs)
Construction: High strength corrosion resistant aluminum
Finish: Powdercoat
Equipment space: 39RU
Cable entrance: Knockouts on sides and bottom
Equipment rails: 23"

Hardware

Hinge type: 4 position lift off hinges
Handle: Padlockable
Door latch: 3 point latch
Battery trays (qty.): Configuration dependent - 8RU per front terminal battery shelf

HVAC

Cooling: 4000 BTU air conditioner
Heating: 500W
EVS: DC fan powered EVS (Emergency Ventilation system) option
Audible noise: <65dbA

Environmental

Temperature:
- Operating: -40 to 46°C
- Storage: -40 to 85°C

Installation

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

Maintenance

Front access after installation

Enclosure Options

Mounting: Pad or platform mount

System Specifications (as shown)

- 48Vdc Cordex 1.8kW rectifiers
- AC panel c/w generator panel and ATS (automatic transfer switch)
- Air conditioner w/heater
- EVS (Emergency ventilation system)
- Alarm terminal block
- Ground bar

General Specifications
Input voltage range N/A: ... 120/240Vac

System options
Consult factory for custom system solutions

Agency Compliance

CSA/UL: C22.2 No. 60951
Telcordia: GR-487 compliance - contact factory for specific compliances
NEMA rating: Type 3R (CSAC22.2 No 94-M91)

Tempest Te45 Battery
72" Front Terminal Battery Enclosure

Tempest Te45 Battery

- 8 strings @ 24Vdc, 4 strings @ 48Vdc
- Designed for single or multiple enclosure applications
- Durable welded aluminum construction
- Compact footprint
- Designed for outdoor or secure indoor applications

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
- mm: 1829H x 762W x 762D
- inches: 72H x 30W x 30D

Weight: 273kg (600lbs)
Construction: High strength corrosion resistant aluminum
Finish: Powdercoat
Equipment space: 39RU
Cable entrance: Knockouts on sides and bottom
Equipment rails: 23"

Hardware

Hinge type: 4 position lift off hinges
Handle: Padlockable
Door latch: 3 point latch
Battery trays (qty.): 4 Front terminal battery shelves

HVAC

Cooling: 4000 BTU air conditioner
Heating: 500W
EVS: DC fan powered EVS (Emergency Ventilation system) option
Audible noise: <65dbA

Environmental

Temperature:
- Operating: -40 to 46°C
- Storage: -40 to 85°C

Installation

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

Maintenance

Front access after installation

Enclosure Options

Mounting: Pad or platform mount

System Specifications (as shown)

- 4 battery shelves for GNB 155Ahr front terminal batteries
- Air conditioner w/heater
- EVS (Emergency ventilation system)
- Alarm terminal block
- Ground bar

General Specifications
Input voltage range N/A: 120/240Vac

System options
Consult factory for custom system solutions.

Agency Compliance

CSA/UL: C22.2 No. 60952
Telcordia: GR-487 compliance - contact factory for specific compliances
NEMA rating: Type 3R (CSAC22.2 No 94-M91)

Tempest Te40 Battery
84" Front Terminal Battery Enclosure


Tempest Te40 Battery

- 10 strings @ 24Vdc, 5 strings @ 48Vdc
- 120 Amp buss
- Designed for single or multiple enclosure applications
- Durable welded aluminum construction
- Compact footprint
- Designed for outdoor or secure indoor applications

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
- mm:.....2134H x 762W x 762D
- inches:.....84H x 30W x 30D

Weight:.....Up to 590kg (1300lbs)
Construction:.....High strength corrosion resistant aluminum
Finish:.....Powdercoat
Equipment space:.....44RU
Cable entrance:.....Knockouts on sides and bottom
Equipment rails:.....23"

Hardware

Hinge type:.....5 position lift off hinges
Handle:.....Padlockable
Door latch:.....3 point latch
Battery trays (qty.):.....5 Front terminal battery shelves

HVAC

Cooling:.....4000 BTU air conditioner
Heating:.....500W
Audible noise:.....<65dbA

Environmental

Temperature:
- Operating:.....-40 to 46°C
- Storage:.....-40 to 85°C

Installation

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

Maintenance

Front access after installation

Enclosure Options

Mounting:.....Pad or platform mount

System Specifications (as shown)

- 5 battery shelves for GNB 155Ahr front terminal batteries
- Air conditioner w/ heater
- Alarm terminal block
- Ground bar

General Specifications
Input voltage range N/A:...120/240Vac

System options
Consult factory for custom system solutions

Agency Compliance

CSA/UL:.....C22.2 No. 60954
Telcordia:.....GR-487 compliance - contact factory for specific compliances
NEMA rating:.....Type 3R (CSAC22.2 No 94-M91)

Tempest Te41 Power
84" Dual Compartment Power Enclosure


Tempest Te41

- Designed for single or multiple enclosure applications
- Dual compartment system
- Durable welded aluminum construction
- Variety of configurations possible with 23RU of space
- Compact footprint
- Up to 39.6kW @ 48Vdc or 34.1kW @ 24Vdc
- Multiple point cable access
- Designed for outdoor or secure indoor applications

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
- mm: 2134H x 762W x 762D
- inches: 84H x 30W x 30D

Weight: Up to 590kg (1300lbs)
Construction: High strength corrosion resistant aluminum
Finish: Powdercoat
Equipment space: Upper compartment 19RU
Lower compartment 26RU
Cable entrance: Knockouts on sides and bottom and rear of enclosure
Equipment rails: 23"

Hardware

Hinge type: 5 position lift off hinges
Handle: Padlockable
Door latch: 2 point latch upper and lower compartments
Battery trays (qty.): Configuration dependent - 8RU per front terminal battery shelf

HVAC

Cooling: Upper compartment filtered fan cooled. 4000 BTU air conditioner lower compartment
Heating: 500W
Audible noise: <65dbA

Environmental

Temperature:
- Operating: -40 to 46°C
- Storage: -40 to 85°C

Installation

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

Maintenance

Front access after installation

Enclosure Options

Mounting: Pad or platform mount

System Specifications (as shown)

- 48Vdc Cordex 3.6kW rectifiers (3.1kW Cordex system optional)
- Qty 48 DC breaker positions
- Qty 4 LVD disconnects for staged shutdown during power outage
- AC panel c/w generator panel and ATS (automatic transfer switch)
- Air conditioner w/ heater
- Fan/filter ambient cooled upper compartment
- Customer specific equipment layout
- Alarm terminal block
- Ground bar

General Specifications
Input voltage range N/A: 120/240Vac

System options
Consult factory for custom system solutions

Agency Compliance

CSA/UL: C22.2 No. 60953
Telcordia: GR-487 compliance - contact factory for specific compliances
NEMA rating: Type 3R (CSAC22.2 No 94-M91)

Tempest Te44
Large Format Battery Enclosure


Tempest Te44

- Designed for Absolyte GNB 100 C-31 batery stacks
- Durable welded aluminum construction
- Build on-site modularity
- Designed for outdoor or secure indoor applications

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm: 1054H x 1321W x 914D
1928H x 1321W x 914D
inches: 41.5H x 52W x 36D
76H x 52W x 36D
Weight: 250kg (550lbs)
408kg (900lbs)
Construction: High strength corrosion resistant aluminum
Finish: Powdercoat
Cable entrance: Bottom and sides

Hardware

Door latch: 4 x padlockable ¼ turn socket pin-head key

HVAC

Cooling: 2000 BTU air conditioner
Heating: 500W
EVS: EVS (Emergency Ventilation system) with hydrogen control

Environmental

Temperature:
Operating: -40 to 46°C
Storage: -40 to 85°C

Installation

Access: Modular design - build on site

Maintenance

Front and rear lift off panel access after installation

Enclosure Options

Mounting: Pad mount
Other: Single or dual stack configurations

System Specifications

- Designed for GNB 100G31 Absolyte battery packs
- Single or dual stack configuration
- High temp and hydrogen detection controlled EVS
- Alarm terminal block
- Ground bar

General Specifications
Input voltage range N/A: 120Vac for air conditioner
Voltage: -48Vdc or 24Vdc configurations

System options
Consult factory for custom system solutions

Agency Compliance

CSA/UL: C22.2 No. 60950
Telcordia: GR-487 compliance - contact factory for specific compliances
NEMA rating: 3R

WTE
Wireless Transport Enclosure

Wireless Transport Enclosure

- Compact dual compartment enclosure
- Small 24" x 24" footprint equipment
- Upper compartment; 17RU 19" rails
- Lower compartment; 2 x 48Vdc battery strings
- Designed for outdoor or secure indoor applications

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
mm:.....1626H x 610W x 610D
inches:.....64H x 24W x 24D
Weight:.....150kg (330lbs)
Construction:.....High strength corrosion resistant aluminum
Finish:.....Powdercoat
Equipment space:.....17RU upper compartment
Cable entrance:.....Plinth and sides
Equipment rails:.....19"

Hardware

Hinge type:.....4 position lift off hinge
Handle:.....Padlockable
Battery trays (qty.):.....2 trays in lower compartment

HVAC

Cooling:.....Upper compartment heat exchanger.
Lower compartment TEC cooler/heater

Environmental

Temperature:
Operating:.....-40 to 46°C
Storage:.....-40 to 85°C

Installation

Access:.....Bolt down plinth, install enclosure

Maintenance

Front door after installation

Enclosure Options

Mounting:.....Pad or platform
Pre-cast polymer concrete pad
HVAC options:.....Left or right side door mounting kit

System Specifications (as shown)

- Dual compartments
  - Upper compartment - heat exchanger
  - Lower compartment - thermoelectric cooling
- Two battery trays (Consult factory for battery specifications)
- Front to back adjustable 19" equipment mounting rails
- Internal AC panel
- Generator plug and transfer switch
- Alarm terminal block
- Ground bar

System options
Consult factory for custom system solutions
Optional pre-formed mounting pad

Agency Compliance

CSA/UL, CE:.....C22.2 No. 60950
Telcordia:.....GR-487 compliance - contact factory for specific compliances

Alpha Indoor Enclosure 9
Indoor Enclosure

- Metal enclosure to protect uninterruptible power supply (UPS) from harsh indoor environments
- Castor wheels and screw pads make for easy relocation or securing the enclosure in place, even in high vibration areas
- Glass window to easily view alarm indicators from a distance
- Modern industrial design suitable for many applications
- Optional matching battery enclosure is available allowing for extended run-time capability

Shown with Alpha FXM 2000, Alpha transfer switches, and AlphaCell™ batteries.

Nominal Specifications for Gold-HP

Power Module	FXM 650		FXM 1100		FXM 2000	
	North America	International	North America	International	North America	International
Nominal voltage	120Vac	230Vac	120Vac	230Vac	120Vac	230Vac
Nominal frequency	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz
Input current*	8.0A/10.5A	4.5A	16.0A	8.0A	20.0A	12.0A
Output current	5.4A	2.8A	9.1A	4.78A	16.6A	8.69A
Output power at 50°C	650W/VA	650 W/VA	1100W/VA	1100W/VA	2000W/VA	2000W/VA
Output power at 74°C	500W/VA	500 W/VA	850W/VA	850W/VA	1500W/VA	1500W/VA
Battery string voltage	24/48Vdc	24Vdc	48Vdc	48Vdc	48Vdc	48Vdc

*At nominal input voltage in and 10A battery charger

Consult your Alpha representative for P/N configurations

Mechanical

Dimensions:
inches: ..... 44.2H x 21.5W x 21.5D
(FXM 650,1100,2000 models)
Unit weight: ..... 70.3kg (155lbs) estimated + batteries (w/FXM 650)
72.6kg (160lbs) estimated + batteries (w/FXM 1100)
74.8kg (165lbs) estimated + batteries (w/FXM 2000)

Environmental

Temperature:
Operating: ..... 35°C at full power with no cabinet fan
45°C at full power with optional cabinet fan
55°C at derated power with no cabinet fan
70°C at derated power with optional cabinet fan
Storage: ..... -40 to 75°C (-40 to 168°F)
Operating altitude: 3658m/12,000ft
Operating humidity: ..... Up to 95%

Battery Runtimes (hours)

Model	w/ FXM 650	w/ FXM 1100	w/ FXM 2000
Four x 195 GXL	4.8 hours	2.6 hours	1.2 hours
Eight x 195 GXL	10.5 hours	5.8 hours	2.9 hours

Agency Compliance

CSA 22.2 No 107.3-03, CE
EMC: See FXM section, pg. 32

System Specifications

- Available with FXM 650, FXM 1100, or FXM 2000
- Cabinet can house four AlphaCell 180/210 GXL batteries, or eight AlphaCell 195GXL-FT batteries
- Casters with brake
- Washable/replaceable air filter
- Power input: 8' line cord w/ NEMA plug, IEC connectors, or terminal blocks
- Power output: NEMA receptacles, IEC connectors, or terminal blocks
- Includes floor brackets for permanent fixing
- Display window for quick status checking

General Specifications

Input voltage range
120Vac: ..... 85 to 175Vac (to 150Vac for FXM 2000)
230Vac: ..... 150 to 328Vac (to 281Vac for FXM 2000)
Output voltage range*
North America: ..... 108 to 132Vac
International: ..... 207 to 253Vac
Voltage waveform: ..... Sine wave
Typical efficiency
(full resistive load): ..... >98%
Typical transfer time: ..... <5ms
Audible noise @ 1m: ..... <40dBA
*±3V without going to batteries

System options

- Alpha Universal Automatic Transfer Switch
- Alpha Universal Generator Transfer Switch
- Surge suppressor
- AlphaGuard™
- External cabinet fan
- Extended Battery Cabinet for additional runtime
- A variety of input and output connections are available

Batteries

Alpha offers a comprehensive line of AlphaCell™ batteries in a number of formats specifically designed for demanding indoor and outdoor applications. In addition to the AlphaCell™ Gel battery line are AGM and specialty batteries that support multiple applications while offering extended runtime and warranty configurations. In particular, excellent heat displacement characteristics have shown Alpha's Gel cell batteries to exhibit superior working life and reliability to similar competing technologies. AlphaCell™ GXL batteries come with a full replacement non-prorated warranty and years of expected life and trouble free performance.

Choosing Alpha battery technology means 100% out-of-box capacity and reliable performance in harsh operating conditions, longer service life and reduced maintenance. In addition to our battery offerings, Alpha has a full range of accessories to complement your battery installation or testing needs.

Battery Selection Considerations

Alpha offers batteries for virtually every backup power application. However, not all batteries are listed in the catalog. To help us propose the optimal battery solution for your specific application, please review the following questions prior to contacting your Alpha representative.

What is the nature of the application?

Cycle – batteries will be drained and recharged frequently.
Float – batteries will only be drained and recharged when the primary power source fails.

What 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 battery backup time requirement?
What is the expected frequency of utility power failures, e.g. once a year, once a month, etc.?
How long does the average utility power failure last?
Is there any government legislation stipulating backup power requirements?

What is the DC voltage requirement?

12, 24, 36, or 48Vdc? Other?

Are there any space restrictions?

Depending on type of battery, how many, and where the batteries & backup equipment will be installed.
How convenient is battery replacement? Consider total cost of ownership.

Is there an existing battery string?

When replacing batteries on the same string, ensure date codes, voltage and conductance are matched.
AlphaGuard™ is highly recommended to spread the charge voltage equally across all batteries in the string, which optimizes battery life and runtime.

Are any accessories required?

E.g. AlphaGuard™ Battery Charge Management System, Battery Heater Mats, Battery Testing Equipment, Battery Spacers, etc.

What warranty/service needs are required?

Is extended warranty required? Special servicing needs?

Note: Replaced batteries require environmentally safe disposal.

AlphaCell™ Gold & GXL
Gel Top Terminal Batteries

- Valve Regulated Lead Acid (sealed) batteries
- Designed for indoor, outdoor standby applications
- 100% out-of-box runtime capacity
- Maintenance-free threaded inserts
- 100% replacement warranty

AlphaCell™ Gold & GXL

Nominal Specifications for Gold-HP

Model		**220 GOLD-HP**	**195 GOLD-HP**
P/N		**Consult your Alpha representative for P/N configurations**	
Heat resistance		Extreme	Extreme
Terminals		Threaded insert ¼" - 20 UNC	Threaded insert ¼" - 20 UNC
Typical runtime (minutes)		221	196
Cells per unit		6	6
Voltage per unit		12.8	12.8
Conductance value		1175	1100
Max. discharge current		900A	900A
Short circuit current		2800A	2600A
10 Second volts @ 100A		11.4	11.3
Impedance @ 60Hz (Ohms)		0.005	0.005
Capacity at 20hrs (to 1.75VPC)		109Ah	100Ah
BCI group size		31	31
Mechanical			
Height 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 71°C
		-40 to 160°F	-40 to 160°F
Charge (with temperature compensation)		-23 to 60°C	-23 to 60°C
		-9.4 to 140°F	-9.4 to 140°F
Float charging voltage		13.5 to 13.8Vdc	13.5 to 13.8Vdc

* Dimensions at top of battery

For information on the warranties please contact your sales rep.

AlphaCell™ Gold & GXL
Gel Top Terminal Batteries

Nominal Specifications for GXL

Model		220 GXL	195 GXL	165 GXL	85 GXL-HP
P/N		Consult your Alpha representative for P/N configurations			
Heat resistance		Extreme	Extreme	Extreme	Extreme
Terminals		Threaded insert ¼" - 20 UNC	Threaded insert ¼" - 20 UNC		Threaded insert 10-32 UNF
Typical runtime (minutes)		221	196	165	85
Cells per unit		6	6	6	6
Voltage per unit		12.8V	12.8V	12.8V	12.8V
Conductance value		1175	1100	1000	600
Max. discharge current		900A	900A	800A	600A
Short circuit current		2800A	2600A	2500A	2200A
10 Second volts @ 100A		11.4	11.3	11.2	10.8
Impedance @ 60Hz (Ohms)		0.005	0.005	0.0055	0.0065
Capacity at 20hrs (to 1.75VPC)		109Ah	100Ah	86Ah	50Ah
BCI group size		31	31	27	22
Mechanical					
Height w/ terminals	mm	215.4H x 340.09W x 172.7D	215.4H x 340.09W x 172.7D	229.8H x 317.8W x 173.4D	205.6H x 228.3W x 138.9D
	inches	8.48H x 13.42W x 6.80D	8.48H x 13.42W x 6.80D	9.05H x 12.5W x 6.83D	8.09H x 8.99W x 5.47D
Weight		33.2kg (73lbs)	30.5kg (67lbs)	28.6kg (63lbs)	18kg (39.6lbs)
Environmental					
Discharge		-40 to 71°C	-40 to 71°C	-40 to 71°C	-40 to 71°C
		-40 to 160°F	-40 to 160°F	-40 to 160°F	-40 to 160°F
Charge (with temperature compensation)		-23 to 60°C	-23 to 60°C	-23 to 60°C	-23 to 60°C
		-9.4 to 140°F	-9.4 to 140°F	-9.4 to 140°F	-9.4 to 140°F
Float charging voltage		13.5 to 13.8Vdc	13.5 to 13.8Vdc	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			

*Dimensions at top of battery

For information on the warranties please contact your sales rep.

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

Hours	1	2	3	4	6	8	10	12	20	24	48	72	100
220 GOLD-HP/220 GXL	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
195 GOLD-HP/195 GXL	65.1	37.4	26.8	21	14.8	11.5	9.5	8	5	4.3	2.2	1.5	1.1
165 GXL	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
85 GXL-HP	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

AlphaCell™ 195 GXL-FT
Gel Front Terminal Batteries

AlphaCell™ 195 GXL-FT

- Front terminals with protective covers
- Valve regulated lead acid batteries
- Long life gel batteries can be used outdoors
- Ideal for telecom and cable applications

Nominal Specifications

Model		**195 GXL-FT**
Service life		Extended
Sealed VRLA		Valve regulated lead acid
Heat resistant		Extreme
Hydrogen emission		Low
Terminals		16mm insert M6 thread
Typical runtime		195 mins
Cells per unit		6
Voltage per unit		12.8V
Conductance value		1200
Max. discharge current		400A
Short circuit current		3000A
10 Second volts @ 100A		10.8
Impedance @ 60Hz (Ohms)		0.0041
Capacity at 20hrs (to 1.75VPC)		110Ah
Mechanical		
Dimensions w/ terminals*	mm	285H x 110W x 395D
	inches	11.22H x 4.33W x 15.55D
Weight		34.52kg (76.29lbs)
Environmental		
Discharge		-40 to 71°C (-40 to 160°F)
Charge (with temp compensation)		-20 to 50°C (-4 to 122°F)
Float charging voltage (Vdc)		Float 2.27 to 2.30VPC @ 25°C cycling 2.35VPC @ 25°C
AC ripple charger		0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4% P-P

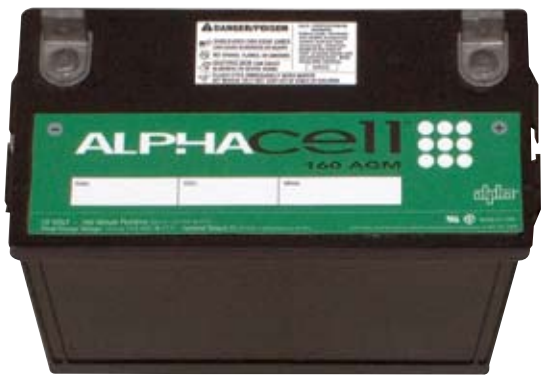
*Dimensions at top of battery. For information on the warranties please contact your sales rep.

Current Discharge Ratings Table in Amps (End Voltage 1.75VPC)

Hours	1	2	3	4	6	8	10	12	20	24	48	72	100
195 GXL-FT	71.1	38.0	26.8	21.1	15.2	12.0	9.92	8.48	5.50	4.60	2.31	1.56	1.13

AlphaCell™ AGM
Top and Front Terminal Batteries

- Designed for indoor, outdoor standby applications
- 100% out-of-box runtime capacity
- Maintenance-free threaded inserts
- 100% replacement warranty
- Convenient carrying handle standard on all models



AlphaCell™ AGM

Nominal Specifications for 160 AGM (Top Terminal)

P/N: 160 AGM		
Silver alloy		N/A
CA/SN alloy		N/A
Typical runtime (minutes)[1]		160
Cells per unit		6
Voltage per unit		12.8V
Conductance value		1300
Max. discharge current		800A
Short circuit current		3300A
10 Second volts @ 100A		11.6
Ohms impedance 60Hz		0.004
Capacity at 20hrs (to 1.75VPC)		88Ah
BCI group size		27
Mechanical		
Dimensions w/terminals	mm	229.8H x 317.8W x 173.4D
	inches	9.05H x 12.57W x 6.83D
Weight		28kg (62lbs)
Environmental		
Discharge		-40 to 71˚C (-40 to 160˚F)
Charge (with temp compensation)		-23 to 60˚C (-9.4 to 140˚F)
Float charging voltage		13.5 to 13.8Vdc
AC ripple charger		0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4% P-P

1.Runtimes calculated using a 25A DC constant current load with voltage discharge to 1.75V/cell @ 25˚C.

Nominal Specifications for AlphaCell™ 225 AGM-FT

P/N: 225 AGM-FT		
Service life		Extended
Sealed VRLA		Valve Regulated Lead acid
Heat resistant		High
Hydrogen emission		Low
Terminals		16mm Insert M6 thread
Typical runtime		225 mins
Cells per unit		6
Voltage per unit		12.8V
Conductance value		1400
Max. discharge current		400A
Short circuit current		3100A
10 Second volts @ 100A		11.2
Impedance @ 60Hz (Ohms)		0.0045
Capacity at 20hrs (to 1.75VPC)		88Ah
Mechanical		
Dimensions w/terminals*	mm	285H x 110W x 395D
	inches	11.22H x 4.33W x 15.55D
Weight		34kg (75.14lbs)
Environmental		
Discharge		-40 to 71°C (-40 to 160°F)
Charge (with temp compensation)		-20 to 50°C (-4 to 122°F)
Float charging voltage (Vdc)		Float 2.27 to 2.30VPC @ 25°C cycling 2.35VPC @ 25°C
AC ripple charger		0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4% P-P

*Dimensions at top of battery. For information on the warranties please contact your sales rep.

Current Discharge Ratings Table in Amps (end Voltage 1.75VPC)

Hours	1	2	3	4	6	8	10	12	20	24	48	72	100
160AGM	61.20	33.90	23.10	17.60	11.98	9.20	7.38	3.84	3.84	3.20	1.60	1.07	0.77
225AGM-FT	81.00	43.10	30.30	23.70	16.70	12.90	10.40	8.90	5.70	4.80	2.43	1.62	1.18

AGM Telecom
Front Terminal Batteries

- Telecom-grade performance and reliability for long duration discharge applications on industry leading brands
- NEBS compliant/ NEBS certified batteries & battery enclosure options
- Front access terminals for ease of installation and ease of maintenance
- Absorbed Glass Mat (AGM) technology for efficient gas recombination (greater than 99%)
- High energy density to conserve valuable floor space
- Full range of field services including battery maintenance, removal, replacement & recycling

Nominal Specifications

Capacity @8hr rate @1.75V/C		**90Ah**	**104Ah**	**125Ah**	**155Ah**
Model Volts		12V	12V	12V	12V
Terminal Type		Threaded copper alloy insert			
Dimensions	mm	395D x 105W x 270H	511D x 110W x 238H	559D x 124W x 283H	559D x 124W x 283H
	inches	156D x 4.1W x 10.6H	20.1D x 4.3W x 9.4H	22D x 4.9W x 11.1H	22D x 4.9W x 11.1H
Weight		31kg (68lb)	35.8kg (79lb)	47.6kg (105lb)	53.8kg (119lb)

Capacity @8hr rate @1.75V/C		**157Ah**	**160Ah**	**180Ah**	**181Ah**
Model Volts		12V	12V	12V	12V
Terminal Type		Threaded copper alloy insert			
Dimensions	mm	559D x 126W x 283H	463D x 176W x 257H	559D x 124W x 318H	559D x 126W x 320H
	inches	22.01D x 4.95W x 11.14H	18.2D x 6.94W x 10.1H	22D x 4.9W x 12.5H	22.01D x 4.95W x 12.6H
Weight		53kg (115lb)	55kg (121lb)	60.3kg (133lb)	60kg (131lb)

Large Format 2V Cell
Long Life Batteries

- Life and float characteristics of a flooded battery in a high density, low maintenance VRLA design
- Low float current reduces grid corrosion and extends battery life

Call your Alpha representative if you need a stationary battery type not listed

345 to 2038Ah Range

Nom Ah Cap (8hr)		345Ah	480Ah	480Ah	599Ah	839Ah
# Cells/Module		3	3	3	3	3
# Plates/Cell		7	9	9	11	15
System # of Cells		24	24	24	24	24
System Voltage		48V	48V	48V	48V	48V
Model Volts		6V	6V	6V	6V	6V
Dimensions	mm	544H x 1135W x 586.7D	476H x 1642W x 587.5D	664H x 1136W x 587.5D	545H x 1642W x 587.5D	773H x 1136W x 587.5D
	inches	21.4H x 44.7W x 23.1D	18.7H x 64.5W x 23.1D	26.1H x 44.7W x 23.1D	21.4H x 64.5W x 23.1D	30.4H x 44.7W x 23.1D
Weight		894kg (1970lb)	1120kg (2470lb)	1093kg (2410lb)	1324kg (2920lb)	1293g (2850lb)
Cell Layout		6W x 4H	4W x 6H	6W x 4H	4W x 6H	3W x 8H

Nom Ah Cap (8hr)		839Ah	1079Ah	1079Ah	1319Ah	1319Ah
# Cells/Module		3	3	3	3	3
# Plates/Cell		15	19	19	23	23
System # of Cells		24	24	24	24	24
System Voltage		48V	48V	48V	48V	48V
Model Volts		6V	6V	6V	6V	6V
Dimensions	mm	545H x 2148W x 587.5D	708H x 1642W x 587.5D	664H x 2148W x 587.5D	850H x 1642W x 587.5D	773H x 2148W x 587.5D
	inches	21.4H x 84.4W x 23.1D	27.9H x 64.5W x 23.1D	26.1H x 84.4W x 23.1D	33.5H x 64.5W x 23.1D	30.4H x 84.5W x 23.1D
Weight		1751kg (3860lb)	1719kg (3790lb)	2150kg (4740lb)	2118kg (4670lb)	2549kg (5620lb)
Cell Layout		4W x 6H	3W x 8H	4W x 6H	3W x 8H	4W x 6H

Nom Ah Cap (8hr)		1559Ah	1559Ah	2038Ah	2038Ah
# Cells/Module		3	3	3	3
# Plates/Cell		27	27	35	35
System # of Cells		24	24	4	24
System Voltage		48V	48V	48V	48V
Model Volts		6V	6V	6V	6V
Dimensions	mm	1004H x 1642W x 587.5D	875H x 2148W x 587.5D	1157H x 1642W x 587.5D	1108H x 2148W x 587.5D
	inches	39.5H x 64.5W x 23.1D	34.4H x 84.4W x 23.1D	45.5H x 64.5W x 23.1D	43.6H x 84.4W x 23.1D
Weight		2517kg (5550lb)	2971kg (6550lb)	2966kg (6540lb)	3774kg (8320lb)
Cell Layout		3W x 8H	4W x 6H	3W x 8H	4W x 6H

760 to 2000Ah Range

Nom Ah Cap (8hr)		760Ah	855Ah	950Ah	1045Ah	1140Ah
# Cells/Module		3	3	3	3	3
# Plates/Cell		17	19	21	23	25
System # of Cells		24	24	24	24	24
System Voltage		48V	48V	48V	48V	48V
Model Volts		6V	6V	6V	6V	6V
Dimensions	mm	556H x 1735W x 689D	613H x 1735W x 689D	671H x 1735W x 689D	728H x 1735W x 689D	785H x 1735W x 689D
	inches	21.9H x 68.3W x 27.1D	24.2H x 68.3W x 27.1D	26.4H x 68.3W x 27.1D	28.7H x 68.3W x 27.1D	30.1H x 68.3W x 27.1D
Weight		1479kg (3260lb)	1638kg (3612lb)	1794kg (3956lb)	1954kg (4308lb)	2110kg (4652lb)
Cell Layout		3W x 8H	3W x 8H	3W x 8H	3W x 8H	3W x 8H

Nom Ah Cap (8hr)		1235Ah	1330Ah	1425Ah	1520Ah	2000Ah
# Cells/Module		3	3	3	3	2
# Plates/Cell		27	29	31	33	33
System # of Cells		24	24	24	24	24
System Voltage		48V	48V	48V	48V	48V
Model Volts		6V	6V	6V	6V	4V
Dimensions	mm	842H x 1735W x 689D	899H x 1735W x 689D	956H x 1735W x 689D	1013H x 1735W x 689D	1351H x 1814W x 727D
	inches	33.2H x 68.3W x 27.1D	35.4H x 38.3W x 27.1D	37.7H x 68.3W x 27.1D	39.9H x 68.3W x 27.1D	53.2H x 71.4W x 28.6D
Weight		2255kg (4972lb)	2426kg (5348lb)	2571kg (5668lb)	2737kg (6020lb)	3908kg (8616lb)
Cell Layout		3W x 8H	3W x 8H	3W x 8H	3W x 8H	(2x6)W x 2H

Note: Add “S” for Standard Polypropylene or “L” for Flame Retardant Polypropylenes, suffix to module number. (ex. 24AVR95-17-S)

696 to 1600Ah Range

Nom Ah Cap (8hr)		696Ah	800Ah	896Ah	1000Ah	1096Ah
# Cells/Module		3	3	3	3	3
# Plates/Cell		15	17	19	21	23
System # of Cells		24	24	4	24	24
System Voltage		48V	48V	48V	48V	48V
Model Volts		6V	6V	6V	6V	6V
Dimensions	mm	563H x 1744W x 670D	622H x 1744W x 670D	679H x 1744W x 670D	737H x 1744W x 670D	794H x 1744W x 670D
	inches	22.2H x 68.72W x 26.4D	24.5H x 68.72W x 26.4D	26.8H x 68.72W x 26.4D	29H x 68.72W x 26.4D	31.3H x 68.72W x 26.4D
Weight		1357kg (2992lb)	1539kg (3392lb)	1706kg (3760lb)	1869kg (4120lb)	2036kg (4488lb)
Cell Layout		3W x 8H	3W x 8H	3W x 8H	3W x 8H	3W x 8H

Nom Ah Cap (8hr)		1200Ah	1296Ah	1400Ah	1496Ah	1600Ah
# Cells/Module		3	3	3	3	3
# Plates/Cell		25	27	29	31	33
System # of Cells		24	24	24	24	24
System Voltage		48V	48V	48V	48V	48V
Model Volts		6V	6V	6V	6V	6V
Dimensions	mm	851H x 1744W x 670D	908H x 1744W x 670D	965H x 1744W x 670D	1022H x 1744W x 670D	1080H x 1744W x 670D
	inches	33.5H x 68.72W x 26.4D	35.8H x 68.72W x 26.4D	38H x 68.72W x 26.4D	40.3H x 68.72W x 26.4D	42.5H x 68.72W x 26.4D
Weight		2036kg (4488lb)	2206kg (4864lb)	2370kg (5224lb)	2555kg (5632lb)	2722kg (6000lb)
Cell Layout		3W x 8H	3W x 8H	3W x 8H	3W x 8H	3W x 8H

Note: Add “L” for Flame Retardant Polypropylenes, suffix to module number (ex. 100AG15-L)

Indoor UPS Batteries
9 to 34AH

9 to 34Ah Batteries

- High Rate Discharge VRLA Batteries
- Power range available in 12V with capacities from 9 to 34Ah
- Optimized grid for high power density
- Upright, side or end mounting
- Thermally welded case to cover bond eliminates leakage
- Optional flame retardant ABS casing to UL94-VO
- 100% replacement warranty

Consult your Alpha representative for P/N configurations

Electrical

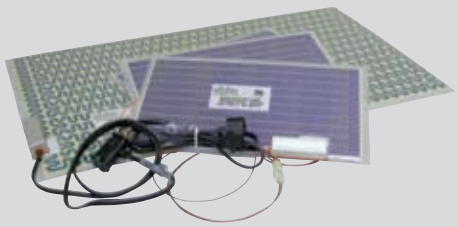
Type:..... Valve regulated lead acid
Range of capacity:..... 9 to 34Ah
Recommended float voltage:.....13.5VPC @ 20°C (68°F)
Terminal type:.....Threaded copper insert
Optional:.....UL 94 VO flame retardants casing

Enviromental

Operating temperature nominal:.....25°C (77°F) note: can operate at higher temperature up to 74°C (165°F) but degrades life of battery

For information on warranties please contact your sales rep.

Battery Accessories



Battery Heater Mats

Battery Heater Mats

- Thermostat Specifications:
  Turns on when temperature falls below 5°C/41°F
  Turns off when temperature rises above 15°C/59°F

Low temperatures can compromise battery performance by reducing runtimes and slowing down the recharge rate. Battery Heater Mats combat these negative effects for better battery performance in cold conditions. In extreme environments, battery damage can result if battery heater mats are not used.

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, AlphaGuard allows you to replace single batteries rather than the whole string. It spreads charge voltage equally across batteries to maximize battery life and compensates for battery differences as they age.

Also available: AlphaGuard Potted Version for Below Grade Applications.

The potted version is ideal for applications where batteries are installed under ground 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 is 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.

Generators

Alpha's line of DC generators are designed to allow for minimal battery backup installation while still providing extended runtime to critical loads. Every generator system incorporates efficient, effective and reliable power technology, including: natural gas or propane powered engine generators, exclusive audible noise baffling, remote status monitoring features and multiple built-in safeguards to protect the system, operators and the public.

AlphaGen™ curbside DC generator system is specifically designed for outside plant communication networks requiring -48Vdc power. It offers quiet operation, small size and low profile for easy installation in populated areas and is one example of several capable generator models in the AlphaGen™ family.

AlphaGen™ Portable

3.0kW Portable 36/48Vdc Generator System

AlphaGen Portable

- DC technology requires no ATS (Automatic Transfer Switch)
- No need to disconnect or reconnect power supply to utility power
- Selectable output for 36 or 48Vdc operation up to 3000W
- Super quiet operation only 58dBA @ 7m/22ft
- Completely enclosed, water resistant for safe operation in the field
- Oversized metal gas tank with level gauge for extended runtimes of up to 20hrs

P/N: 013-018-10-010

Performance / Features

Engine: ..... Honda GX 200 6.5hp, air-cooled, OHV, single cylinder, manual recoil starting, manual choke
Rated power: ..... 2800W continuous, 3000W max
Alternator: ..... Permanent magnet, brushless, bearingless

Dual range selector:
36V: ..... 39.5Vdc nominal at generator output connector
48V: ..... 52.5Vdc nominal at generator output connector

Output regulation: 1Vdc
Control features: ..... Automatic voltage regulation
Electronic governor
Over current protection
Analog voltmeter with back light
Cable interface: ..... Anderson type SBE-80 connector
Fuel tank: ..... 3.4 gallon metal tank with level gauge

Runtime:
@ 25% load: 20hrs
@ 80% load: 10hrs
@ 100% load: 7.2hrs

Audible noise: ..... Approx. 58dBA @ 7m under full load
Frame: ..... Fully enclosed

Mechanical

Dimensions:
mm: ..... 569H x 480W x 655D
inches: ..... 22.4H x 18.9W x 25.8D
Dry weight: ..... Less than 53.5kg (118lbs)

Agency Compliance

CSA C22.2 No. 100-95, 107.1-01,107.2-M89, 0.4 FCC part 15B Class A

Required Accessories

Output interface cable: .....Available in 10', 30' or 50' lengths
Battery interface cable:.....Choose ring lung, heavy-duty alligator clamp, or Y-adapter*

*Connects the power supply's battery input directly to the generator

30' Output interface
10' P/N 877-567-10-022
50' P/N 877-567-10-021

Ring lug battery interface

Alligator clamp battery interface
P/N 874-946-20

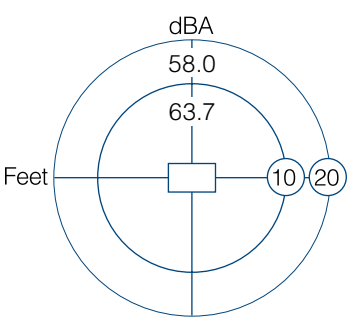
Y-Adaptor battery
P/N 874-946-22

Optional accessories:

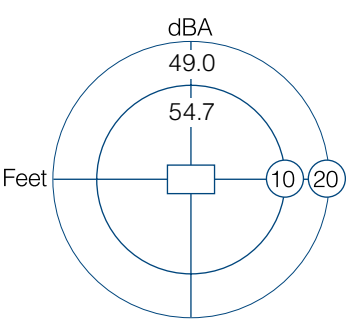
DCX-PG-WK:.....Portable generator wheel kit
AG-PG-TOOL:.....Punch tool kit for enclosures
AG-PG-UK: .....Enclosure upgrade kit
DCX-PG-HANDLE: .....Locking handle
AG-CAB-KIT.....Cable bag with cable and key lanyard

3.0kW Portable Generator Sound Levels

Ambient background noise level at 45dBA
All readings are 8 point averages



Generator at 100% rated load



Generator at 100% rated load (typical)

AlphaGen front view

AlphaGen portable trailer

AlphaGen with wheel kit

AlphaGen™
DC Generator System

AlphaGen

- 3.5, 5.0, and 7.5kW options in either 36Vdc or 48Vdc configurations
- Cost effective extended runtime solution for telecom powering applications
- Quiet operation, small size, and low profile allow for easier installation in populated areas
- Eliminates large quantities of batteries otherwise required for extended runtime
- Designed for stand-alone or collocated 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

Performance / Features

Gas inlet pressure:.....0.5 to 2 PSI inlet pressure (see note 1)
Ign charger voltage:.....13.5Vdc
Ign charger current:.....6A max
Remote interface length:.....75ft max
Distance depends upon proper installation, de-rating and wire gauge (see note 2)
Fuel system, controls & monitoring:.....The controls and fuel system meet applicable sections of NFPA 37, 54 and 58 for automatic unattended operation of remotely located generators. Full system control and status monitoring included.
Sensors:.....Gas hazard
Pad shear
Water intrusion
Tamper

Safety shutdowns

All models:.....Low oil pressure
Over temp
Low fuel pressure shutdown (propane only)
Water intrusion
Pad shear
Gas hazard (propane or natural gas)
Over speed
Over crank
Optional feature:.....Cold start kit: Provides additional starting capability at temperatures below 17.7˚C (0˚F).

Agency Compliance

UL1778
UL2200
NFPA 37/54/58/70
CSA C22.2 No.107.1
EMC/FCC Part 15 Class A

Note: Contact Alpha Technologies for the following:
1. Low pressure
2. Remote interface length distance

Nominal Specifications

Model:	3.5kW	5.0kW	7.5kW
DC output voltage	39.0V ±0.5V @ no load 36V configuration	39.0V ±0.5V @ no load 36V configuration	52.0V ±0.5V @ no load 48V configuration
	52.0V ±0.5V @ no load 48V configuration	52.0V ±0.5V @ no load 48V configuration	104.0V ±0.5V @ no load 96V configuration
DC output load regulation	0.5V	0.5V	0.5V
Output current	39.0V @ 90A max	39.0V @ 128A max	52.0V @ 144A max
	52.0V @ 67A max	52.0V @ 96A max	104V @ 72A max
Engine	398CC, Air cooled, Single OHV	398CC, Air cooled, Single OHV	624CC, Air cooled, Twin OHV
	10.5hp (using natural gas fuel)	10.5hp (using natural gas fuel)	15hp (using natural gas fuel)
RPM: (variable speed)	2800 to 3600RPM	2800 to 3600RPM	2800 to 3600RPM
Acoustical noise			
dBA 10' @ 100% rated load	68.7Ave	68.5Ave	70.3Ave
dBA 20' @ 100% rated load	63.0Ave	62.5Ave	64.3Ave
dBA 10' @ 70% rated load	68.3Ave	66.9Ave	66.4Ave
dBA 20' @ 70% rated load	62.6Ave	60.9Ave	60.4Ave

Dimensions		CE-3x	CE-9x	PN-4xL	CE-3x	CE-9x	PN-4xL	PN-6x	with optional pedestal
Height	cm	111.2	132.1	81.3	111.2	132.1	81.3	99	144
	in	44	52	32	44	52	32	39	57
Width	cm	66	132.1	81.3	66	132.1	81.3	100	
	in	26	52	32	26	52	32	39.25	
Depth	cm	61	61	76.2	61	61	76	61	
	in	24	24	30	24	24	30	24	
Weight	kg	174	187	177	174	187	177	174	168
	lbs	383	413	390	383	413	390	338	370

APU fuel consumption			
Natural gas: 1000 BTU/Ft.^{3}	60ft^3/hr	80ft^3/hr	156ft^3/hr
Propane gas: 2520 BTU/Ft.^{3}	0.82gal/hr	1.10gal/hr	1.48gal/hr
	30ft^3/hr	40ft^3/hr	54ft^3/hr
	3.46lbs/hr	4.62lbs/hr	6.24lbs/hr
Exterior surface temperature	65˚C max (149˚F) (meets requirements of UL/CSA)	65˚C max (149˚F) (meets requirements of UL/CSA)	65˚C max (149˚F) (meets requirements of UL/CSA)

CE-3x2
3.5 or 5kW

CE-9x2
3.5 or 5kW

CE-3/9G propane storage for generator (For 3.5 and 5.0kW)

PN-4xL
3.5 or 5kW

PN-6x
7.5kW
(PN-6x is not compatible with CE-3/9G)

Services and Support

Effective power systems require first class support. Alpha provides a full range of service and support solutions designed to keep power infrastructure running.

At Alpha we understand that our products are often just one or more parts of a complete power solution. That's why Alpha service goes beyond just Alpha equipment to providing support solutions that meet the ultimate need of our customers: continuous, reliable power.

Whether it's an item sent in for repair, a technical support phone call or an on site preventative maintenance visit; Alpha technicians are available to stand behind every Alpha product. Have your equipment repaired right at the factory, or in one of our many service centers. Take advantage of our service plans that provide a complete on site maintenance solution for one low annual fee. Or call us to have new batteries installed, the old ones recycled and perform a complete preventative maintenance routine for your power system.

Alpha has standard service and support solutions designed to meet the needs of our clients. These are presented in the following pages. At Alpha we understand that many power systems are unique situations that have unique needs. Our services can be tailored to provide the service that's right for you. If you want to know more just call us, 24/7, at:

USA and Canada: 1-888-462-7487
International: 1-604-436-5547

Alpha Service

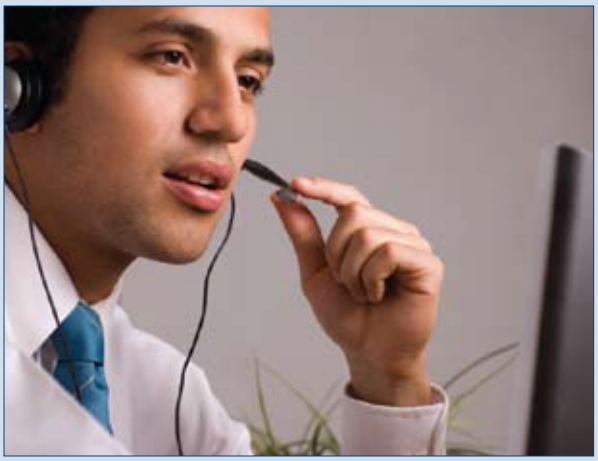
Canada and USA call 1-888-462-7487 International call +1-604-436-5547

Alpha Services Plans

	Factory Warranty	Warranty plus Extended Warranty	Basic On Site	Reliability On Site
Comprehensive Coverage of Equipment and Batteries	Included	Included	Included	Included
Telephone Technical Support	Included	Included	Included	Included
Advance Replacement	Optional	Included	Included	Included
Freight to Customer	Included	Included	Included	Included
On-Site Start Up Business Day		Optional	Included	Included
On-Site Corrective Maintenance Business Day		Optional	Included	Included
Next business day response			Included	Included
Equipment Preventative Maintenance				Included
Battery Preventative Maintenance				Included

Alpha Services on Demand

Service	Description
Repair/exchange	Repair or exchange of delivered unit for a flat fee.
Advance replacement	Immediate shipment of replacement unit with credit issued for return unit when received.
Replacement battery bundle	Set of replacement batteries including delivery.
On site replace and PM	On site replacement of all batteries including delivery, recycling, installation and preventative maintenance on equipment and battery cabinet.



Technical Support

Alpha provides Technical Support services 24 hours per day, 7 days per week. If you reach voice mail, relax. Someone will get back to you within 30 minutes. That's our commitment to quality service. So go ahead, call us at the number below. Don't worry. You do not have to have your credit card ready.

Free 24-hour telephone technical support

- Alpha's technical support center provides expert technical support 24 hours-a-day, 7 days-a-week.
- All calls receive a response within 30 minutes.
- Toll-free in the USA and Canada: 1-888-462-7487
- International: +1-604-436-5547
- E-mail: support@alpha.ca

Installation and Commissioning

Get off to the right start. Many problems can be avoided if a system is correctly installed and fully tested at the beginning. Commissioning costs are waived when the customer upgrades their warranty to an on site Basic or Reliability service plan. We want our systems to perform their best right out of the gate. Let Alpha take the responsibility, we're used to it.

Maintenance and repair

Things go wrong. Batteries wear out. Components fail. Environmental damage occurs. While Alpha products adhere to the highest quality standards in the industry; maintenance and repair of power equipment that is in regular use is an unavoidable fact. Do it yourself, send it to us, or call us out to help. Alpha is available to provide service the way you need it. Alpha service plans and Extended Warranties help organizations plan for and minimize costs, but it is always best to avoid failures before they happen. Our Reliability Plan does just that with regularly scheduled Preventative Maintenance visits to stop troubles before they happen. That is the goal after all; continuous reliable power.

Training

Alpha provides a range of training solutions to meet client needs. Our course on Telecom DC Power is an industry standard. A wide range of courses are available covering various aspects of power systems installation, maintenance and management. Training courses are available at our Vancouver, Canada facility where students can enjoy the features of a wonderful location when they are not in the classroom.

Alpha does provide training programs on-site. Like all Alpha services these programs can be customized to meet your needs. Please enquire.

Software, manuals, product registration and specifications

A wide range of documentation is available on our website to help you get the most from Alpha products. Visit us online at www.alpha.ca. While you are there don't forget to register your product with us. That way we will be able to provide you with relevant information concerning your product, even a reminder when you should change your batteries. Don't worry. We won't bombard you with email.

To see a list of currently scheduled courses please visit us online at **www.alpha.ca/training**

Training Courses

Course 1

Telecom DC Power and Cordex Advanced Power System Training

This course is recommended for anyone who is designing, engineering, installing or maintaining DC power plants for the telecommunications industry. The course is applicable to all telecom DC power plants but provides specific training on the Alpha Cordex DC power systems.

What is covered:		Duration: 2 days
DC Power system theory	Safety	Remote access, Ethernet, POTS and SNMP
DC System sizing	Controller programming	Maintenance and troubleshooting techniques
Site engineering	Installation and commissioning	30% Hands on training
Checking alarm set-points	SNMP and MODBUSS	

Course 2

Power Systems for Cable Applications

This course is recommended for anyone who is designing, engineering, installing and maintaining power systems used in Cable TV headend or outside plant applications. DC power plant, AC UPS and Network powering topologies will be reviewed

What is covered:		Duration: 1 day
AC/DC Power system theory	AC/DC System sizing	Outside plant network powering topologies
Site engineering	Installation & commissioning	Maintenance and troubleshooting techniques
Safety	Checking alarm set-points	

Course 3

Cordex Power Systems - Advanced

This course is recommended for anyone who is designing, engineering, installing or maintaining Alpha Cordex DC power systems. The course is focused on Cordex Power Systems and controller programming.

What is covered:		Duration: 1 day
Installation & commissioning	Detailed controller programming	Remote access, Ethernet, POTS and SNMP
Safety	Checking alarm set-points	Maintenance and troubleshooting techniques

Course 4

Cordex Power Systems - Basic

This course is recommended for anyone who is installing or maintaining Alpha Cordex DC power systems. The course is focused on the Cordex controller programming.

What is covered:		Duration: 1/2 day
Installation & commissioning	Basic controller programming	Maintenance and troubleshooting techniques
Safety	Checking alarm set-points	

Course 5

Telecom DC Power

This course is recommended for anyone who is designing, engineering, installing or maintaining DC power plants for the telecommunications industry. The course is applicable in all telecom DC power plants.

What is covered:		Duration: 1 day
DC Power system theory	Installation & commissioning	Maintenance and troubleshooting techniques
DC System sizing	Site engineering	Checking alarm set-points
Safety		

Contact training@alpha.ca or 1-888-462-7487 for further details.


cordex
CXRF 48-1.8kW
AC
DC
ALM

Your Power Solutions Partner

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