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.

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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.
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

**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
> 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™ 1kW 48Vdc
Modular Rectifier Shelf Systems

Cordex™ 48-1kW Rectifier 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

> 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

<table>
<thead>
<tr>
<th>Cordex 48-1.2kW Rectifier Shelves</th>
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<tbody>
<tr>
<td><strong>Shelves</strong></td>
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<tr>
<td>&gt; <strong>2RU Front Access</strong></td>
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<tr>
<td>Dimensions:</td>
</tr>
<tr>
<td>mm: ..................................88H x 439.5W x 305D</td>
</tr>
<tr>
<td>inches: ............................3.5H x 17.3W x 12.0D</td>
</tr>
<tr>
<td>*Note: Rectifier front handle adds additional 12.5mm/0.49&quot; Depth)</td>
</tr>
<tr>
<td>Weight:</td>
</tr>
<tr>
<td>Shelf: ..............................4.55kg (10.03lbs)</td>
</tr>
<tr>
<td>Rectifier: ..........................1.23kg (2.72lbs)</td>
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<td><strong>1RU rear Access</strong></td>
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<tr>
<td>Dimensions:</td>
</tr>
<tr>
<td>mm: ..................................44H x 439.5W x 305D</td>
</tr>
<tr>
<td>inches: ............................75H x 17.3W x 12.0D</td>
</tr>
<tr>
<td>*Note: Rectifier front handle adds additional 12.5mm/0.49&quot; Depth)</td>
</tr>
<tr>
<td>Weight:</td>
</tr>
<tr>
<td>Shelf: ..............................3.0kg (6.6lbs)</td>
</tr>
<tr>
<td>Rectifier: ..........................1.23kg (2.72lbs)</td>
</tr>
<tr>
<td>Note: Shelf P/Ns DO NOT include modules or distribution breakers</td>
</tr>
<tr>
<td>Dimensions do not include mounting bracket</td>
</tr>
<tr>
<td>Communication ports:............CAN: Interface to control rectifiers &amp; smart peripherals</td>
</tr>
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<td>Ethernet: ..........................10/100 Base-T for TCIP/SNMP features</td>
</tr>
</tbody>
</table>

**Related Components**

877-690-19: .....................5-15P (120V) line cord, 2.5m
877-671-19: .....................Universal IEC 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

**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)
Standard Solutions

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

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)

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

**Environmental**

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

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

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

**Related Components**

- 877-690-19: 5-15P (120V) line cord, 2.5m
- 877-671-19: Universal 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
Standard Solutions
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

Mechanical

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

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

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

Connections:
Load breaker: 14x sets, ¼”-20 studs on ⅝” centers
Battery breaker: 4x sets, ¼”-20 studs on ⅝” centers
Return bar: 18x sets, ⅜” holes on 1” 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)
Humidity: 0 to 95% RH non-condensing
Elevation: -500 to 2800m (-1640 to 9186ft) with de-rated output

Related Components

058-156-20: 23” battery tray expansion kit
058-157-20: 19” battery tray expansion kit
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

P/N: 053-991-20

**Electrical**

**Input:**
- Voltage: 176 to 312Vac (nominal)
- Current: 2x 48Vdc @ 240Vac (per module)
- Frequency: 45 to 66Hz
- Efficiency: >91% (50-100% load @ nominal voltage)
- Power factor: >.99

**Output:**
- System: 262.5A max @ nominal I/P
- Rectifier: 37.5A @ 48Vdc (nominal I/P)
- Power: System: 12600W max @ nominal I/P
- Rectifier: 1800W max @ nominal I/P

**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)
- Controller: CXCM2 modular controller

**Mechanical**

- Dimensions:
  - mm: 222H x 438W x 310D
  - inches: 8.75H x 17.24W x 12.2D
- Weight:
  - System: 28kg (62lbs)
  - Rectifier: 2.8kg (6.2lbs) each
- Mounting:
  - 19/23" universal mount (center or flush)

**Connections:**
- Load breaker: 14x sets, ¼"-20 studs on ⅝" centers
- Battery breaker: 4x sets, ¼"-20 studs on ⅝" centers
- Return bar: 18x sets, ⅛"-20 screws on ⅜" centers
- Rectifier input: 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 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)
- 473-347-10: 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

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 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

**Connections:**
- Load breaker: Hot: ¼”-20 studs on ½” centers
  Return: ¼” holes on ½” 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

- 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: 053-383-20 (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: >0.99

**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: 4x8 AM plug-in breaker positions (no LVD)
  3x8 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

**Connections:**
- Load breaker: Hot: ¼"-20 studs on ⅝" centers
  Return: ¼" holes on ⅝" centers
- GMT fuses: Screw terminal 1.31mm² to 0.128mm² (#16 to #26 AWG)
- Battery terminations: ¾" holes on 1" centers
  4x sets per polarity
- Rectifier input: ¾" 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)
**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

**P/N: 025-999-20**

**Electrical**

- **AC input:** Single phase, 208 to 277Vac
- **Rectifier voltage:** 208 to 277Vac
- **Max. bus capacity:** 10,000A system

**Performance / Features**

- **System level alarms/controls:** Alarms/control parameters are user-programmable through built-in digital supervisory unit.
- **Indicators:** LCD with touch screen
- **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 1 ¾” centers or 2 hole ⅜” dia. on 1” centers
  - GJ breaker: 1 pole and 2 pole are ¼” to 16, 3 pole are 2 hole, ⅜” dia. on 1¾” centers or ¼” dia. on 1” centers
  - Ground bar: Overhead buss ground, 15 sets of 2 hole ½” dia. on 1¼” 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
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

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 (1/2 height) battery mount rack
053-390-20-020 ........ System mounted in 44RU Zone 4 seismic rack
053-390-20-030 ........ System mounted in 44RU Z4 rack with 3x battery trays for 6x 24V strings
Rectifier: ................. Up to 11x 24V-3.1kW rectifier positions
Distribution: ............ 38x AM plug-in breaker positions
10x GMT type fuse positions
Shunt
Low voltage disconnect
Controller: ............... CXCM4 modular controller

Mechanical

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

Connections:
Load breaker: .......... Hot: ¼"-20 studs on ½" centers
Return: ¼" holes on ½" 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)
Humidity: ................. -40 to 75°C (-40 to 167°F) de-rated output
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

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

**P/N: 053-391-20**

**Electrical**

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

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

**Performance / Features**

- Configurations:
  - 053-391-20-020: System mounted in 44RU zone 4 seismic rack
    - Rectifier: Up to 11x 24V-3.1kW rectifier positions
  - Distribution: 58x AM plug-in breaker positions (expandable to 78x positions)
    - 10x GMT type fuse positions
    - Shunt
    - Low voltage disconnect

- Controller: CXCM4 modular controller

**Mechanical**

- **Dimensions:**
  - mm: 2134H x 648W x 533D
  - inches: 84H x 25.5W x 21D (includes rack)
  - Weight: 172kg (379lbs)
  - Mounting: 23° center mount

- **Connections:**
  - Load breaker: 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
> 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

**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

**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
Cordex™ 3.3kW System
125/220V High Voltage Integrated Systems

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

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

**Electrical**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage:</td>
<td>Nominal: 208 to 277Vac, Operating: 176 to 320Vac, Extended: 176 to 150Vac (de-rated to 75%)</td>
</tr>
<tr>
<td>Phase:</td>
<td>1 or 3</td>
</tr>
<tr>
<td>Frequency:</td>
<td>45 to 66Hz</td>
</tr>
<tr>
<td>Power factor:</td>
<td>&gt;0.99</td>
</tr>
<tr>
<td>Efficiency:</td>
<td>&gt;93% (50 to 100% load)</td>
</tr>
<tr>
<td>Output voltage:</td>
<td>90 to 160Vdc</td>
</tr>
<tr>
<td>Current:</td>
<td>8.8A per module @ 125Vdc, 5A per module @ 220Vdc, up to 3 modules per shelf</td>
</tr>
<tr>
<td>Load regulation:</td>
<td>Static &lt;=0.5%</td>
</tr>
<tr>
<td>Line regulation:</td>
<td>Static &lt;=0.1%</td>
</tr>
<tr>
<td>Transient response:</td>
<td>&lt;=2% for 10 to 100% load step. 10ms recovery time.</td>
</tr>
<tr>
<td>Wide band noise:</td>
<td>&lt;10mVRms</td>
</tr>
<tr>
<td></td>
<td>&lt;80mVpp</td>
</tr>
<tr>
<td>Insulation:</td>
<td>2.5kVac input-earth, 3kVac input-output, 2kVac output-earth, 0.5kVac signals-earth</td>
</tr>
</tbody>
</table>

**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

**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

**EMC:**
- FCC Part 15, Class A
- EN 55022 Class A (CISPR 22)
- EN 61000-4-3 Radiated Immunity
- EN 61000-4-4 EFRT/Burst
- EN 61000-4-6 Conducted Immunity

*Rectifier module not included system weight
Cordex™ Power Systems
Compatibility Matrix

AMPS
(not to scale)

CXCR
8000A
6000A
4000A
2000A
1000A
500A
CXCM4
CXCP
2000A
1350A
900A
CXCI
CXC1
CXCM2
CXCR
150A
375A
CXCM1
225A
100A
20A
CXCI
120A
65A
CXCR
13A
CXCM
CXCR
CXCI
CXCM1
CXCI
CXCM4
CXCP
2000A
1560A
CXCI
140A
CXCM1
CXCI
CXCM2
CXCR
780A
70A
CXCI
83A
14A
20A
0
25
50
75
100
125
150
175
200
250
375A
25A
20A
13A

48-3.6kW
48-3.6kW
48-1.8kW
48-1.2kW
48-1kW
48-650W
24-3.1kW
24-400W
12-250W
Multi bay
Single bay
Single shelf
Single shelf
Single shelf
Single shelf
Single bay
Single shelf
Single shelf
20A
130A
140A
83A
450A
1350A
900A
200A
75A
150A
100A
25A
37A
225A
120A
65A
13A
14A
20A
2000A
800A
600A
400A
200A
175A
150A
125A
100
75
50
25
0
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.
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

<table>
<thead>
<tr>
<th>Model:</th>
<th>AMPS80-3-75</th>
<th>AMPS80-3-30</th>
<th>AMPS80-2-40</th>
<th>AMPS80-1-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>P/N</td>
<td>Consult your Alpha representative for P/N configurations</td>
<td>120V single ph</td>
<td>120V single ph</td>
<td>120V single ph</td>
</tr>
<tr>
<td>Input &amp; output phase</td>
<td>120/208V 3-ph</td>
<td>120/208V 3-ph</td>
<td>120/240V or 120/208V 2-ph</td>
<td>120V single ph</td>
</tr>
<tr>
<td>Output capacity</td>
<td>7,500 to 75,000VA</td>
<td>7,500 to 30,000VA</td>
<td>5,000 to 40,000VA</td>
<td>2,500 to 20,000VA</td>
</tr>
<tr>
<td>Output power (resistive load)</td>
<td>6,000 to 60,000W</td>
<td>6,000 to 24,000W</td>
<td>4,000 to 32,000W</td>
<td>2,000 to 16,000W</td>
</tr>
<tr>
<td>Maximum output current</td>
<td>208A rms per phase</td>
<td>83A rms per phase</td>
<td>168A rms per phase</td>
<td>168A rms</td>
</tr>
<tr>
<td>Max. no. of 2,500VA/2,000W inverter modules</td>
<td>30</td>
<td>12</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Min. no. of 2,500VA/2,000W inverter modules</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Technology</td>
<td>Twin Sine Inverter (TSI) technology; each inverter module has DC input &amp; AC input</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Static switch</td>
<td>Not required; each module has its own static switch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td>94% AC-to-AC; 90% DC-to-AC (from 50 to 100% full resistive load)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waveform</td>
<td>Pure sine wave</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output power factor</td>
<td>0.8 (can run capacitive &amp; inductive loads)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer time</td>
<td>Zero transfer time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warranty</td>
<td>2 year standard (1 and 3 year optional extensions)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 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, 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 dbm |

### 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)
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.
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)

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

WinPower Monitoring Software

WinPower Monitoring Software
## 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
- **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
  - Under voltage threshold: Adjustable between 100 to 114Vac for 120Vac systems, the default value is 108Vac
  - Backfeed protection: Comply with safety requirement
  - Redundant power: Startup power-on by priority
- **Output:**
  - Nominal output voltage: Same as utility or the output of inverter modules
  - Permissible frequency area: Max. ±2.5%
  - (inverter synchronization)
  - Transfer time: Typical 1/4 cycle
  - Rated power: 50A for 110/115/120Vac
  - Operation methods: Inverter priority/mains priority

### Controller Module
- **Input:**
  - Nominal voltage: 48Vdc
  - Operating range: 30Vdc – 72Vdc
  - Over current protection: 2A fuse

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

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

### Mechanical

### Inverter Module
- **Dimension:**
  - mm: 270D x 215W x 43.8H
  - inches: 10.63D x 8.46W x 1.72H
  - Weight: 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)

### Controller Module
- **Dimension:**
  - 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)

### 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 global 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.
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.

In normal operation, all incoming AC power is rectified to DC power, supplying the DC bus. The output inverter then inverts the DC power to AC power to support the critical loads. When the AC input is lost or goes out of range, the UPS draws power from its battery so that AC output is not affected. Because the AC input with its spikes, voltage blips and anomalies is first converted to DC, there is less need for using the battery when these AC input variances occur. Less battery usage preserves battery capacity for extended outages, and 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
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 frequency 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
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
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: CSA/CE*
EMI: Class A FCC/CISPR [EN 50091-2-1995]

*CE applies to 230 Vac version only
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 326Vac
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: CSAus/CE*
EMI: Class A FCC/CISPR [EN 50091-2:1995]

*CE applies to 230 Vac version only
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

Agency Compliance

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

*CE applies to 230 Vac version only

Mechanical

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

**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:
- 0.93A @ 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: CSAus, CE
EMI: Class A FCC/CISPR, EN50091-1-2, EN60950
NEMA: 3R

**CE applies to 230 Vac version only**
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) is suitable for most extreme operating environments.

Temperature compensated battery charging protects batteries from over charging at extreme temperatures.

---

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: 2.6A 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 (43.4lbs)

#### 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
- CSA, CE**

**EMI:**
- Level A FCC, CISPR22, EN55022

**NEMA:**
- 3R

**CE applies to 230Vac version only**
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) is suitable for most extreme operating environments.

Temperature compensated battery charging protects batteries from over charging at extreme temperatures.

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

### Mechanical

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions (mm)</th>
<th>Dimensions (inches)</th>
<th>Weight (without batteries)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alpha Micro</strong></td>
<td>500H x 358W x 294D</td>
<td>19.7H x 14.1W x 11.6D</td>
<td>19.7kg (43.4lbs)</td>
</tr>
<tr>
<td><strong>Alpha Micro XL</strong></td>
<td>776H x 358W x 294D</td>
<td>30.6H x 14.1W x 11.6D</td>
<td>19.7kg (49.8lbs)</td>
</tr>
<tr>
<td><strong>Alpha Micro XL3</strong></td>
<td>1330H x 358W x 294D</td>
<td>52.4H x 14.1W x 11.6D</td>
<td>22.6kg (69.2lbs)</td>
</tr>
</tbody>
</table>

### Agency Compliance

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

Marks: CSA, 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.

<table>
<thead>
<tr>
<th>Plug and receptacle diagram</th>
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</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram" /></td>
</tr>
</tbody>
</table>

### Application Specific Models

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

### 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

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</tr>
</thead>
<tbody>
<tr>
<td>Output power rating</td>
<td>1000VA/750W</td>
<td>1500VA/1000W</td>
<td>2000VA/1334W</td>
<td>2500VA/1667W</td>
<td>3000VA/2000W</td>
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</tbody>
</table>

### 60Hz models (CFR, CFR-NT & CFR-M)

| Input voltage (Vac) nominal | 120 | 120/208/240 | 120/208/240 | 120/208/240 | 120/208/240 |
| Output voltage (Vac) nominal | 120 | 120/208/240 | 120/208/240 | 120/208/240 | 120/208/240 |

### 50Hz models (CFR-E)

| Input/Output voltage (Vac) nominal | 230 | 230 | 230 | 230 | 230 |
| Typical efficiency - AC/AC 100% load | 90% | 90% | 90% | 90% | 90% |
| Typical heat output - line mode | 284 BTU/h | 427 BTU/h | 398 BTU/h | 636 BTU/h | 758 BTU/h |

### Mechanical

| Dimensions | inches | 10H x 8.5W x 20D | 21H x 8.5W x 22.5D | 21H x 8.5W x 22.5D | 21H x 8.5W x 22.5D | 21H x 8.5W x 22.5D |
| mm | 254H x 216W x 508D | 533H x 216W x 571D | 533H x 216W x 571D | 533H x 216W x 571D | 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*

| Extended battery runtime options* | EBP 24A | EBP 48A | EBP 48A | EBP 48A | EBP 48A |
| Total runtime** | 32min | 1hr 39min | 1hr 10min | 52min | 1hr 15min |
| EBP 24C | EBP 48E | EBP 48E | EBP 48E | EBP 48E |
| Total runtime** | 2hrs 12min | 3hrs 45min | 2hrs 48min | 2hrs 10min | 2hrs 30min |
| EBP 24E | | | | |
| Total runtime** | 5hrs 12min | | | | |

### 60Hz power connector options†

| CFR-NT models | L5-15P | L5-15P | T. B. | L5-20P | L5-20P | T. B. | L6-30P | L6-30P | L6-30P | L6-30P | L6-30P | L6-30P | L6-30P | L6-30P |
| CFR-NT models | L5-15R | L5-15R | L5-15R | L5-30R | L5-30R | L5-30R | L6-30R | L6-30R | L6-30R | L6-30R | L6-30R | L6-30R | L6-30R | L6-30R |

### 50Hz power connector options†

<table>
<thead>
<tr>
<th>Input /Output: CFR-E models</th>
<th>British</th>
<th>Australian</th>
<th>Schuko</th>
<th>British</th>
<th>Australian</th>
<th>Schuko</th>
<th>British</th>
<th>Australian</th>
<th>Schuko</th>
<th>British</th>
<th>Australian</th>
<th>T. B.</th>
<th>British</th>
<th>Australian</th>
<th>T. B.</th>
</tr>
</thead>
</table>

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* 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**

<table>
<thead>
<tr>
<th>Marks:</th>
<th>CSA 107.1-01, CAN/CSA 601.1-M90</th>
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</thead>
</table>

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**Power Connector Options**

<table>
<thead>
<tr>
<th>Input: Hospital Grade NEMA STD</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image.png" alt="Connector Options" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Output: Hospital Grade NEMA STD</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image.png" alt="Connector Options" /></td>
</tr>
</tbody>
</table>

---

![AlphaMED back panel](image.png)
**Nominal Specifications**

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

* 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**

<table>
<thead>
<tr>
<th>EBP 48A</th>
<th>EBP 48E</th>
<th>EBP 1275-48R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions:</td>
<td>Dimensions:</td>
<td>Dimensions:</td>
</tr>
<tr>
<td>inches: 10.5H x 8.5W x 10.5D</td>
<td>inches: 21.5H x 8.5W x 21.5D</td>
<td>inches: 30.3H x 22.0W x 31.5D</td>
</tr>
<tr>
<td>mm: 267H x 216W x 267D</td>
<td>mm: 546H x 216W x 546D</td>
<td>mm: 770H x 660W x 800D</td>
</tr>
<tr>
<td>Weight: 58kg (127lbs)</td>
<td>Weight: 141kg (312lbs)</td>
<td>Weight: 411kg (905lbs)</td>
</tr>
<tr>
<td>Capacity: 33Ah</td>
<td>Capacity: 88Ah</td>
<td>Capacity: 264Ah</td>
</tr>
</tbody>
</table>
ALI Elite
Indoor UPS Solutions

- 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

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

*Rounded to the nearest minute
> 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**

<table>
<thead>
<tr>
<th>Tower</th>
<th>Model</th>
<th>P/N</th>
<th>Tower</th>
<th>Model</th>
<th>P/N</th>
<th>Tower</th>
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<th>Model</th>
<th>P/N</th>
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<tbody>
<tr>
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<td>ALI Elite 1000TXL</td>
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<td>ALI Elite 1500TXL</td>
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<td>Rack mount</td>
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<td>017-747-81</td>
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<td>NEMA 5-15P</td>
<td>NEMA L5-20P</td>
<td>NEMA L5-30P</td>
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<td>Breaker</td>
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<tr>
<td>Audible noise</td>
<td>&lt;40dBA @ 1m</td>
<td>&lt;45dBA @ 1m</td>
<td>&lt;45dBA @ 1m</td>
<td>&lt;45dBA @ 1m</td>
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<td></td>
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<td></td>
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<tr>
<td>Receptacles</td>
<td>6 NEMA 5-15R</td>
<td>6 NEMA 5-15R</td>
<td>6 NEMA 5-20R</td>
<td>4 NEMA 5-15R, 1 NEMA 5-30R</td>
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</tr>
<tr>
<td></td>
<td>6 NEMA 5-15R</td>
<td>6 NEMA 5-15R</td>
<td>6 NEMA 5-20R</td>
<td>4 NEMA 5-15R, 1 NEMA 5-30R</td>
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## Nominal Specifications

### Battery

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<th>DC voltage</th>
<th>ALIBP 1000T</th>
<th>ALIBP1500T</th>
<th>ALIBP2/3000T</th>
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<tbody>
<tr>
<td>24V</td>
<td>8.9H x 6.7W x 17.7D</td>
<td>16.9H x 6.7W x 18.9D</td>
<td>16.9H x 6.7W x 18.9D</td>
</tr>
<tr>
<td>36V</td>
<td>16.9H x 6.7W x 18.9D</td>
<td>16.9H x 6.7W x 18.9D</td>
<td>16.9H x 6.7W x 21.6D</td>
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<tr>
<td>48V</td>
<td>226.1H x 170.2W x 449.6D</td>
<td>429.3H x 170.2W x 480.1D</td>
<td>429.3H x 170.2W x 548.6D</td>
</tr>
<tr>
<td>48V</td>
<td>30kg (66lbs)</td>
<td>46kg (94.8lbs)</td>
<td>57kg (125.7lbs)</td>
</tr>
</tbody>
</table>

### Mechanical

#### Tower

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>ALIBP 1000T</th>
<th>ALIBP1500T</th>
<th>ALIBP2/3000T</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>5.1H x 16.9W x 22.0D</td>
<td>5.1H x 16.9W x 22.0D</td>
<td>5.1H x 16.9W x 22.0D</td>
</tr>
<tr>
<td>mm</td>
<td>129.5H x 429.3W x 558.2D</td>
<td>129.5H x 429.3W x 558.2D</td>
<td>129.5H x 429.3W x 558.2D</td>
</tr>
<tr>
<td>Weight</td>
<td>19kg (41.9lbs)</td>
<td>24kg (52.9lbs)</td>
<td>27kg (59.5lbs)</td>
</tr>
<tr>
<td>Approx. ship weight</td>
<td>21kg (46.2lbs)</td>
<td>26kg (57.3lbs)</td>
<td>29kg (63.7lbs)</td>
</tr>
</tbody>
</table>

#### Rack mount

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>ALIBP 1000T</th>
<th>ALIBP1500T</th>
<th>ALIBP2/3000T</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>8.5H x 6.7W x 18.9D</td>
<td>8.5H x 6.7W x 18.9D</td>
<td>8.5H x 6.7W x 18.9D</td>
</tr>
<tr>
<td>mm</td>
<td>215.9H x 170.2W x 480.1D</td>
<td>215.9H x 170.2W x 480.1D</td>
<td>215.9H x 170.2W x 480.1D</td>
</tr>
<tr>
<td>Weight</td>
<td>31.5kg (69.4lbs)</td>
<td>25.5kg (56.2lbs)</td>
<td>31.5kg (69.4lbs)</td>
</tr>
<tr>
<td>Approx. ship weight</td>
<td>33.5kg (73.9lbs)</td>
<td>27.5kg (60.6lbs)</td>
<td>33.5kg (73.9lbs)</td>
</tr>
</tbody>
</table>

### Battery pack

#### Model ALIBP 1000T

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>ALIBP 1000T</th>
<th>ALIBP1500T</th>
<th>ALIBP2/3000T</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>16.9W x 15.7D x 5.1H</td>
<td>16.9W x 15.7D x 5.1H</td>
<td>16.9W x 15.7D x 5.1H</td>
</tr>
<tr>
<td>mm</td>
<td>429.3W x 398.8D x 129.5H</td>
<td>429.3W x 398.8D x 129.5H</td>
<td>429.3W x 398.8D x 129.5H</td>
</tr>
<tr>
<td>Weight</td>
<td>29.65kg (64.5lbs)</td>
<td>29.65kg (64.5lbs)</td>
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</tr>
<tr>
<td>Approx. ship weight</td>
<td>32.95kg (72.6lbs)</td>
<td>32.95kg (72.6lbs)</td>
<td>32.95kg (72.6lbs)</td>
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</table>

#### Model ALIBP 1000RM

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>ALIBP 1000RM</th>
<th>ALIBP1500RM</th>
<th>ALIBP2/3000RM</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>8.9H x 6.7W x 17.7D</td>
<td>16.9H x 6.7W x 18.9D</td>
<td>16.9H x 6.7W x 18.9D</td>
</tr>
<tr>
<td>mm</td>
<td>226.1H x 170.2W x 449.6D</td>
<td>429.3H x 170.2W x 480.1D</td>
<td>429.3H x 170.2W x 548.6D</td>
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<tr>
<td>Weight</td>
<td>30kg (66lbs)</td>
<td>46kg (94.8lbs)</td>
<td>57kg (125.7lbs)</td>
</tr>
<tr>
<td>Approx. ship weight</td>
<td>32kg (70.5lbs)</td>
<td>49kg (108lbs)</td>
<td>53kg (116lbs)</td>
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### Battery Runtimes*

<table>
<thead>
<tr>
<th>Model</th>
<th>ALI Elite 1000 TXL/RMXL</th>
<th>ALI Elite 1500 TXL/RMXL</th>
<th>ALI Elite 2000 TXL/RMXL</th>
<th>ALI Elite 3000 TXL/RMXL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tower at 50% Load</td>
<td>UPS</td>
<td>26min</td>
<td>44min</td>
<td>44min</td>
</tr>
<tr>
<td></td>
<td>1 EBP</td>
<td>169min</td>
<td>111min</td>
<td>111min</td>
</tr>
<tr>
<td></td>
<td>2 EBP</td>
<td>307min</td>
<td>176min</td>
<td>176min</td>
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<tr>
<td>Tower at 100% Load</td>
<td>UPS</td>
<td>10min</td>
<td>16min</td>
<td>16min</td>
</tr>
<tr>
<td></td>
<td>1 EBP</td>
<td>77min</td>
<td>47min</td>
<td>47min</td>
</tr>
<tr>
<td></td>
<td>2 EBP</td>
<td>147min</td>
<td>83min</td>
<td>83min</td>
</tr>
<tr>
<td>Rack at 50% Load</td>
<td>UPS</td>
<td>26min</td>
<td>13min</td>
<td>13min</td>
</tr>
<tr>
<td></td>
<td>1 EBP</td>
<td>144min</td>
<td>93min</td>
<td>70min</td>
</tr>
<tr>
<td></td>
<td>2 EBP</td>
<td>277min</td>
<td>184min</td>
<td>131min</td>
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<tr>
<td>Rack at 100% Load</td>
<td>UPS</td>
<td>10min</td>
<td>5min</td>
<td>5min</td>
</tr>
<tr>
<td></td>
<td>1 EBP</td>
<td>68min</td>
<td>41min</td>
<td>30min</td>
</tr>
<tr>
<td></td>
<td>2 EBP</td>
<td>131min</td>
<td>85min</td>
<td>58min</td>
</tr>
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</table>

*Rounded to the nearest minute
Pinnacle Plus
Indoor UPS Solutions

- 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
- 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
# Nominal Specifications

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

<table>
<thead>
<tr>
<th>Model</th>
<th>PINNACLE Plus 1000T</th>
<th>PINNACLE Plus 1500T</th>
<th>PINNACLE Plus 2000T</th>
<th>PINNACLE Plus 3000T</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tower</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at 50% load</td>
<td>UPS 15min</td>
<td>11min</td>
<td>15min</td>
<td>11min</td>
</tr>
<tr>
<td></td>
<td>1 EBP 118min</td>
<td>72min</td>
<td>63min</td>
<td>38min</td>
</tr>
<tr>
<td></td>
<td>2 EBP 240min</td>
<td>148min</td>
<td>118min</td>
<td>72min</td>
</tr>
<tr>
<td>at 100% load</td>
<td>UPS 6min</td>
<td>4min</td>
<td>6min</td>
<td>4min</td>
</tr>
<tr>
<td></td>
<td>1 EBP 56min</td>
<td>32min</td>
<td>29min</td>
<td>16min</td>
</tr>
<tr>
<td></td>
<td>2 EBP 112min</td>
<td>70min</td>
<td>55min</td>
<td>33min</td>
</tr>
<tr>
<td><strong>Rack</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at 50% load</td>
<td>UPS 15min</td>
<td>11min</td>
<td>15min</td>
<td>11min</td>
</tr>
<tr>
<td></td>
<td>1 EBP 118min</td>
<td>72min</td>
<td>63min</td>
<td>38min</td>
</tr>
<tr>
<td></td>
<td>2 EBP 240min</td>
<td>148min</td>
<td>118min</td>
<td>72min</td>
</tr>
<tr>
<td>at 100% load</td>
<td>UPS 6min</td>
<td>4min</td>
<td>6min</td>
<td>4min</td>
</tr>
<tr>
<td></td>
<td>1 EBP 56min</td>
<td>32min</td>
<td>29min</td>
<td>16min</td>
</tr>
<tr>
<td></td>
<td>2 EBP 112min</td>
<td>70min</td>
<td>55min</td>
<td>33min</td>
</tr>
</tbody>
</table>

*Rounded to the nearest minute
Pinnacle Plus High Power
Indoor UPS Solutions

- 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:
- 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
- UPS fault - continuous

Audible alarm:
- On battery - 5 second interval

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

<table>
<thead>
<tr>
<th>Tower</th>
<th>Model</th>
<th>PINNACLE Plus 6000T</th>
<th>PINNACLE Plus 10000T</th>
<th>PINNACLE Plus 12000T</th>
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</thead>
<tbody>
<tr>
<td>P/N</td>
<td>017-751-400</td>
<td>017-751-300</td>
<td>017-751-500</td>
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<tr>
<td>Capacity</td>
<td>6000VA/4200W</td>
<td>10000VA/7000W</td>
<td>12000VA/8400W</td>
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<tr>
<td>Input plug</td>
<td>Terminal Block</td>
<td>Terminal Block</td>
<td>Terminal Block</td>
<td></td>
</tr>
<tr>
<td>Input protection</td>
<td>Circuit Breaker</td>
<td>Circuit Breaker</td>
<td>Circuit Breaker</td>
<td></td>
</tr>
<tr>
<td>Receptacles</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Tower</td>
<td>Terminal Block</td>
<td>Terminal Block</td>
<td>Terminal Block</td>
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<td>Battery</td>
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<td>DC voltage</td>
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<td>240V</td>
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<td>Mechanical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>inches</td>
<td>22.4H x 10.1W x 23.2D</td>
<td>28.2H x 10.1W x 27.2D</td>
<td>34.6H x 13.5W x 27.2D</td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td>699.4H x 257.8W x 699.8D</td>
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<td>Net weight</td>
<td>95kg (209lbs)</td>
<td>151kg (332lbs)</td>
<td>198kg (435lbs)</td>
<td></td>
</tr>
<tr>
<td>Approx. ship weight</td>
<td>Contact Alpha</td>
<td>Contact Alpha</td>
<td>Contact Alpha</td>
<td></td>
</tr>
<tr>
<td>Battery runtimes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tower at 50% load</td>
<td>UPS</td>
<td>17min</td>
<td>8min</td>
<td>17min</td>
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<tr>
<td>Tower at 100% load</td>
<td>UPS</td>
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<td>2min</td>
<td>7min</td>
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## Extended Run Time Battery Pack Specifications

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<th>Battery pack</th>
<th>PINBP6000T</th>
<th>PINBP10000/12000T</th>
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<tbody>
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<td>P/N</td>
<td>033-751-400</td>
<td>033-751-311</td>
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<td>Dimensions</td>
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</tr>
<tr>
<td></td>
<td>mm</td>
<td>258W x 697D x 570H</td>
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<tr>
<td>Weight</td>
<td>Contact Alpha</td>
<td></td>
</tr>
<tr>
<td>Approx. ship weight</td>
<td>Contact Alpha</td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th></th>
<th>40kVA/36KW</th>
<th>50kVA/45KW</th>
<th>60kVA/54KW</th>
<th>80kVA/72KW</th>
<th>100kVA/90KW</th>
<th>130kVA/117KW</th>
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<tbody>
<tr>
<td>Normal AC input</td>
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<td></td>
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<td></td>
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<tr>
<td>Input voltage (V)</td>
<td>480V Core, 3 Wire + G (220V, 208V, 600V w/ Aux Transformer 4 Wire + G)</td>
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<td></td>
<td></td>
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<tr>
<td>Frequency</td>
<td>60Hz +/-5%</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power factor</td>
<td>&lt;0.99</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Current distortion (THDI)</td>
<td>&lt;5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Bypass AC input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Bypass overload</td>
<td>10x nominal current for 1 cycle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load output</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output voltage</td>
<td>480V Core, 3 Wire + G (220V, 208V, 600V w/ Aux Transformer 4 Wire + G)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>60Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage regulation</td>
<td>+/-1.0% balance load, +/-2.5% unbalanced load</td>
<td></td>
<td></td>
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<tr>
<td>Voltage transient response</td>
<td>+/-5% for 100% step load, +/-1% for loss or return of AC input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage recovery time</td>
<td>Within 1% of nominal within 1 cycle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Voltage distortion</td>
<td>&lt;1% L-L and L-N for non-linear loads (&lt;2% max)</td>
<td></td>
<td></td>
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<tr>
<td>Inverter overload</td>
<td>150% for 1 min, 125% for 10min</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Heat rejection (BTU) @ 480V</td>
<td>9248</td>
<td>11560</td>
<td>13872</td>
<td>18496</td>
<td>19607</td>
<td>25489</td>
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<tr>
<td>Overall efficiency</td>
<td>Double conversion mode</td>
<td>Up to 94%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-20 to 45°C (-4 to 113°F)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Operating temperature</td>
<td>UPS: 0 to 40°C (32 to 104°F), Battery: 25°C (77°F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Operating altitude</td>
<td>1000 m</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>28W x 33.42D x 75H inches</td>
<td>28W x 33.42D x 75H inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>882 lbs</td>
<td>1146 lbs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matching maintenance bypass</td>
<td>28W x 33.42D x 75H inches</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Transformer cabinet</td>
<td>28W x 33.42D x 75H inches</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Distribution cabinet</td>
<td>42W x 33.42D x 75H inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top entry cabinet</td>
<td>14W x 33.42D x 75H inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery cabinet</td>
<td>26W x 33.42D x 75H inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery cabinet</td>
<td>32W x 33.42D x 75H inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery cabinet</td>
<td>48W x 33.42D x 75H inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parallel system bypass cabinet (480V only)</td>
<td>28 or 42W x 33.42D x 75H inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Galaxy 3000
Three Phase UPS

- 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 control
- Input Power Factor Correction (PFC) minimizes operating cost

### Nominal Specifications

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

<table>
<thead>
<tr>
<th>Model</th>
<th>10kVA</th>
<th>15kVA</th>
<th>20kVA</th>
<th>30kVA</th>
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</thead>
<tbody>
<tr>
<td><strong>Batteries</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backup time (minutes)</td>
<td>11/39/60</td>
<td>7/22/35/55</td>
<td>15/24/38</td>
<td>8/12/21</td>
</tr>
<tr>
<td><strong>Mechanical specifications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard cabinet</td>
<td>inches</td>
<td>32.8W x 62.4H x 35.5D</td>
<td>32.8W x 62.4H x 35.5D</td>
<td>32.8W x 62.4H x 35.5D</td>
</tr>
<tr>
<td></td>
<td>cm</td>
<td>83.8W x 158.5H x 90.2D</td>
<td>83.8W x 158.5H x 90.2D</td>
<td>83.8W x 158.5H x 90.2D</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>0.94kg (2.065lbs)</td>
<td>0.94kg (2.065lbs)</td>
<td>0.94kg (2.065lbs)</td>
</tr>
<tr>
<td>Micro cabinet</td>
<td>inches</td>
<td>23W x 48.5H x 33.5D</td>
<td>23W x 48.5H x 33.5D</td>
<td>23W x 48.5H x 33.5D</td>
</tr>
<tr>
<td></td>
<td>cm</td>
<td>58.4W x 123.2H x 90.2D</td>
<td>58.4W x 123.2H x 90.2D</td>
<td>58.4W x 123.2H x 90.2D</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>0.94kg (2.065lbs)</td>
<td>0.94kg (2.065lbs)</td>
<td>0.94kg (2.065lbs)</td>
</tr>
<tr>
<td>Auxiliary cabinets</td>
<td>Maintenance bypass cabinet</td>
<td>inches</td>
<td>23W x 62.4H x 35.5D</td>
<td>23W x 62.4H x 35.5D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cm</td>
<td>58.4W x 158.5H x 90.2D</td>
<td>58.4W x 158.5H x 90.2D</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>353.8kg (780lbs)</td>
<td>353.8kg (780lbs)</td>
<td>353.8kg (780lbs)</td>
</tr>
<tr>
<td>Auxiliary cabinets</td>
<td>Output voltage transformer</td>
<td>inches</td>
<td>23W x 62.4H x 35.5D</td>
<td>23W x 62.4H x 35.5D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cm</td>
<td>58.4W x 158.5H x 90.2D</td>
<td>58.4W x 158.5H x 90.2D</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>353.8kg (780lbs)</td>
<td>353.8kg (780lbs)</td>
<td>353.8kg (780lbs)</td>
</tr>
<tr>
<td>Auxiliary cabinets</td>
<td>Distribution cabinet (24 to 42 pole)</td>
<td>inches</td>
<td>23W x 62.4H x 35.5D</td>
<td>23W x 62.4H x 35.5D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cm</td>
<td>58.4W x 158.5H x 90.2D</td>
<td>58.4W x 158.5H x 90.2D</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>353.8kg (780lbs)</td>
<td>353.8kg (780lbs)</td>
<td>353.8kg (780lbs)</td>
</tr>
</tbody>
</table>

---

**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, 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

<table>
<thead>
<tr>
<th>Non-locking plugs and receptacles</th>
<th>15 Ampere</th>
<th>20 Ampere</th>
<th>30 Ampere</th>
<th>50 Ampere</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Receptacle</strong></td>
<td>Plug</td>
<td>Receptacle</td>
<td>Plug</td>
<td>Receptacle</td>
</tr>
<tr>
<td><strong>125V</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpha P/N</td>
<td>531-003-10</td>
<td>530-001-10</td>
<td>531-006-10</td>
<td>530-003-10</td>
</tr>
<tr>
<td>For Canadian customers only</td>
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</tr>
<tr>
<td>Alpha P/N</td>
<td>531-005-10</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>250V</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Alpha P/N</td>
<td>531-004-10</td>
<td>530-002-10</td>
<td>531-008-10</td>
<td>530-004-10</td>
</tr>
<tr>
<td>For Canadian customers only</td>
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<td></td>
</tr>
<tr>
<td>Alpha P/N</td>
<td>531-007-10</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Locking plugs and receptacles</th>
<th>15 Ampere</th>
<th>20 Ampere</th>
<th>30 Ampere</th>
<th>50 Ampere</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Receptacle</strong></td>
<td>Plug</td>
<td>Receptacle</td>
<td>Plug</td>
<td>Receptacle</td>
</tr>
<tr>
<td><strong>125V</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpha P/N</td>
<td>531-201-10</td>
<td>530-201-10</td>
<td>531-203-10</td>
<td>530-204-10</td>
</tr>
<tr>
<td><strong>250V</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpha P/N</td>
<td>531-202-10</td>
<td>530-202-10</td>
<td>531-205-10</td>
<td>530-206-10</td>
</tr>
<tr>
<td><strong>125V/250V</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpha P/N</td>
<td>530-205-10</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
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.
CSEM6
-48Vdc to +/-190Vdc Converter

> 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

Agency Compliance

CSA: C22.2 60950-1 (NRTL/C)
UL: 60950-1 (NTRL)
FCC: 47 CFR part 15
EN: 55022 (CISPR 22)
Bellcore:
GR-63-CORE
GR-1089-CORE
GR-1089 Class A2 (with GFI) or A3
NEBS: Consult factory on system application
> +/-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

**CSM46**

+/-190Vdc to -48Vdc Converter

**P/N: 012-554-20**

**Electrical**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage:</td>
<td>195 to 380Vdc (+/- 97.5 to +/- 190Vdc)</td>
</tr>
<tr>
<td>Input current:</td>
<td>240mA +/- 2%</td>
</tr>
<tr>
<td>Efficiency:</td>
<td>&gt;85%</td>
</tr>
<tr>
<td>Output power:</td>
<td>Up to 75W</td>
</tr>
<tr>
<td>(de-rates linearly with input voltage)</td>
<td></td>
</tr>
<tr>
<td>Output voltage:</td>
<td>-50 to -55Vdc</td>
</tr>
<tr>
<td>Output current:</td>
<td>1.5A max</td>
</tr>
<tr>
<td>(de-rates linearly with input voltage)</td>
<td></td>
</tr>
<tr>
<td>Noise:</td>
<td>&lt;500mv p-p to 20MHz</td>
</tr>
<tr>
<td></td>
<td>&lt;250mVrms to 20MHz</td>
</tr>
</tbody>
</table>

**Performance / Features**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Converter A:</td>
<td>I/P OK (green LED)</td>
</tr>
<tr>
<td>Converter A:</td>
<td>O/P OK (green LED)</td>
</tr>
<tr>
<td>Converter B:</td>
<td>I/P OK (green LED)</td>
</tr>
<tr>
<td>Converter B:</td>
<td>O/P OK (green LED)</td>
</tr>
<tr>
<td>Test points:</td>
<td>I/P voltage</td>
</tr>
<tr>
<td></td>
<td>O/P voltage</td>
</tr>
<tr>
<td>Protection:</td>
<td>Input fuses</td>
</tr>
<tr>
<td></td>
<td>Input current limit</td>
</tr>
<tr>
<td></td>
<td>Input transient protection</td>
</tr>
<tr>
<td></td>
<td>Input high and low voltage shutdown</td>
</tr>
<tr>
<td></td>
<td>Thermal shutdown</td>
</tr>
<tr>
<td></td>
<td>Output or/ing diodes</td>
</tr>
<tr>
<td></td>
<td>Output OVP</td>
</tr>
<tr>
<td></td>
<td>Reverse polarity protection</td>
</tr>
<tr>
<td>Miscellaneous:</td>
<td>Alarm masking switch for disabling shelf level alarmining</td>
</tr>
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</table>

**Mechanical**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions:</td>
<td>42H x 23W x 280D</td>
</tr>
<tr>
<td>Weight:</td>
<td>0.67kg (1.5lbs)</td>
</tr>
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</table>

**Environmental**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature:</td>
<td>40 to 75°C (-40 to 167°F) with external airflow</td>
</tr>
<tr>
<td>Humidity:</td>
<td>0 to 95% NC</td>
</tr>
</tbody>
</table>

**Shelves**

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical:</td>
<td>45H x 273W x 311D</td>
</tr>
<tr>
<td></td>
<td>1.75H x 10.75W x 12.25D</td>
</tr>
<tr>
<td></td>
<td>(excludes connectors and mounting brackets)</td>
</tr>
<tr>
<td>Weight:</td>
<td>4.87kg (10.8lbs)</td>
</tr>
</tbody>
</table>

**Performance / Features**

| Access:                     | Front access                                       |
|                           | 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 ½” 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)             |
Integrated 8kW capacity 24-48Vdc converter system with front access distribution
Support for small to medium 48Vdc loads from legacy 24V power system
Integrated Cordex CXCi for advanced local and remote monitoring and control
Internal low voltage shutdown for cost effective integration into existing systems
Universal 19/23” mounting for flexible installation options into existing racks

P/N: 053-997-20

**Electrical**

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

**Output:**
- 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

**Dimensions:**
- mm: 222H x 438W x 310D
- inches: 8.75H x 17.24W x 12.2D

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

**Connections:**
- Load breaker: 18x sets, ¼"-20 studs on ½" centers
- Return bar: 18x sets, ¼” holes on ½” 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.
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

#### Multipurpose Power Supply

- 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

### Electrical

- **AC input voltage:** 90 to 320 Vac
- **AC input frequency:** 45 to 66 Hz
- **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 58 Vdc w/AC power
- **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 72.4H x 14D
    - Weight: 13.6kg (30lbs)

### Environment

#### Operating:

- With heater option: -40 to 115°F plus solar loading
- Without heater option: -10 to 115°F plus solar loading

#### Storage:

- -15 to 85°C (-5 to 185°F)

### User Interface

- **Local Alarms**
  - System LED: Green steady = system output normal, DC output
  - Battery LED: Yellow steady = system on battery
  - Replace battery: Red steady = replace one or two battery strings
  - Replace battery A&B (internal): Red steady = replace one or both battery strings

- **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

- **Remote Audible Indicator**
  - Alarm on: "Alarm Enable/Disable" toggle switch located on UPS

### 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

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

### Electrical

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC input voltage</td>
<td>120Vac or 240Vac</td>
</tr>
<tr>
<td>AC input frequency</td>
<td>50/60Hz</td>
</tr>
<tr>
<td>Surge protection</td>
<td>ANSI/IEEE Std. C62.41 to category A, B, or C</td>
</tr>
<tr>
<td></td>
<td>requirements, using a “Ring Wave” or</td>
</tr>
<tr>
<td></td>
<td>“Combination” waveform, at a level of 6kV</td>
</tr>
</tbody>
</table>

### 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)
- **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-STD BAT-7**: Battery 7.2AH AGM, 1 year warranty
- **AX-LONG BAT-7**: Battery 7.2AH AGM, 3 year warranty
- **AX-STD BAT-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**: 8.75W x 7.75H x 3.0D
- **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)
- **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**
- **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
- **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/IC, CE, C-Tick, RoHS to EU 2002/95/EC, Seismic zone 4 rated per GR-63
FlexPoint™ AX Series
FTTP ONT UPS System

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

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

**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-PC + 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 year
- **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

<table>
<thead>
<tr>
<th>Load/Temp</th>
<th>-40°C/-40°F</th>
<th>-20°C/-4°F</th>
<th>25°C/77°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2Ah</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7W</td>
<td>360</td>
<td>560</td>
<td>800</td>
</tr>
<tr>
<td>10W</td>
<td>160</td>
<td>360</td>
<td>500</td>
</tr>
<tr>
<td>15W</td>
<td>110</td>
<td>195</td>
<td>320</td>
</tr>
<tr>
<td>18W</td>
<td>80</td>
<td>156</td>
<td>240</td>
</tr>
<tr>
<td>20W</td>
<td>60</td>
<td>130</td>
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<td>25W</td>
<td>50</td>
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<td>170</td>
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<tr>
<td>30W</td>
<td>30</td>
<td>80</td>
<td>130</td>
</tr>
<tr>
<td>17Ah</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10W</td>
<td>750</td>
<td>1080</td>
<td>1240</td>
</tr>
<tr>
<td>15W</td>
<td>400</td>
<td>680</td>
<td>940</td>
</tr>
<tr>
<td>20W</td>
<td>60</td>
<td>440</td>
<td>680</td>
</tr>
<tr>
<td>25W</td>
<td>160</td>
<td>340</td>
<td>480</td>
</tr>
<tr>
<td>30W</td>
<td>140</td>
<td>232</td>
<td>400</td>
</tr>
</tbody>
</table>
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: ......... 2.27kg (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: ........... 5.9kg (13lbs)

**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)

![Diagram of Indoor Wall Mount Home Converter with Two Wire 8ft, 11.6Vdc Nominal, 24W Output, Two Conductor, Wall, Less than 30’ (10m)]

#### 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)

![Diagram of Indoor Wall Mount Home Converter with Two Wire 8ft, 11.6 to 16Vdc, Three Conductor, Wall, Less than 300’ (100m), 10.5 to 14Vdc, 30W Output, Power + Alarms, Less than 10’ (3m), 7.2Ah or 17Ah Battery Module]

#### Outdoor Powering – Non-UPS
Operational Temperature Range: -40 to 45°C (-40 to 113°F)

![Diagram of Meter Base and Meter, Outdoor Power-Ring Converter, 11.6Vdc Nominal, 24W Output, Two Conductor, Wall, Less than 30’ (10m)]

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

![Diagram of Meter Base and Meter, Outdoor Power-Ring Converter, 11.6 to 16Vdc, Three Conductor, Wall, Less than 100’ (30m), 10.5 to 14Vdc, 30W Output, Power + Alarms, Less than 10’ (3m), 7.2Ah or 17Ah Battery Module]
Standard Solutions

SOHO: Small Office Home Office
SBU: Small Business Unit
MDU: Multiple Dwelling Unit
MTU: Multiple Tenant Unit

FMPS 48Vdc
Fttx ONT UPS

CSM36
48V to +/-190V
DC-DC up converter

CSM46
+/-190V to 48V
DC-DC down converter

ONT: Optical Line Terminal

WDM

Optical Splitter

GPON: Gigabit Passive Optical Networking

Fiber

Copper pairs
(network powering)

Flexnet AX 12Vdc
Fttx ONT UPS

FlexPoint™
1230 Series Indoor
12Vdc 30W UPS

ONT

CENTRAL OFFICE / HEADEND

ONT

ONT

ON
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.
Cordex™
Controller Features

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 runaway
• Battery equalize: Manual, automatic, and periodic equalize charge modes, optional Battery Current Terminate function to prevent over charging of battery
• Battery boost mode: Offline high-voltage equalize charge with interlock safety feature
• Dynamic charge current control: Limits battery recharge current to a fixed value, helps to prevent thermal runaway
• Battery test: Sets rectifier voltage low and performs safe discharge of batteries through the connected system loads
• Battery capacity prediction: Calculates current battery capacity after a discharge
• Battery runtime 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
> 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

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
- **Communication ports:** RJ45 ethernet 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:** ................. 88H x 26W x 280D
- **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**
> 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
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

**Performance / Features**

- Display: 4 segment LCD for V/I display
- 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**

- 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
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

ICES-03 Class B
EN55022 (CISPR 22) Class B
C-Tick (Australia)

Immunity: ..................... EN 61000-4-2
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6
Cordex™ CXCM4 System Controller

- Modular, hot swappable 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
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)**

**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
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
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<tr>
<th>Model</th>
<th>CXCM</th>
<th>CXCM1</th>
<th>CXCM2</th>
<th>CXCM4</th>
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<tbody>
<tr>
<td><strong>Specifications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen</td>
<td>Full graphic LCD 160 x 160 pixels</td>
<td>Basic current / Volts display only</td>
<td>Full graphic LCD 160 x 160 pixels</td>
<td>Full graphic LCD 160 x 160 pixels</td>
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<tr>
<td>Inputs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog</td>
<td>2V, 2T, 1C, 1BIV</td>
<td>1V, 1C, 2T</td>
<td>1V, 2T, 2C, 4BIV</td>
<td>2V, 2T, 4C, 2BIV</td>
</tr>
<tr>
<td>Digital</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Alarm relay outputs</td>
<td>8 Form C</td>
<td>4 Form C</td>
<td>6 Form C</td>
<td>8 Form C</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mm</td>
<td>177H x 74W x 255D</td>
<td>41.4H x 84.4W x 256.8D</td>
<td>86.4H x 128W x 247D</td>
<td>17H x 87W x 257D</td>
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<tr>
<td>inches</td>
<td>6.9H x 2.9W x 10D</td>
<td>1.63H x 334W x 10.11D</td>
<td>3.4H x 5W x 9.7D</td>
<td>7H x 3.4W x 10.1D</td>
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<table>
<thead>
<tr>
<th>Model</th>
<th>CXCI</th>
<th>CXCR/CXCP</th>
<th>CXCR HV</th>
</tr>
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<tbody>
<tr>
<td><strong>Specifications</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Screen</td>
<td>Basic current / Volts display only</td>
<td>Full graphic LCD 160 x 160 pixels</td>
<td>Full graphic LCD 160 x 160 pixels</td>
</tr>
<tr>
<td>Inputs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog</td>
<td>1V, 1C, 2T</td>
<td>2V, 2T, 4C, 2BIV</td>
<td>1V, 2T, 1C, 4BIV, 1GFI</td>
</tr>
<tr>
<td>Digital</td>
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<td>8</td>
<td>4</td>
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<tr>
<td>Alarm relay outputs</td>
<td>4 Form C</td>
<td>8 Form C</td>
<td>8 Form C</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mm</td>
<td>88H x 26W x 280D</td>
<td>131H x 431W x 100D</td>
<td>131H x 431W x 100D</td>
</tr>
<tr>
<td>inches</td>
<td>3.5H x 1W x 11D</td>
<td>5.1H x 16.9W x 3.9D</td>
<td>5.1H x 16.9W x 3.9D</td>
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**Rectifier shelf option availability**

<table>
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<tr>
<th>Model</th>
<th>CXCM</th>
<th>CXCM1</th>
<th>CXCM2</th>
<th>CXCM4</th>
<th>CXCI</th>
<th>CXCR/CXCP</th>
<th>CXCR HV</th>
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<tbody>
<tr>
<td>250W (12Vdc)</td>
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<tr>
<td>400W (24Vdc)</td>
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<tr>
<td>650W (48Vdc)</td>
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<tr>
<td>1kW (48Vdc)</td>
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<td></td>
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<td>Yes</td>
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<tr>
<td>1.2kW (48Vdc)</td>
<td>Yes</td>
<td></td>
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<tr>
<td>1.8kW (48Vdc)</td>
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<tr>
<td>3.1kW (24Vdc)</td>
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<tr>
<td>3.6kW (48Vdc)</td>
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<td>Yes</td>
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<tr>
<td>1.1kW (125/220Vdc)</td>
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<tr>
<td>4.4kW (125/220Vdc)</td>
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<td></td>
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<td></td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>
Cordex™ 4R/8D ADIO
CXC Smart Peripheral

- 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
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.

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

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
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 61000-4-11
ANSI/IEEE C62.41 Cat B3

CXRC 48-650W
Cordex™ 1kW
48Vdc Modular Switched Mode Rectifier

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

<table>
<thead>
<tr>
<th>P/N: 010-566-20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical</strong></td>
</tr>
<tr>
<td><strong>Input voltage:</strong></td>
</tr>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th><strong>Performance / Features</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicators:</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Cooling:</strong></td>
</tr>
<tr>
<td><strong>Adjustments:</strong></td>
</tr>
<tr>
<td>(via CXC Controller)</td>
</tr>
<tr>
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<tr>
<td><strong>Protection:</strong></td>
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</table>

<table>
<thead>
<tr>
<th><strong>Mechanical</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions:</strong></td>
</tr>
<tr>
<td>mm: 177H x 71W x 250D</td>
</tr>
<tr>
<td>inches: 6.9H x 2.8W x 9.8D</td>
</tr>
<tr>
<td><strong>Weight:</strong> 2.9kg (6.4lbs)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Environmental</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature:</strong></td>
</tr>
<tr>
<td>Operation: -40 to 50°C (-40 to 122°F)</td>
</tr>
<tr>
<td>(with short periods up to 70°C/158°F)</td>
</tr>
<tr>
<td>Storage: -40 to 85°C (-40 to 185°F)</td>
</tr>
<tr>
<td><strong>Humidity:</strong> 0 to 95% RH non-condensing</td>
</tr>
<tr>
<td><strong>Elevation:</strong> -500 to 4000m (-1640 to 13120ft)</td>
</tr>
<tr>
<td><strong>Heat dissipation:</strong> &lt;295 BTU per hour</td>
</tr>
</tbody>
</table>

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

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:**
- >95% 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)

**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

**Psophometric noise:** <150mVp-p

### 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
- 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 HP 1.2kW Efficiency Chart](chart.png)
Cordex™ 1.8kW
48Vdc Modular Switched Mode Rectifier

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

### Electrical

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input voltage:</strong></td>
<td>Nominal: 208 to 277 Vac, Operating: 176 to 312 Vac, Extended: 176 to 90 Vac (de-rated power)</td>
</tr>
<tr>
<td><strong>Input frequency:</strong></td>
<td>45 to 66 Hz</td>
</tr>
<tr>
<td><strong>Power factor:</strong></td>
<td>&gt;0.99 (50 to 100% load)</td>
</tr>
<tr>
<td><strong>THD:</strong></td>
<td>&lt;5%</td>
</tr>
<tr>
<td><strong>Load regulation:</strong></td>
<td>&lt;=0.5% (static)</td>
</tr>
<tr>
<td><strong>Line regulation:</strong></td>
<td>&lt;=0.1% (static)</td>
</tr>
<tr>
<td><strong>Load transient response:</strong></td>
<td>&lt;=2% for 50 to 100% load step, 2ms recovery time</td>
</tr>
<tr>
<td><strong>Noise:</strong></td>
<td>Voice band: &lt;32dBm, Wide band: &lt;30mV RMS (10kHz to 10MHz) &lt;150mV pk to pk (10kHz to 100MHz)</td>
</tr>
<tr>
<td><strong>Psophometric:</strong></td>
<td>&lt;1mV</td>
</tr>
<tr>
<td><strong>Acoustic:</strong></td>
<td>&lt;60dBa @ 1m (3ft)</td>
</tr>
</tbody>
</table>

### Performance / Features

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

### Mechanical

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions:</strong></td>
<td>mm: 84H x 100W x 235D, inches: 3.3H x 3.94W x 9.25D</td>
</tr>
<tr>
<td><strong>Weight:</strong></td>
<td>2.8kg (6.2lbs)</td>
</tr>
</tbody>
</table>

### Environmental

- **Temperature:** Standard: -40 to 65°C (-40 to 149°F); Storage: -40 to 85°C (-40 to 185°F); 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” 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, ⅝” studs on ⅛” centers
- **Chassis ground:** ¼” studs on ⅛” 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, CFR47 (FCC) Part 15 Class B, ICES-03 Class B, EN55022 (CISPR 22) Class B, C-Tick (Australia), EN 61000-3-2, EN 61000-3-3
- **Immunity:** EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11, ANSI/IEEE C62.41 Cat B3
Cordex™ 3.6kW
48Vdc Modular Switched Mode Rectifier

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

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: <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
- 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
- IEC/EN55022 (CISPR 22) Class B
- C-Tick (Australia)
- EN 61000-3-2
- EN 61000-3-3
- EN 61000-4-4
- 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

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

<table>
<thead>
<tr>
<th>P/N 010-582-20</th>
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</thead>
</table>

### Electrical

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>90 to 320Vac</td>
</tr>
<tr>
<td>Input frequency</td>
<td>45 to 70Hz</td>
</tr>
<tr>
<td>Power factor</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>THD</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>Efficiency</td>
<td>&gt;90%</td>
</tr>
<tr>
<td>Power output</td>
<td>400W (max)</td>
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<tr>
<td>Output voltage</td>
<td>20 to 29Vdc</td>
</tr>
<tr>
<td>Output current</td>
<td>14A (current limited)</td>
</tr>
</tbody>
</table>
| 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 |

### Mechanical

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
</table>
| Dimensions | mm: 88.4H x 71.6W x 242D  
inches: 3.4H x 2.8W x 9.5D |
| Weight | 1.4kg (3lbs) |

### Environmental

<table>
<thead>
<tr>
<th>Specification</th>
<th>Range</th>
</tr>
</thead>
</table>
| Temperature | Operation: -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) |
| 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  
ICES-03 Class B  
EN55022 (CISPR 22) Class B  
C-Tick (Australia)  
EN 61000-3-2  
EN 61000-3-3 |
| Immunity | EN 61000-4-2  
EN 61000-4-3  
EN 61000-4-4  
EN 61000-4-5  
EN 61000-4-6  
EN 61000-4-11  
ANSI/IEEE C62.41 Cat B3 |
Cordex™ 3.1kW 24Vdc Modular Switched Mode Rectifier

- Available in 130A @ 24Vdc 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:** ........ Pre-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: ...............<32dBnC
  - 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
- **Controls:** .............. CAN interface to CXC
- **Adjustments:** ........ Float voltage
- **Protection:** ............ Current limit/short circuit

### 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
- **EMC:** ..................... ETSI 300 386
- **Emissions:** .............. CFR47 (FCC) Part 15 Class B
- **Immunity:** ............... EN61000-3-3
- **NEBS:** ................... GR-1089 CORE
- **NEBS:** ................... GR-69 CORE

- **UL 60950-1 1st edition
- **CE marked
- **IEC/EN 60950-1
- **ETSI 300 386
- **ICES-03 Class B
- **EN55022 (CISPR 22) Class B
- **C-Tick (Australia)
- **EN 61000-3-2
- **EN 61000-3-3
- **EN 61000-3-4
- **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
- **NEBS:** ................. GR-69 CORE
Cordex™ 250W
12Vdc Modular Switched Mode Rectifier

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

P/N: 010-587-20

**Electrical**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>90 to 320Vac</td>
</tr>
<tr>
<td>Input frequency</td>
<td>45 to 70Hz</td>
</tr>
<tr>
<td>Power factor</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>THD</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>Efficiency</td>
<td>&gt;90%</td>
</tr>
<tr>
<td>Power output</td>
<td>250W</td>
</tr>
<tr>
<td>Output voltage</td>
<td>10.5 to 14.5Vdc</td>
</tr>
<tr>
<td>Output current</td>
<td>18.5A @ 13.5Vdc (20A max)</td>
</tr>
<tr>
<td>Load regulation</td>
<td>&lt;±0.5% (static)</td>
</tr>
<tr>
<td>Line regulation</td>
<td>&lt;±0.1% (static)</td>
</tr>
<tr>
<td>Transient response</td>
<td>±2% for 50 to 100% load step</td>
</tr>
<tr>
<td></td>
<td>2ms recovery time</td>
</tr>
<tr>
<td>Wide band noise</td>
<td>&lt;30mVrms</td>
</tr>
<tr>
<td></td>
<td>&lt;150mVp-p</td>
</tr>
<tr>
<td>Psophometric noise</td>
<td>&lt;1mV</td>
</tr>
</tbody>
</table>

**Performance / Features**

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

Cooling:
- Natural convection

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

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

**Mechanical**

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

**Environmental**

Temperature:
- Operation: -40 to 50°C (-40 to 122°F)
- 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
- EN55022 (CISPR 22) Class B
- C-Tick (Australia)
- EN 61000-3-2
- EN 61000-3-3

Immunity:
- EN 61000-4-2
- EN 61000-4-3
- EN 61000-4-4
- EN 61000-4-5
- EN 61000-4-6
- EN 61000-4-11
- ANSI/IEEE C62.41 Cat B3
Cordex™ 1.1kW
125Vdc Modular Switched Mode Rectifier

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

P/N: 010-579-20

**Electrical**

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

Power output: 1100W continuous/module

Power factor: >0.99 (input current)

THD: <5%

Efficiency: >93%

Output voltage: 90 to 480Vdc

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

Power limiting and wide range AC input

93% efficiency with power factor correction

Convection cooled

Hot swappable, 4RU ultra compact design

P/N: 030-740-20

**Shelves**

>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

**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)
- 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)

**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
- CFR47 (FCC) Part 15 Class A
- ICES-03 Class A
- C-Tick (Australia)
- EN 61000-3-2
- EN 61000-3-3
- EN 61000-4-2
- EN 61000-4-3
- EN 61000-4-4
- EN 61000-4-5
- EN 61000-4-6
- EN 61000-4-11
- ANSI/IEEE C62.41 Cat B3

The Cordex™ 1.1kW is designed to meet the following:
Cordex™ 1.1kW
220Vdc Modular Switched Mode Rectifier

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

**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 and <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
- **Environmental**
  - **Temperature:**
    - Operation: -40 to 50°C (-40 to 122°F)
    - Storage: -50 to 85°C (-56 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**
  - **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
      - 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

- 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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage:</td>
<td>Nominal: 208 to 240Vac, Operating: 187 to 312Vac, Extended: 187 to 90Vac (de-rated)</td>
</tr>
<tr>
<td>Operating frequency:</td>
<td>45 to 70Hz</td>
</tr>
<tr>
<td>Power</td>
<td>4400W continuous/module</td>
</tr>
<tr>
<td>Power factor</td>
<td>&gt;0.99 (50 to 100% load)</td>
</tr>
<tr>
<td>THD</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>Efficiency</td>
<td>&gt;92%</td>
</tr>
<tr>
<td>Load regulation</td>
<td>Static &lt;0.5%</td>
</tr>
<tr>
<td>Line regulation</td>
<td>Static &lt;0.1%</td>
</tr>
<tr>
<td>Transient response</td>
<td>&lt;0.5% for 40 to 90% load step, 30ms recovery time</td>
</tr>
<tr>
<td>Wide band noise</td>
<td>220Vdc module: &lt;30mVrms, 125Vdc module: &lt;90mVrms, 700mV-p</td>
</tr>
<tr>
<td>Insulation</td>
<td>2.5kVac input-earth, 3kVac input-output, 2kVac output-earth, 0.5kVac signals-earth</td>
</tr>
<tr>
<td>Acoustic</td>
<td>&lt;60dBa @ 1m (3ft)</td>
</tr>
</tbody>
</table>

#### Performance / Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators</td>
<td>AC mains OK — green LED, Module OK — green LED, Module fail — red LED</td>
</tr>
<tr>
<td>Controls</td>
<td>CAN interface to CXC</td>
</tr>
<tr>
<td>Adjustments (via CXC controller)</td>
<td>Equalize voltage, High &amp; low voltage alarms, High voltage shutdown, Current limit, Slope, Start delay</td>
</tr>
<tr>
<td>Protection</td>
<td>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</td>
</tr>
</tbody>
</table>

#### Mechanical

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions:</td>
<td>mm: 160H x 87W x 300D, inches: 6.3H x 3.4W x 11.8D, Weight: 4.65kg (10.57lbs)</td>
</tr>
</tbody>
</table>

### Environmental

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature:</td>
<td>Standard: -40 to 50°C (-40 to 130°F), Extended: -40 to 75°C (-40 to 167°F)</td>
</tr>
<tr>
<td>Humidity:</td>
<td>20% to 95% non-condensing</td>
</tr>
<tr>
<td>Elevation:</td>
<td>-500 to 2800m (-1640 to 9186ft)</td>
</tr>
<tr>
<td>Heat dissipation:</td>
<td>&lt;1080 BTU per hour</td>
</tr>
</tbody>
</table>

### Shelves

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight:</td>
<td>8.5kg (19lbs)</td>
</tr>
<tr>
<td>Connections:</td>
<td>Fits 19&quot; rack flush/center mount only (5 modules)</td>
</tr>
</tbody>
</table>

### Agency Compliance

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

- 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 x 435D
  - inches: 3.5H x 4W x 17.13D
- Weight: 5kg (11lbs)

**Environmental**

- Temperature:
  - Operating: -20 to 40°C (-4 to 104°F)
  - Storage: -40 to 70°C (-40 to 158°F)
- Relative humidity: Up to 95%, non-condensing
- Operating altitude: Up to 1500m (4900ft) above sea level

**Agency Compliance**

- Safety: UL 60950
- Immunity: EN 61000-4
- Emissions: EN 55022 (Class A)
- RoHS: Compliant
INEX 1000, 1500
For installation in INEX System

- 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

> 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:**
- 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
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 (15.7lbs)

**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.
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

P/N: 012-526-20

Electrical

Input voltage: .................21 to 30Vdc
Input current: ..................Up to 94A @ 24V
Efficiency: ......................>88%
Input noise:
  Voice band: ......................<32dBmRMS
  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: ......................<38dBmRMS
  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 3.9W x 9.2D
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 CXC 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 61000-4-2, -3, -4, -6
  GR-1089 (where applicable)
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

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: | <32dBmC |
| 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: | <38dBmC |
| Voice 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

**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) |

**Agency Compliance**

| Safety: | CSA/UL C22.2 60950 (NRTL) |
| CE IEC/EN 60950 |
| EMI: | 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.
- 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

<table>
<thead>
<tr>
<th>P/N</th>
<th>Breakers</th>
<th>Positions</th>
<th>Capacity</th>
<th>Mounting</th>
<th>RU</th>
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<tbody>
<tr>
<td>020-107-20</td>
<td>AM bolt-in</td>
<td>16/22</td>
<td>550A</td>
<td>19/23&quot;</td>
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<tr>
<td>020-588-20</td>
<td>AM plug-in</td>
<td>16</td>
<td>400A</td>
<td>19&quot;</td>
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<tr>
<td>020-589-20</td>
<td>AM plug-in</td>
<td>20</td>
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<td>020-671-20</td>
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<td>020-675-20</td>
<td>AM plug-in</td>
<td>18</td>
<td>600A</td>
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<td>020-534-20</td>
<td>GJ</td>
<td>3</td>
<td></td>
<td>19/23&quot;</td>
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<tr>
<td>020-578-20</td>
<td>GJ</td>
<td>4</td>
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<td>23&quot;</td>
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Fuse Panels
Stand-Alone DC Distribution

- 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

<table>
<thead>
<tr>
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<tr>
<td>Breakers</td>
<td>GMT</td>
<td>GMT</td>
<td>TPL</td>
<td>TPS*</td>
<td>TPS*</td>
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<td>90A</td>
<td>1200A</td>
<td>400A</td>
<td>400A</td>
<td>600A</td>
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<td>23&quot;</td>
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<td>5</td>
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<td>3</td>
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</table>

*Requires AM plug-in breaker cartridge for TPS fuse mount (520-059-10)
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

<table>
<thead>
<tr>
<th>Model</th>
<th>Single tier</th>
<th>Two tier</th>
<th>Four tier</th>
</tr>
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<td>020-635-20</td>
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<td>AM plug-in</td>
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<td>Positions</td>
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<td>40-48</td>
<td>80-96</td>
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<td>Capacity</td>
<td>600A</td>
<td>1200A</td>
<td>2000A</td>
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<td>RU</td>
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<td>9</td>
<td>17</td>
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Modular Distribution Tier Options

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<td>24 position AM plug-in</td>
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<td></td>
<td>20 position AM plug-in w/ 600A LVD</td>
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<tr>
<td></td>
<td>3 position GJ</td>
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<td></td>
<td>3 position GJ w/ 600A LVD</td>
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<td></td>
<td>Dual voltage</td>
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<tr>
<td></td>
<td>12x primary &amp; 10x secondary (AM plug-in)</td>
</tr>
<tr>
<td></td>
<td>16x primary &amp; 6x secondary (AM plug-in)</td>
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<tr>
<td></td>
<td>8x primary (w/ LVD) &amp; 10x secondary (AM plug-in)</td>
</tr>
<tr>
<td></td>
<td>12x primary (w/ LVD) &amp; 6x secondary (AM plug-in)</td>
</tr>
</tbody>
</table>

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

- 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)

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

Rectifier input:
Hot: .................................2x sets ½” holes on 1” centers
Return: ..............................2x sets ½” holes on 1” centers
Alarm: ...............................1.31 to 0.128mm² (#16 to #26AWG)
Communications: ...............Terminal blocks: Internal I/O
DB (serial) connection(s): CXCI and CXCM2 I/O
RJ-12 Offset: CAN for optional ADIO
Access: .........................Front access after installation with 1RU required above panel for tooling

Environmental

Temperature: ......................-40 to 65°C (-40 to 149°F)
-40 to 55°C(-40 to 131°F) de-rated when L71 (24V LVD) equipped
Humidity: ........................0 to 95% RH non-condensing
Elevation: ..........................-500 to 4000m (-1640 to 13124ft)

Related Components

Distribution:
L87: .................................18x load positions (AM plug-in breaker)
L88: .................................14x load positions & 4x battery positions (AM plug-in breaker)

System options:
L71: .................................24V LVD
L72: .................................48V LVD
L84: .................................400A shunt
L74: .................................CXCI I/O extension
L75: .................................CXCM2 I/O extension
L79: .................................4R/8D ADIO
L93: .................................Top cover

External options:
614-840-13: .................... Bus bar for UDC & single 19/23” 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
## Distribution Panel Overview
### DC Distribution Options

<table>
<thead>
<tr>
<th>P/N</th>
<th>Fuse position</th>
<th>Fuse type</th>
<th>Breaker position</th>
<th>Breaker type</th>
<th>Capacity</th>
<th>Mounting</th>
<th>Front access</th>
<th>RU</th>
<th>Additional options</th>
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<tbody>
<tr>
<td>020-107-20</td>
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<td>16/22 AM</td>
<td>16</td>
<td>AM</td>
<td>550A</td>
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<tr>
<td>020-588-20</td>
<td>16*</td>
<td>TPS*</td>
<td>16</td>
<td>AM</td>
<td>400A</td>
<td>19/23'</td>
<td>Yes</td>
<td>5</td>
<td>Gnd bar, LVD</td>
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<tr>
<td>020-589-20</td>
<td>20*</td>
<td>TPS*</td>
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<td>400A</td>
<td>23'</td>
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<td>5</td>
<td>Gnd bar, LVD</td>
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<tr>
<td>020-671-20</td>
<td>24*</td>
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<td>23'</td>
<td>No</td>
<td>3</td>
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</tr>
<tr>
<td>020-675-20</td>
<td>18*</td>
<td>TPS*</td>
<td>18</td>
<td>AM</td>
<td>600A</td>
<td>19/23'</td>
<td>No</td>
<td>3</td>
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</tr>
<tr>
<td>020-534-20</td>
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<td>GJ</td>
<td>GJ</td>
<td>19/23'</td>
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<tr>
<td>020-578-20</td>
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<td>1</td>
<td>Gnd bar</td>
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<td>020-597-20</td>
<td>2</td>
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<td>4</td>
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<td>18*</td>
<td>TPS*</td>
<td>18</td>
<td>AM</td>
<td>300A</td>
<td>19/23'</td>
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<td>3</td>
<td>Controller I/O, LVD, Shunt, Batt breakers</td>
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<tr>
<td>020-645-20</td>
<td>20-24*</td>
<td>TPS*</td>
<td>20-24</td>
<td>AM</td>
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<td>40-48*</td>
<td>TPS*</td>
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<td>AM</td>
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<td>TPS*</td>
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<td>23'</td>
<td>Yes</td>
<td>17</td>
<td>Controller, LVD, Shunt</td>
</tr>
</tbody>
</table>

**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).
## Circuit Breakers & Fuses

### DC Distribution Options

#### Breakers

<table>
<thead>
<tr>
<th>P/N</th>
<th>Description</th>
<th></th>
<th>P/N</th>
<th>Description</th>
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<th>P/N</th>
<th>Description</th>
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<td>747-011-20</td>
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<td>470-120-10</td>
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<td>470-300-10</td>
<td>1 Amp, Mid-Trip</td>
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<td>470-125-10</td>
<td>125 Amp</td>
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<td>470-188-10</td>
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#### Fuses

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</tr>
<tr>
<td>460-082-10</td>
<td>1.5 Amp</td>
<td></td>
<td>460-143-10</td>
<td>225 Amp</td>
<td></td>
<td>460-218-10</td>
<td>6 Amp</td>
</tr>
<tr>
<td>460-083-10</td>
<td>2 Amp</td>
<td></td>
<td>460-139-10</td>
<td>250 Amp</td>
<td></td>
<td>460-219-10</td>
<td>10 Amp</td>
</tr>
<tr>
<td>460-013-10</td>
<td>3 Amp</td>
<td></td>
<td>460-144-10</td>
<td>300 Amp</td>
<td></td>
<td>460-220-10</td>
<td>15 Amp</td>
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<tr>
<td>460-085-10</td>
<td>4 Amp</td>
<td></td>
<td>460-145-10</td>
<td>400 Amp</td>
<td></td>
<td>460-221-10</td>
<td>20 Amp</td>
</tr>
<tr>
<td>460-084-10</td>
<td>5 Amp</td>
<td></td>
<td>460-146-10</td>
<td>500 Amp</td>
<td></td>
<td>460-222-10</td>
<td>25 Amp</td>
</tr>
<tr>
<td>460-105-10</td>
<td>7.5 Amp</td>
<td></td>
<td>460-147-10</td>
<td>600 Amp</td>
<td></td>
<td>460-223-10</td>
<td>30 Amp</td>
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<tr>
<td>460-069-10</td>
<td>10 Amp</td>
<td></td>
<td>460-148-10</td>
<td>800 Amp</td>
<td></td>
<td>460-224-10</td>
<td>40 Amp</td>
</tr>
<tr>
<td>460-150-10</td>
<td>15 Amp</td>
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<td>460-225-10</td>
<td>50 Amp</td>
<td></td>
<td>460-226-10</td>
<td>60 Amp</td>
</tr>
<tr>
<td>520-046-10</td>
<td>GMT Fuse Cover</td>
<td></td>
<td>460-227-10</td>
<td>70 Amp</td>
<td></td>
<td>460-228-10</td>
<td>80 Amp</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>460-229-10</td>
<td>90 Amp</td>
<td></td>
<td>460-230-10</td>
<td>100 Amp</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>520-059-10</td>
<td>TPS Fuse Holder (AM plug-in breaker)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.
### 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.

### 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

- **120V**
- **230V Option not available**

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

### 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.
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

<table>
<thead>
<tr>
<th>Mechanical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions:</td>
</tr>
<tr>
<td>mm: 687H x 559W x 457D</td>
</tr>
<tr>
<td>inches: 27H x 22W x 18D</td>
</tr>
<tr>
<td>Weight: 27.2kg (60lbs)</td>
</tr>
<tr>
<td>Construction: High strength corrosion resistant aluminum</td>
</tr>
<tr>
<td>Finish: Powdercoat</td>
</tr>
<tr>
<td>Equipment space: EIA standard 19&quot; 7RU space with one battery shelf</td>
</tr>
<tr>
<td>Cable entrance: Bottom of enclosure: 1 x 3&quot; diameter knock-out (2½&quot; trade size) 4 x 1.125&quot; diameter knock-out (¾&quot; trade size)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hinge type: Stainless steel piano hinge</td>
</tr>
<tr>
<td>Door prop: ¾&quot; aluminum rod, 2 positions</td>
</tr>
<tr>
<td>Door latch: 3 point latch with integrated Corbin Type 2 lock</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HVAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling: Thermostat controlled 48Vdc fan, 100 cfm or better, ON at 49°C (120°F) OFF at 32°C (89°F)</td>
</tr>
<tr>
<td>Door installed louvers: Equipped with washable filter</td>
</tr>
<tr>
<td>Audible noise: 46db at 1m (3ft) (when enclosure fan is on)</td>
</tr>
</tbody>
</table>

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)
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

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>687H x 559W x 457D</td>
</tr>
<tr>
<td>inches</td>
<td>27H x 22W x 18D</td>
</tr>
<tr>
<td>Weight</td>
<td>27.2kg (60lbs)</td>
</tr>
<tr>
<td>Construction</td>
<td>High strength corrosion resistant aluminum</td>
</tr>
<tr>
<td>Finish</td>
<td>Power coat finish</td>
</tr>
<tr>
<td>Equipment space</td>
<td>EIA standard 19&quot;, 7RU space with one battery shelf</td>
</tr>
<tr>
<td>Cable entrance</td>
<td>Bottom of enclosure: 1 x 3” diameter knock-out (2½” trade size) 4 x 1.125” diameter knock-out (¼” trade size)</td>
</tr>
</tbody>
</table>

## Hardware Specifications

- Hinge type: Stainless steel piano hinge
- Door prop: ¼” aluminum rod, 2 positions
- Door latch: Belcore 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

<table>
<thead>
<tr>
<th>Mechanical</th>
</tr>
</thead>
</table>
| **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 |

<table>
<thead>
<tr>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hinge type:</strong> Stainless steel piano hinge</td>
</tr>
<tr>
<td><strong>Door prop:</strong> ¼&quot; aluminum rod, 2 positions</td>
</tr>
<tr>
<td><strong>Handle:</strong> Stainless steel handle for extended life and improved look</td>
</tr>
<tr>
<td><strong>Door latch:</strong> 3 point latch with integrated Corbin Type 2 lock or optional best lock for maximum security</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HVAC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cooling:</strong> Thermostat controlled fans with filters</td>
</tr>
<tr>
<td><strong>Other:</strong> Bug screen protected top vent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Installation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access:</strong> Removable bottom shelf or easy wiring access</td>
</tr>
</tbody>
</table>

**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

*Shown with Alpha UPS module, transfer switches, and AlphaCell batteries.*
Alpha Outdoor Enclosure Side Mount 10

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

Consult your Alpha representative for P/N configurations

**Mechanical**

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

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)

### 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

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

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

**Door/lid**
- Completely removable

**Miscellaneous**
- Door prop rod
- 120V 20A or 240V 15A breaker
- Duplex quad
- Remove indicator light

**Enclosure Options**

- 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
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

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 92Ah 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)
> Designed for outdoor or secure indoor applications  
> Easily transportable  
> Durable aluminum construction  
> Pedestal, wall, pole or rack mount  
> Compact footprint

<table>
<thead>
<tr>
<th>Mechanical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions:</td>
</tr>
<tr>
<td>Weight:</td>
</tr>
<tr>
<td>Construction:</td>
</tr>
<tr>
<td>Finish:</td>
</tr>
<tr>
<td>Equipment space:</td>
</tr>
<tr>
<td>Cable entrance:</td>
</tr>
<tr>
<td>Equipment rails:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hinge type:</td>
</tr>
<tr>
<td>Handle:</td>
</tr>
<tr>
<td>Door latch:</td>
</tr>
<tr>
<td>Equipment shelves:</td>
</tr>
<tr>
<td>Battery trays (qty.):</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HVAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling:</td>
</tr>
<tr>
<td>Door installed louvers:</td>
</tr>
<tr>
<td>Audible noise:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental</th>
</tr>
</thead>
</table>
| Temperature: | Operating: -40°C to 46°C  
Storage: -40°C to 85°C |

<table>
<thead>
<tr>
<th>Installation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front access after installation filter access on front door</td>
</tr>
</tbody>
</table>

**Enclosure options**

- Wall mount, pole mount, pedestal mount, rack mount
- 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)
### 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

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

### 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)

### 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 Te45
72" Single Compartment Power Enclosure

> 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

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)
> 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

- 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**

<table>
<thead>
<tr>
<th>Mechanical</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions:</strong></td>
</tr>
<tr>
<td>mm: 2134H x 762W x 762D</td>
</tr>
<tr>
<td>inches: 84H x 30W x 30D</td>
</tr>
<tr>
<td><strong>Weight:</strong> Up to 590kg (1300lbs)</td>
</tr>
<tr>
<td><strong>Construction:</strong> High strength corrosion resistant aluminum</td>
</tr>
<tr>
<td><strong>Finish:</strong> Powdercoat</td>
</tr>
<tr>
<td><strong>Equipment space:</strong> 44RU</td>
</tr>
<tr>
<td><strong>Cable entrance:</strong> Knockouts on sides and bottom</td>
</tr>
<tr>
<td><strong>Equipment rails:</strong> 23&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hinge type:</strong> 5 position lift off hinges</td>
</tr>
<tr>
<td><strong>Handle:</strong> Padlockable</td>
</tr>
<tr>
<td><strong>Door latch:</strong> 3 point latch</td>
</tr>
<tr>
<td><strong>Battery trays (qty.):</strong> 5 Front terminal battery shelves</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HVAC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cooling:</strong> 4000 BTU air conditioner</td>
</tr>
<tr>
<td><strong>Heating:</strong> 500W</td>
</tr>
<tr>
<td><strong>Audible noise:</strong> &lt;65dbA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature:</strong></td>
</tr>
<tr>
<td>Operating: -40 to 46°C</td>
</tr>
<tr>
<td>Storage: -40 to 85°C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Installation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access:</strong> Removable rear panels and front hinged door provide full enclosure access</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front access after installation</td>
</tr>
</tbody>
</table>

**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: 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

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. 60963
Telcordia: ..........................GR-487 compliance - contact factory for specific compliances
NEMA rating: ......................Type 3R (CSAC22.2 No 94-M91)
Tempest Te44
Large Format Battery Enclosure

> Designed for Absolyte GNB 100 C-31 battery 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
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
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

### Nominal Specifications for Gold-HP

<table>
<thead>
<tr>
<th>Power Module</th>
<th>FXM 650</th>
<th>FXM 1100</th>
<th>FXM 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>International</td>
<td>North America</td>
<td>International</td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>120Vac</td>
<td>230Vac</td>
<td>120Vac</td>
</tr>
<tr>
<td>Nominal frequency</td>
<td>60Hz</td>
<td>50Hz</td>
<td>60Hz</td>
</tr>
<tr>
<td>Input current*</td>
<td>8.0A/10.5A</td>
<td>4.5A</td>
<td>16.0A</td>
</tr>
<tr>
<td>Output current</td>
<td>5.4A</td>
<td>2.8A</td>
<td>9.1A</td>
</tr>
<tr>
<td>Output power at 50°C</td>
<td>650W/VA</td>
<td>650 W/VA</td>
<td>1100W/VA</td>
</tr>
<tr>
<td>Output power at 74°C</td>
<td>500W/VA</td>
<td>500 W/VA</td>
<td>850W/VA</td>
</tr>
<tr>
<td>Battery string voltage</td>
<td>24/48Vdc</td>
<td>24Vdc</td>
<td>48Vdc</td>
</tr>
</tbody>
</table>

*At nominal input voltage in and 10A battery charger

### 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)

<table>
<thead>
<tr>
<th>Model</th>
<th>w/ FXM 650</th>
<th>w/ FXM 1100</th>
<th>w/ FXM 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four x 195 GXL</td>
<td>4.8 hours</td>
<td>2.6 hours</td>
<td>1.2 hours</td>
</tr>
<tr>
<td>Eight x 195 GXL</td>
<td>10.5 hours</td>
<td>5.8 hours</td>
<td>2.9 hours</td>
</tr>
</tbody>
</table>

### 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™ GX 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.
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

Nominal Specifications for Gold-HP

<table>
<thead>
<tr>
<th>Model</th>
<th>220 GOLD-HP</th>
<th>195 GOLD-HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>P/N</td>
<td>Consult your Alpha representative for P/N configurations</td>
<td></td>
</tr>
<tr>
<td>Heat resistance</td>
<td>Extreme</td>
<td>Extreme</td>
</tr>
<tr>
<td>Terminals</td>
<td>Threaded insert ¼&quot; - 20 UNC</td>
<td>Threaded insert ¼&quot; - 20 UNC</td>
</tr>
<tr>
<td>Typical runtime (minutes)</td>
<td>221</td>
<td>196</td>
</tr>
<tr>
<td>Cells per unit</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Voltage per unit</td>
<td>12.8</td>
<td>12.8</td>
</tr>
<tr>
<td>Conductance value</td>
<td>1175</td>
<td>1100</td>
</tr>
<tr>
<td>Max. discharge current</td>
<td>900A</td>
<td>900A</td>
</tr>
<tr>
<td>Short circuit current</td>
<td>2800A</td>
<td>2600A</td>
</tr>
<tr>
<td>10 Second volts @ 100A</td>
<td>11.4</td>
<td>11.3</td>
</tr>
<tr>
<td>Impedance @ 60Hz (Ohms)</td>
<td>0.005</td>
<td>0.005</td>
</tr>
<tr>
<td>Capacity at 20hrs (to 1.75VPC)</td>
<td>109Ah</td>
<td>100Ah</td>
</tr>
<tr>
<td>BCI group size</td>
<td>31</td>
<td>31</td>
</tr>
</tbody>
</table>

**Mechanical**

<table>
<thead>
<tr>
<th>Height w/terminals</th>
<th>mm</th>
<th>215.4H x 340.9W x 172.7D</th>
<th>215.4H x 340.9W x 172.7D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>inches</td>
<td>8.48H x 13.42W x 6.80D</td>
<td>8.48H x 13.42W x 6.80D</td>
</tr>
<tr>
<td>Weight</td>
<td>33.2kg (73lbs)</td>
<td>30.5kg (67lbs)</td>
<td></td>
</tr>
</tbody>
</table>

**Environmental**

<table>
<thead>
<tr>
<th>Discharge</th>
<th>-40 to 71°C</th>
<th>-40 to 71°C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-40 to 160°F</td>
<td>-40 to 160°F</td>
</tr>
<tr>
<td>Charge (with temperature compensation)</td>
<td>-23 to 60°C</td>
<td>-23 to 60°C</td>
</tr>
<tr>
<td></td>
<td>-9.4 to 140°F</td>
<td>-9.4 to 140°F</td>
</tr>
<tr>
<td>Float charging voltage</td>
<td>13.5 to 13.8Vdc</td>
<td>13.5 to 13.8Vdc</td>
</tr>
</tbody>
</table>

* 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

<table>
<thead>
<tr>
<th>Model</th>
<th>220 GXL</th>
<th>195 GXL</th>
<th>165 GXL</th>
<th>85 GXL-HP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P/N</strong></td>
<td>Consult your Alpha representative for P/N configurations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heat resistance</strong></td>
<td>Extreme</td>
<td>Extreme</td>
<td>Extreme</td>
<td>Extreme</td>
</tr>
<tr>
<td><strong>Terminals</strong></td>
<td>Threaded insert ¼&quot; - 20 UNC</td>
<td>Threaded insert ¼&quot; - 20 UNC</td>
<td>Threaded insert 10-32 UNF</td>
<td></td>
</tr>
<tr>
<td><strong>Typical runtime (minutes)</strong></td>
<td>221</td>
<td>196</td>
<td>165</td>
<td>85</td>
</tr>
<tr>
<td><strong>Cells per unit</strong></td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td><strong>Voltage per unit</strong></td>
<td>12.8V</td>
<td>12.8V</td>
<td>12.8V</td>
<td>12.8V</td>
</tr>
<tr>
<td><strong>Conductance value</strong></td>
<td>1175</td>
<td>1100</td>
<td>1000</td>
<td>600</td>
</tr>
<tr>
<td><strong>Max. discharge current</strong></td>
<td>900A</td>
<td>900A</td>
<td>800A</td>
<td>600A</td>
</tr>
<tr>
<td><strong>Short circuit current</strong></td>
<td>2800A</td>
<td>2600A</td>
<td>2500A</td>
<td>2200A</td>
</tr>
<tr>
<td><strong>10 Second volts @ 100A</strong></td>
<td>11.4</td>
<td>11.3</td>
<td>11.2</td>
<td>10.8</td>
</tr>
<tr>
<td><strong>Impedance @ 60Hz (Ohms)</strong></td>
<td>0.005</td>
<td>0.005</td>
<td>0.0055</td>
<td>0.0065</td>
</tr>
<tr>
<td><strong>Capacity at 20hrs (to 1.75VPC)</strong></td>
<td>109Ah</td>
<td>100Ah</td>
<td>86Ah</td>
<td>50Ah</td>
</tr>
<tr>
<td><strong>BCI group size</strong></td>
<td>31</td>
<td>31</td>
<td>27</td>
<td>22</td>
</tr>
</tbody>
</table>

### Mechanical

<table>
<thead>
<tr>
<th>Height w/ terminals</th>
<th>mm</th>
<th>215.4H x 340.09W x 172.7D</th>
<th>215.4H x 340.09W x 172.7D</th>
<th>229.8H x 317.8W x 173.4D</th>
<th>205.6H x 228.3W x 138.9D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>inches</td>
<td>8.4H x 13.42W x 6.80D</td>
<td>8.4H x 13.42W x 6.80D</td>
<td>9.05H x 12.5W x 6.83D</td>
<td>8.09H x 8.99W x 5.47D</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td></td>
<td>33.2kg (73lbs)</td>
<td>30.5kg (67lbs)</td>
<td>28.6kg (63lbs)</td>
<td>18kg (39.6lbs)</td>
</tr>
</tbody>
</table>

### Environmental

<table>
<thead>
<tr>
<th><strong>Discharge</strong></th>
<th>-40 to 71°C</th>
<th>-40 to 71°C</th>
<th>-40 to 71°C</th>
<th>-40 to 71°C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Charge</strong> (with temperature compensation)</td>
<td>-23 to 60°C</td>
<td>-23 to 60°C</td>
<td>-23 to 60°C</td>
<td>-23 to 60°C</td>
</tr>
<tr>
<td><strong>Float charging voltage</strong></td>
<td>13.5 to 13.8Vdc</td>
<td>13.5 to 13.8Vdc</td>
<td>13.5 to 13.8Vdc</td>
<td>13.5 to 13.8Vdc</td>
</tr>
<tr>
<td><strong>AC ripple charger</strong></td>
<td>0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4% P-P</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*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    | 5    | 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 | 7.3  | 5.7  | 4.6  | 3.97 | 2.5  | 2.12 | 1.11 | 0.76 | 0.56 |      |
Nominal Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>195 GXL-FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service life</td>
<td>Extended</td>
</tr>
<tr>
<td>Sealed VRLA</td>
<td>Valve regulated lead acid</td>
</tr>
<tr>
<td>Heat resistant</td>
<td>Extreme</td>
</tr>
<tr>
<td>Hydrogen emission</td>
<td>Low</td>
</tr>
<tr>
<td>Terminals</td>
<td>16mm insert M6 thread</td>
</tr>
<tr>
<td>Typical runtime</td>
<td>195 mins</td>
</tr>
<tr>
<td>Cells per unit</td>
<td>6</td>
</tr>
<tr>
<td>Voltage per unit</td>
<td>12.8V</td>
</tr>
<tr>
<td>Conductance value</td>
<td>1200</td>
</tr>
<tr>
<td>Max. discharge current</td>
<td>400A</td>
</tr>
<tr>
<td>Short circuit current</td>
<td>3000A</td>
</tr>
<tr>
<td>10 Second volts @ 100A</td>
<td>10.8</td>
</tr>
<tr>
<td>Impedance @ 60Hz (Ohms)</td>
<td>0.0041</td>
</tr>
<tr>
<td>Capacity at 20hrs (to 1.75VPC)</td>
<td>110Ah</td>
</tr>
</tbody>
</table>

**Mechanical**

<table>
<thead>
<tr>
<th>Dimensions w/ terminals*</th>
<th>mm</th>
<th>inches</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>285H x 110W x 395D</td>
<td>11.22H x 4.33W x 15.55D</td>
</tr>
<tr>
<td>Weight</td>
<td>34.52kg (76.29lbs)</td>
<td></td>
</tr>
</tbody>
</table>

**Environmental**

<table>
<thead>
<tr>
<th>Discharge</th>
<th>-40 to 71°C (-40 to 160°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charge (with temp compensation)</td>
<td>-20 to 50°C (-4 to 122°F)</td>
</tr>
<tr>
<td>Float charging voltage (Vdc)</td>
<td>Float 2.27 to 2.30VPC @ 25°C cycling 2.35VPC @ 25°C</td>
</tr>
<tr>
<td>AC ripple charger</td>
<td>0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4% P-P</td>
</tr>
</tbody>
</table>

*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)

<table>
<thead>
<tr>
<th>Hours</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>20</th>
<th>24</th>
<th>48</th>
<th>72</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>195 GXL-FT</td>
<td>71.1</td>
<td>38.0</td>
<td>26.8</td>
<td>21.1</td>
<td>15.2</td>
<td>12.0</td>
<td>9.92</td>
<td>8.48</td>
<td>5.50</td>
<td>4.60</td>
<td>2.31</td>
<td>1.56</td>
<td>1.13</td>
</tr>
</tbody>
</table>
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

### Nominal Specifications for 160 AGM (Top Terminal)

<table>
<thead>
<tr>
<th>P/N: 160 AGM</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver alloy</td>
<td>N/A</td>
</tr>
<tr>
<td>CA/SN alloy</td>
<td>N/A</td>
</tr>
<tr>
<td>Typical runtime (minutes)</td>
<td>160</td>
</tr>
<tr>
<td>Cells per unit</td>
<td>6</td>
</tr>
<tr>
<td>Voltage per unit</td>
<td>12.8V</td>
</tr>
<tr>
<td>Conductance value</td>
<td>1300</td>
</tr>
<tr>
<td>Max. discharge current</td>
<td>800A</td>
</tr>
<tr>
<td>Short circuit current</td>
<td>3300A</td>
</tr>
<tr>
<td>10 Second volts @ 100A</td>
<td>11.6</td>
</tr>
<tr>
<td>Ohms impedance 60Hz</td>
<td>0.004</td>
</tr>
<tr>
<td>Capacity at 20hrs (to 1.75VPC)</td>
<td>88Ah</td>
</tr>
<tr>
<td>BCI group size</td>
<td>27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mechanical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions w/terminals</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Weight</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge</td>
</tr>
<tr>
<td>Charge (with temp compensation)</td>
</tr>
<tr>
<td>Float charging voltage</td>
</tr>
</tbody>
</table>

AC ripple charger: 0.5% RMS or 1.5% of float charge voltage recommended for best results. Max. allowed = 4% P-P

### Nominal Specifications for AlphaCell™ 225 AGM-FT

<table>
<thead>
<tr>
<th>P/N: 225 AGM-FT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Service life</td>
<td>Extended</td>
</tr>
<tr>
<td>Sealed VRLA</td>
<td>Valve Regulated Lead acid</td>
</tr>
<tr>
<td>Heat resistant</td>
<td>High</td>
</tr>
<tr>
<td>Hydrogen emission</td>
<td>Low</td>
</tr>
<tr>
<td>Terminals</td>
<td>16mm Insert M6 thread</td>
</tr>
<tr>
<td>Typical runtime</td>
<td>225 mins</td>
</tr>
<tr>
<td>Cells per unit</td>
<td>6</td>
</tr>
<tr>
<td>Voltage per unit</td>
<td>12.8V</td>
</tr>
<tr>
<td>Conductance value</td>
<td>1400</td>
</tr>
<tr>
<td>Max. discharge current</td>
<td>400A</td>
</tr>
<tr>
<td>Short circuit current</td>
<td>3100A</td>
</tr>
<tr>
<td>10 Second volts @ 100A</td>
<td>11.2</td>
</tr>
<tr>
<td>Impedance @ 60Hz (Ohms)</td>
<td>0.0045</td>
</tr>
<tr>
<td>Capacity at 20hrs (to 1.75VPC)</td>
<td>88Ah</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mechanical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions w/terminals*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Weight</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge</td>
</tr>
<tr>
<td>Charge (with temp compensation)</td>
</tr>
<tr>
<td>Float charging voltage (Vdc)</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>Hours</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>20</th>
<th>24</th>
<th>48</th>
<th>72</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>160AGM</td>
<td>61.20</td>
<td>33.90</td>
<td>23.10</td>
<td>17.60</td>
<td>11.98</td>
<td>9.20</td>
<td>7.38</td>
<td>3.84</td>
<td>3.84</td>
<td>3.20</td>
<td>1.60</td>
<td>1.07</td>
<td>0.77</td>
</tr>
<tr>
<td>225AGM-FT</td>
<td>81.00</td>
<td>43.10</td>
<td>30.30</td>
<td>23.70</td>
<td>16.70</td>
<td>12.90</td>
<td>10.40</td>
<td>8.90</td>
<td>5.70</td>
<td>4.80</td>
<td>2.43</td>
<td>1.62</td>
<td>1.18</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Capacity @8hr rate @1.75V/C</th>
<th>90Ah</th>
<th>104Ah</th>
<th>125Ah</th>
<th>155Ah</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Volts</td>
<td>12V</td>
<td>12V</td>
<td>12V</td>
<td>12V</td>
</tr>
<tr>
<td>Terminal Type</td>
<td>Threaded copper alloy insert</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
</tr>
<tr>
<td></td>
<td>395D x 105W x 270H</td>
<td>511D x 110W x 238H</td>
<td>559D x 124W x 283H</td>
<td>559D x 124W x 283H</td>
</tr>
<tr>
<td></td>
<td>inches</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>156D x 4.1W x 10.6H</td>
<td>20.1D x 4.3W x 9.4H</td>
<td>22D x 4.9W x 11.1H</td>
<td>22D x 4.9W x 11.1H</td>
</tr>
<tr>
<td>Weight</td>
<td>31kg (68lb)</td>
<td>35.8kg (79lb)</td>
<td>47.6kg (105lb)</td>
<td>53.8kg (119lb)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Capacity @8hr rate @1.75V/C</th>
<th>157Ah</th>
<th>160Ah</th>
<th>180Ah</th>
<th>181Ah</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Volts</td>
<td>12V</td>
<td>12V</td>
<td>12V</td>
<td>12V</td>
</tr>
<tr>
<td>Terminal Type</td>
<td>Threaded copper alloy insert</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
</tr>
<tr>
<td></td>
<td>559D x 126W x 283H</td>
<td>463D x 176W x 257H</td>
<td>559D x 124W x 318H</td>
<td>559D x 126W x 320H</td>
</tr>
<tr>
<td></td>
<td>inches</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>22.01D x 4.95W x 11.14H</td>
<td>18.2D x 6.94W x 10.1H</td>
<td>22D x 4.9W x 12.5H</td>
<td>22.01D x 4.95W x 12.6H</td>
</tr>
<tr>
<td>Weight</td>
<td>53kg (115lb)</td>
<td>55kg (121lb)</td>
<td>60.3kg (133lb)</td>
<td>60kg (131lb)</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Nom Ah Cap (8hr)</th>
<th>345Ah</th>
<th>480Ah</th>
<th>480Ah</th>
<th>599Ah</th>
<th>839Ah</th>
</tr>
</thead>
<tbody>
<tr>
<td># Cells/Module</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td># Plates/Cell</td>
<td>7</td>
<td>9</td>
<td>9</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>System # of Cells</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>System Voltage</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
</tr>
<tr>
<td>Model Volts</td>
<td>6V</td>
<td>6V</td>
<td>6V</td>
<td>6V</td>
<td>6V</td>
</tr>
<tr>
<td>Dimensions</td>
<td>mm 544H x 1135W x 586.7D</td>
<td>476H x 1642W x 587.5D</td>
<td>664H x 1136W x 587.5D</td>
<td>545H x 1642W x 587.5D</td>
<td>773H x 1136W x 587.5D</td>
</tr>
<tr>
<td></td>
<td>inches 21.4H x 44.7W x 23.1D</td>
<td>18.7H x 64.5W x 23.1D</td>
<td>26.1H x 44.7W x 23.1D</td>
<td>21.4H x 64.5W x 23.1D</td>
<td>30.4H x 44.7W x 23.1D</td>
</tr>
<tr>
<td>Weight</td>
<td>894kg (1970lb)</td>
<td>1120kg (2470lb)</td>
<td>1093kg (2410lb)</td>
<td>1324kg (2920lb)</td>
<td>1293kg (2850lb)</td>
</tr>
<tr>
<td>Cell Layout</td>
<td>6W x 4H</td>
<td>4W x 6H</td>
<td>6W x 4H</td>
<td>4W x 6H</td>
<td>3W x 8H</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nom Ah Cap (8hr)</th>
<th>839Ah</th>
<th>1079Ah</th>
<th>1079Ah</th>
<th>1319Ah</th>
<th>1319Ah</th>
</tr>
</thead>
<tbody>
<tr>
<td># Cells/Module</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td># Plates/Cell</td>
<td>15</td>
<td>19</td>
<td>19</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>System # of Cells</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>System Voltage</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
</tr>
<tr>
<td>Model Volts</td>
<td>6V</td>
<td>6V</td>
<td>6V</td>
<td>6V</td>
<td>6V</td>
</tr>
<tr>
<td>Dimensions</td>
<td>mm 545H x 2148W x 587.5D</td>
<td>708H x 1642W x 587.5D</td>
<td>664H x 2148W x 587.5D</td>
<td>850H x 1642W x 587.5D</td>
<td>773H x 2148W x 587.5D</td>
</tr>
<tr>
<td></td>
<td>inches 21.4H x 84.4W x 23.1D</td>
<td>27.9H x 64.5W x 23.1D</td>
<td>26.1H x 84.4W x 23.1D</td>
<td>33.5H x 64.5W x 23.1D</td>
<td>30.4H x 84.5W x 23.1D</td>
</tr>
<tr>
<td>Weight</td>
<td>1751kg (3860lb)</td>
<td>1719kg (3790lb)</td>
<td>2150kg (4740lb)</td>
<td>2118kg (4670lb)</td>
<td>2549kg (5620lb)</td>
</tr>
<tr>
<td>Cell Layout</td>
<td>4W x 6H</td>
<td>3W x 8H</td>
<td>4W x 6H</td>
<td>3W x 8H</td>
<td>4W x 6H</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nom Ah Cap (8hr)</th>
<th>1559Ah</th>
<th>1559Ah</th>
<th>2038Ah</th>
<th>2038Ah</th>
</tr>
</thead>
<tbody>
<tr>
<td># Cells/Module</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td># Plates/Cell</td>
<td>27</td>
<td>27</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>System # of Cells</td>
<td>24</td>
<td>24</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>System Voltage</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
</tr>
<tr>
<td>Model Volts</td>
<td>6V</td>
<td>6V</td>
<td>6V</td>
<td>6V</td>
</tr>
<tr>
<td>Dimensions</td>
<td>mm 1004H x 1642W x 587.5D</td>
<td>875H x 2148W x 587.5D</td>
<td>1157H x 1642W x 587.5D</td>
<td>1108H x 2148W x 587.5D</td>
</tr>
<tr>
<td></td>
<td>inches 39.5H x 64.5W x 23.1D</td>
<td>34.4H x 84.4W x 23.1D</td>
<td>45.5H x 64.5W x 23.1D</td>
<td>43.6H x 84.4W x 23.1D</td>
</tr>
<tr>
<td>Weight</td>
<td>2517kg (5550lb)</td>
<td>2971kg (6550lb)</td>
<td>2966kg (6540lb)</td>
<td>3774kg (8320lb)</td>
</tr>
<tr>
<td>Cell Layout</td>
<td>3W x 8H</td>
<td>4W x 6H</td>
<td>3W x 8H</td>
<td>4W x 6H</td>
</tr>
</tbody>
</table>
### Batteries

#### 760 to 2000Ah Range

<table>
<thead>
<tr>
<th>Nom Ah Cap (8hr)</th>
<th>760Ah</th>
<th>855Ah</th>
<th>950Ah</th>
<th>1045Ah</th>
<th>1140Ah</th>
</tr>
</thead>
<tbody>
<tr>
<td># Cells/Module</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td># Plates/Cell</td>
<td>17</td>
<td>19</td>
<td>21</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>System # of Cells</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>System Voltage</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
</tr>
<tr>
<td>Model Volts</td>
<td>mm</td>
<td>556H x 1735W x 689D</td>
<td>613H x 1735W x 689D</td>
<td>671H x 1735W x 689D</td>
<td>728H x 1735W x 689D</td>
</tr>
<tr>
<td></td>
<td>inches</td>
<td>21.9H x 68.3W x 27.1D</td>
<td>24.2H x 68.3W x 27.1D</td>
<td>26.4H x 68.3W x 27.1D</td>
<td>28.7H x 68.3W x 27.1D</td>
</tr>
<tr>
<td>Weight</td>
<td>1479kg (3260lb)</td>
<td>1638kg (3612lb)</td>
<td>1794kg (3956lb)</td>
<td>1954kg (4308lb)</td>
<td>2110kg (4652lb)</td>
</tr>
<tr>
<td>Cell Layout</td>
<td>3W x 8H</td>
<td>3W x 8H</td>
<td>3W x 8H</td>
<td>3W x 8H</td>
<td>3W x 8H</td>
</tr>
</tbody>
</table>

#### 696 to 1600Ah Range

<table>
<thead>
<tr>
<th>Nom Ah Cap (8hr)</th>
<th>1235Ah</th>
<th>1330Ah</th>
<th>1425Ah</th>
<th>1520Ah</th>
<th>2000Ah</th>
</tr>
</thead>
<tbody>
<tr>
<td># Cells/Module</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td># Plates/Cell</td>
<td>27</td>
<td>29</td>
<td>31</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>System # of Cells</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>System Voltage</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
<td>48V</td>
</tr>
<tr>
<td>Model Volts</td>
<td>mm</td>
<td>842H x 1735W x 689D</td>
<td>899H x 1735W x 689D</td>
<td>956H x 1735W x 689D</td>
<td>1013H x 1735W x 689D</td>
</tr>
<tr>
<td></td>
<td>inches</td>
<td>33.2H x 68.3W x 27.1D</td>
<td>35.4H x 68.3W x 27.1D</td>
<td>37.7H x 68.3W x 27.1D</td>
<td>39.9H x 68.3W x 27.1D</td>
</tr>
<tr>
<td>Weight</td>
<td>2255kg (4972lb)</td>
<td>2426kg (5348lb)</td>
<td>2571kg (5668lb)</td>
<td>2737kg (6020lb)</td>
<td>3908kg (8616lb)</td>
</tr>
<tr>
<td>Cell Layout</td>
<td>3W x 8H</td>
<td>3W x 8H</td>
<td>3W x 8H</td>
<td>3W x 8H</td>
<td>(2x6)W x 2H</td>
</tr>
</tbody>
</table>

#### Note:
- Add “S” for Standard Polypropylene or “L” for Flame Retardant Polypropylenes, suffix to module number. (ex. 24AVR95-17-S)
- Add “L” for Flame Retardant Polypropylenes, suffix to module number (ex. 100AG15-L)
Indoor UPS Batteries
9 to 34AH

- 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

Environmental

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

- **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

- **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.

---

### 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.
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 gas 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

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
Generators

Consult your Alpha representative for P/N configurations

Performance / Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas inlet pressure</td>
<td>0.5 to 2 PSI inlet pressure</td>
</tr>
<tr>
<td>Ign charger voltage</td>
<td>13.5Vdc</td>
</tr>
<tr>
<td>Ign charger current</td>
<td>6A max</td>
</tr>
<tr>
<td>Remote interface length</td>
<td>75ft max</td>
</tr>
<tr>
<td>Fuel system, controls &amp; monitoring</td>
<td>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.</td>
</tr>
<tr>
<td>Sensors</td>
<td>Gas hazard, Pad shear, Water intrusion, Tamper</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Model:</th>
<th>3.5kW</th>
<th>5.0kW</th>
<th>7.5kW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC output voltage</strong></td>
<td>39.0V ±0.5V @ no load 36V configuration</td>
<td>39.0V ±0.5V @ no load 36V configuration</td>
<td>52.0V ±0.5V @ no load 48V configuration</td>
</tr>
<tr>
<td></td>
<td>52.0V ±0.5V @ no load 48V configuration</td>
<td>52.0V ±0.5V @ no load 48V configuration</td>
<td>104.0V ±0.5V @ no load 96V configuration</td>
</tr>
<tr>
<td><strong>DC output load regulation</strong></td>
<td>0.5V</td>
<td>0.5V</td>
<td>0.5V</td>
</tr>
<tr>
<td><strong>Output current</strong></td>
<td>39.0V @ 90A max</td>
<td>39.0V @ 128A max</td>
<td>52.0V @ 144A max</td>
</tr>
<tr>
<td></td>
<td>52.0V @ 67A max</td>
<td>52.0V @ 96A max</td>
<td>104V @ 72A max</td>
</tr>
<tr>
<td><strong>Engine</strong></td>
<td>398CC, Air cooled, Single OHV</td>
<td>398CC, Air cooled, Single OHV</td>
<td>624CC, Air cooled, Twin OHV</td>
</tr>
<tr>
<td></td>
<td>10.5hp (using natural gas fuel)</td>
<td>10.5hp (using natural gas fuel)</td>
<td>15hp (using natural gas fuel)</td>
</tr>
<tr>
<td><strong>RPM: (variable speed)</strong></td>
<td>2800 to 3600RPM</td>
<td>2800 to 3600RPM</td>
<td>2800 to 3600RPM</td>
</tr>
</tbody>
</table>

### Acoustical noise

<table>
<thead>
<tr>
<th></th>
<th>10' @ 100% rated load</th>
<th>20' @ 100% rated load</th>
<th>10' @ 70% rated load</th>
<th>20' @ 70% rated load</th>
</tr>
</thead>
<tbody>
<tr>
<td>dBA</td>
<td>68.7Ave</td>
<td>63.0Ave</td>
<td>68.3Ave</td>
<td>62.6Ave</td>
</tr>
<tr>
<td></td>
<td>68.5Ave</td>
<td>62.5Ave</td>
<td>66.9Ave</td>
<td>60.9Ave</td>
</tr>
<tr>
<td></td>
<td>70.3Ave</td>
<td>64.3Ave</td>
<td>66.4Ave</td>
<td>60.4Ave</td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th></th>
<th>CE-3x</th>
<th>CE-9x</th>
<th>PN-4xL</th>
<th>CE-3x</th>
<th>CE-9x</th>
<th>PN-4xL</th>
<th>PN-6x</th>
<th>with optional pedestal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Height</strong></td>
<td>cm</td>
<td></td>
<td></td>
<td>cm</td>
<td></td>
<td></td>
<td>cm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>111.2</td>
<td>132.1</td>
<td>81.3</td>
<td>111.2</td>
<td>132.1</td>
<td>81.3</td>
<td>99</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>44</td>
<td>52</td>
<td>32</td>
<td>44</td>
<td>52</td>
<td>32</td>
<td>39</td>
<td>57</td>
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<tr>
<td><strong>Width</strong></td>
<td>cm</td>
<td></td>
<td></td>
<td>cm</td>
<td></td>
<td></td>
<td>cm</td>
<td></td>
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<td></td>
<td>66</td>
<td>132.1</td>
<td>81.3</td>
<td>66</td>
<td>132.1</td>
<td>81.3</td>
<td>100</td>
<td></td>
</tr>
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<td></td>
<td>26</td>
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<td>32</td>
<td>26</td>
<td>52</td>
<td>32</td>
<td>39.25</td>
<td></td>
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<tr>
<td><strong>Depth</strong></td>
<td>cm</td>
<td></td>
<td></td>
<td>cm</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>kg</td>
<td></td>
<td></td>
<td>lbs</td>
<td></td>
<td></td>
<td>kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>174</td>
<td>167</td>
<td>177</td>
<td>174</td>
<td>187</td>
<td>177</td>
<td>174</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>383</td>
<td>413</td>
<td>390</td>
<td>383</td>
<td>413</td>
<td>390</td>
<td>338</td>
<td>370</td>
</tr>
</tbody>
</table>

### APU fuel consumption

<table>
<thead>
<tr>
<th></th>
<th>1000 BTU/Fl.³</th>
<th>2520 BTU/Fl.³</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Natural gas</strong></td>
<td>60ft³/hr</td>
<td>80ft³/hr</td>
</tr>
<tr>
<td><strong>Propane gas</strong></td>
<td>0.82gal/hr</td>
<td>1.10gal/hr</td>
</tr>
<tr>
<td><strong>Exterior surface temperature</strong></td>
<td>65°C max (149°F) (meets requirements of UL/CSA)</td>
<td>65°C max (149°F) (meets requirements of UL/CSA)</td>
</tr>
</tbody>
</table>
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
## Services and Support

**Alpha Service**

Canada and USA call 1-888-462-7487  
International call +1-604-436-5547

## Alpha Services Plans

<table>
<thead>
<tr>
<th>Service</th>
<th>Factory Warranty</th>
<th>Warranty plus Extended Warranty</th>
<th>Basic On Site</th>
<th>Reliability On Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive Coverage of Equipment and Batteries</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Telephone Technical Support</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Advance Replacement</td>
<td>Optional</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Freight to Customer</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>On-Site Start Up Business Day</td>
<td>Optional</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>On-Site Corrective Maintenance Business Day</td>
<td>Optional</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Next business day response</td>
<td></td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Equipment Preventative Maintenance</td>
<td></td>
<td></td>
<td></td>
<td>Included</td>
</tr>
<tr>
<td>Battery Preventative Maintenance</td>
<td></td>
<td></td>
<td></td>
<td>Included</td>
</tr>
</tbody>
</table>

## Alpha Services on Demand

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repair/exchange</td>
<td>Repair or exchange of delivered unit for a flat fee.</td>
</tr>
<tr>
<td>Advance replacement</td>
<td>Immediate shipment of replacement unit with credit issued for return unit when received.</td>
</tr>
<tr>
<td>Replacement battery bundle</td>
<td>Set of replacement batteries including delivery.</td>
</tr>
<tr>
<td>On site replace and PM</td>
<td>On site replacement of all batteries including delivery, recycling, installation and preventative maintenance on equipment and battery cabinet.</td>
</tr>
</tbody>
</table>
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.

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

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.

<table>
<thead>
<tr>
<th>What is covered</th>
<th>Duration: 2 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Power system theory</td>
<td>Safety</td>
</tr>
<tr>
<td>DC System sizing</td>
<td>Controller programming</td>
</tr>
<tr>
<td>Site engineering</td>
<td>Installation and commissioning</td>
</tr>
<tr>
<td>Checking alarm set-points</td>
<td>SNMP and MODBUSS</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>What is covered</th>
<th>Duration: 1 day</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC/DC Power system theory</td>
<td>AC/DC System sizing</td>
</tr>
<tr>
<td>Site engineering</td>
<td>Installation &amp; commissioning</td>
</tr>
<tr>
<td>Safety</td>
<td>Checking alarm set-points</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>What is covered</th>
<th>Duration: 1 day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation &amp; commissioning</td>
<td>Detailed controller programming</td>
</tr>
<tr>
<td>Safety</td>
<td>Checking alarm set-points</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>What is covered</th>
<th>Duration: 1/2 day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation &amp; commissioning</td>
<td>Basic controller programming</td>
</tr>
<tr>
<td>Safety</td>
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</table>

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.

<table>
<thead>
<tr>
<th>What is covered</th>
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<tbody>
<tr>
<td>DC Power system theory</td>
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Contact training@alpha.ca or 1-888-462-7487 for further details.
Services and Support

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.

<table>
<thead>
<tr>
<th>What is covered:</th>
<th>Duration: 2 days</th>
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<tbody>
<tr>
<td>DC Power system theory</td>
<td>Safety</td>
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<tr>
<td>DC System sizing</td>
<td>Controller programming</td>
</tr>
<tr>
<td>Site engineering</td>
<td>Installation and commissioning</td>
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<td>Checking alarm set-points</td>
<td>SNMP and MODBUSS</td>
</tr>
</tbody>
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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.

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Course 3
Cordex Power Systems - Advanced
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Course 4
Cordex Power Systems - Basic
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