Argus Technologies

Company Overview
Argus Technologies specializes in the design and manufacture of premium quality DC power solutions for the global communications industry. Since 1986, Argus has been recognized as an industry leader in the telephony market, and is leading the way in wireless technology today.

In addition to complete custom power systems, Argus products include enclosures, rectifiers, converters, and system controllers featuring remote and local monitoring.

Sales and service is available though a network of dedicated centers worldwide. Argus offers EF&I, training, 24/7 technical support (on and off line), and e-solutions.

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, our companies provide a range of installation and maintenance services.

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Cordex Controllers

The Cordex CXC is Argus’ latest generation of advanced digital controllers for DC power system monitoring and control. Cordex supervisory controllers come in a wide array of modular designs for compact integration into Argus DC 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. Some additional features include user definable alarms with custom algorithms, digital and analog input monitoring, data logging, integrated SNMP, and highly reliable CAN bus communications. Optional RS-485 communication is also available to control the legacy “Pathfinder” series of rectifiers.

The Cordex CXC is designed for effortless operation of the Cordex rectifier family, making time consuming and complicated set up and monitoring of DC power systems a thing of the past.
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 Argus Pathfinder based systems and can be used as a site monitor for any Argus or 3rd party DC power system
- **CAN communications**: Common platform for Argus 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
Cordex™ CXCI
System Controller

- Control and monitor via Internet Explorer browser
- Internet ready, integrated SNMP
- High reliability CAN bus communication
- User definable alarms and data logging
- Flexible battery management features
- Smart peripheral monitoring features
- Integrated controller for 2RU rectifiers

**Features**

Part number: .................. Integrated option on 1.8kW, 650W, 400W, and 250W shelves

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

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

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

**Electrical**

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

**Mechanical**

Dimensions:
- mm: .......................... 88H x 26W x 280D
- inch: .......................... 3.5H x 1W x 11D

Mounting: .................. Integrated on Cordex 2RU series
- 19" & 23" shelves

**Environmental**

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

**Standards**

Safety: .................. CSA C22.2 No 60950-1-03
- UL 60950-1 1st edition
- CE marked
LCD touch-screen user interface
Internet ready, integrated SNMP
High reliability CAN bus communication
User definable alarms and data logging
Flexible battery management features
Smart peripheral monitoring features
19/23" Universal rack or panel mount configurations

Features

Part number: .....................018-557-20
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

Environmental

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

Standards

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)

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

Cordex™ CXCR/CXCP
System Controller

CXCR Rack Mount Controller
Cordex™ CXCM
System Controller

- LCD touch-screen user interface
- Internet ready, integrated SNMP
- High reliability CAN bus communication
- User definable alarms and data logging
- Flexible battery management features
- 4RU modular CXC for 1kW rectifier shelves

### Features

- **Part number:** 018-557-20
- **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 (3.9lb)

### Environmental

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

### Standards

- **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)
- **Immunity:**
  - EN 61000-4-2
  - EN 61000-4-3
  - EN 61000-4-4
  - EN 61000-4-5
  - EN 61000-4-6
LCD touch-screen user interface
Internet ready, integrated SNMP
High reliability CAN bus communication
User definable alarms and data logging
Flexible battery management features
Smart peripheral monitoring features
2RU modular CXC for 1.8kW rectifier shelves

Features

Part number: 018-573-20

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

Electrical

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

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

Standards

Safety: CSA C22.2 No 60950-1-03
UL 60950-1 1st edition
CE marked
LCD touch-screen user interface
Internet ready, integrated SNMP
High reliability CAN bus communication
User definable alarms and data logging
Flexible battery management features
Smart peripheral monitoring features
19/23" Universal rack mount configurations

Features

- Part number: 018-570-20
- **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

Cordex™ 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 (13.8lb)

Environmental

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

Standards

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

Cordex Controllers
- LCD touch-screen user interface
- Internet ready, integrated SNMP
- High reliability CAN bus communication
- User definable alarms and data logging
- Flexible battery management features
- Smart peripheral monitoring features
- 4RU modular CXC for 3.1/3.6kW rectifier shelves

### Features

- **Part number:** .....................018-574-20
- **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 (3.9lb)
- **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

### Standards

- **Safety:** ............................CSA C22.2 No 60950-1-03
  - UL 60950-1 1st edition
  - CE marked
  - IEC/EN 60950-1
- **EMC:** ..............................ETSI 300 386
- **Emissions:** ......................CFR47 (FCC) Part 15 Class B
  - ICES-03 Class B
  - EN55022 (CISPR 22) Class B
  - C-Tick (Australia)
- **Immunity:** ........................EN 61000-4-2
  - EN 61000-4-3
  - EN 61000-4-4
  - EN 61000-4-5
  - EN 61000-4-6
Individual cell battery and string voltage measurements
Shunt multiplexing for multiple current measurements
Temperature monitoring
CAN bus peripheral add-on for CXC
Advanced monitoring and logging via CXC controller
Detailed monitoring of up to four battery strings

Electrical

**BMC**
- Input voltage: List 2: 9.6 to 62VDC
  - List 4: 88 to 306VDC
  - Requires external supply
- DCCT: +15V +/-5%, 25mA
  - -15V +/-5%, 25mA

**Ring Devices**
- Power: 19.5 to 24V *supplied from BMC
- BCM input signal: 0 to 16.5VDC
- SM input signal: -50mV / +50mV
- HV input signal: 0 to 320VDC (HV320)
  - 0 to 600VDC (HV600)

Mechanical

**BMC**
- Dimensions:
  - mm: 38H x 181.9D x 207.6W
  - inches: 1.50H x 7.16D x 8.18W
  - Mounting: 19/23" rack mount (via 030-734-20 2-module peripheral chassis)

**Ring Devices**
- Dimensions (excludes temperature sensor):
  - mm: 22.7H x 43D x 104.6W
  - inches: 0.89H x 1.69D x 4.12W
  - Mounting: Battery or wall mount

Environmental

- Temperature:
  - Standard: -5 to +55°C (23 to 131°F)
  - Storage: -40 to +70°C (-40 to 158°F)
  - Humidity: 0 to 95% RH non-condensing

Communications

**BMC**
- Software: Requires CXC V1.93 min
- LED’s:
  - Power on (green)
  - Module acquired (green)
  - 4x Battery string OK (green)
  - 4x Battery string alarm (yellow)

**Ring Devices**
- LED’s:
  - Data transfer (green)
  - Communications lost (yellow)
  - Device on alarm (red)

Connections

**BMC**
- Power supply: 2-POS screw terminal block for up to #18AWG wire
- CAN IN/OUT: 2x RJ-12 offset
- Ring device:
  - IN/OUT: 8x RJ-11
  - DCCT: 4x 4-POS molex connector

**Ring Devices**
- BCM:
  - Communications: RJ-11 (in/out)
  - Temperature: Metal tab for ambient sense and ¼" lug for battery terminal mount
  - Signal: 2x #18AWG signal wires (loose ¼" and ¼" crimp lugs provided)
- SM:
  - Communications: RJ-11 (in/out)
  - Signal: Screw terminal block for up to #18AWG wire
- HV:
  - Communications: RJ-11 (in/out)
  - Signal: Screw terminal block for up to #18AWG wire (loose ¼" and ¼" lugs provided)
Cordex™ 4R/8D ADIO
CXC Smart Peripheral

- Provides I/O expansion to existing Cordex controllers
- Additional four relay alarm outputs
- Additional eight digital inputs
- Connects via standard CAN communication interface
- Programmable and adjustable via CXC interface

### Electrical

<table>
<thead>
<tr>
<th>Part number:</th>
<th>018-590-20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power supply:</strong></td>
<td></td>
</tr>
<tr>
<td>Voltage:</td>
<td>9V to 60VAC</td>
</tr>
<tr>
<td>Current:</td>
<td>500mA</td>
</tr>
<tr>
<td>Power:</td>
<td>5W</td>
</tr>
<tr>
<td><strong>Digital inputs:</strong></td>
<td></td>
</tr>
<tr>
<td>Inactive voltage:</td>
<td>-1.5 to 1.5V</td>
</tr>
<tr>
<td>Active voltage:</td>
<td>± (5 to 60V)</td>
</tr>
<tr>
<td><strong>Relay outputs:</strong></td>
<td></td>
</tr>
<tr>
<td>Voltage:</td>
<td>Up to 60V</td>
</tr>
<tr>
<td>Current:</td>
<td>500mA</td>
</tr>
</tbody>
</table>

### User Interface

| Status indication: | Power on (green) Module acquired (green) |
| Connections: | 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

### Standards

- Unit is designed to meet the following standards
- CSA: CSA C22.2 No 60950-1-03
- UL: 60950-1 1st edition
- CE: EN60950
- NEBS: GR-1089-CORE GR-63-CORE
## Cordex™ Controller Series

### Reference Guide

#### Specifications:

<table>
<thead>
<tr>
<th>Screen</th>
<th>CXCM</th>
<th>CXCM2</th>
<th>CXCM4</th>
<th>CXCI</th>
<th>CXCR/CXCP</th>
<th>CXCR HV</th>
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</thead>
<tbody>
<tr>
<td>Full graphic LCD 160 x 160 pixels</td>
<td>Full graphic LCD 160 x 160 pixels</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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### Inputs:

<table>
<thead>
<tr>
<th>Analog</th>
<th>CXCM</th>
<th>CXCM2</th>
<th>CXCM4</th>
<th>CXCI</th>
<th>CXCR/CXCP</th>
<th>CXCR HV</th>
</tr>
</thead>
<tbody>
<tr>
<td>2V, 2T, 1C, 1BIV</td>
<td>1V, 2T, 2C, 4BIV</td>
<td>2V, 2T, 4C, 2BIV</td>
<td>1V, 1C, 2T</td>
<td>2V, 2T, 4C, 2BIV</td>
<td>1V, 2T, 1C, 4BIV, 1GFI</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Digital</th>
<th>CXCM</th>
<th>CXCM2</th>
<th>CXCM4</th>
<th>CXCI</th>
<th>CXCR/CXCP</th>
<th>CXCR HV</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>8</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alarm relay outputs</th>
<th>CXCM</th>
<th>CXCM2</th>
<th>CXCM4</th>
<th>CXCI</th>
<th>CXCR/CXCP</th>
<th>CXCR HV</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Form C</td>
<td>6 Form C</td>
<td>8 Form C</td>
<td>4 Form C</td>
<td>8 Form C</td>
<td>8 Form C</td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions (H x W x D):

| mm | 177 x 74 x 255 | 86.4 x 128 x 247 | 177 x 87 x 257 | 88 x 26 x 280 | 131 x 431 x 100 | 131 x 431 x 100 |
| inches | 6.9 x 2.9 x 10 | 3.4 x 5 x 9.7 | 7 x 3.4 x 10.1 | 3.5 x 1 x 11 | 5.1 x 16.9 x 3.9 | 5.1 x 16.9 x 3.9 |

### Rectifier shelf option availability:

| 250W (12VDC) | Yes |
| 400W (24VDC) | Yes |
| 650W (48VDC) | Yes |
| 1kW (48VDC) | Yes | Yes |
| 1.8kW (48VDC) | Yes | Yes | Yes |
| 3.1kW (24VDC) | Yes |
| 3.6kW (48VDC) | Yes |
| 1.1kW (125/220VDC) | Yes |
| 4.4kW (125/220VDC) | Yes |
Power Solutions

Argus has over 20 years experience providing a wide variety of fully integrated DC power system solutions. With options for standardized systems, and custom DC system integration, Argus has the flexibility to provide a DC power solution for a wide range of power requirements and various site installation requirements.

Integrated shelf systems are available for all small power rectifier models providing a complete power solution in a single rack mount package. The systems incorporate a Cordex controller, rectifiers, and DC 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, Argus can provide both standard and custom 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 DC distribution configurations, multiple voltage output designs, and front access solutions to name a few.

Coupling advanced Cordex power technology with an enormous selection of system components, Argus can easily provide optimal system solutions up to 8,000 Amps.
Integrated 12VDC shelf power systems up to 1000W (1kW)
Bulk 12VDC power systems up to 1250W (1.25kW)
Distribution modules available with optional LVD and shunts
Universal 19/23" rack mounting
Designed for CSA, UL, CE, FCC and C-Tick standards

Cordex™ 250W Modular Rectifier Shelf Systems

Cordex Rectifier Shelves

<table>
<thead>
<tr>
<th>Model</th>
<th>Rectifiers</th>
<th>Controller</th>
<th>Distribution</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>19/23&quot; 2RU universal mount</td>
<td>4 x CXRC 12-250W</td>
<td>1 x CXCI</td>
<td>(4) AM bullet type breakers</td>
<td>030-770-20</td>
</tr>
<tr>
<td>19/23&quot; 2RU universal mount</td>
<td>5 x CXRC 12-250W</td>
<td>1 x CXCI</td>
<td>Bulk power for external distribution panel</td>
<td>030-783-20</td>
</tr>
</tbody>
</table>

19/23" Shelf Systems

P/N 030-770-20
Cordex 1000W shelf power system with CXCI controller & bullet breaker distribution

P/N 030-783-20
Cordex 1250W bulk power system with CXCI controller

Shelves

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

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

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

Environmental

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

Related Components

Cordex rectifier CXRC 12-250W: See page 40
Cordex controller CXCI: See page 7
AM plug-in breakers: See page 37
Integrated 24VDC shelf power systems up to 1.6kW
Bulk 24VDC power systems up to 2kW
Distribution modules available with optional LVD and shunts
Universal 19" and 23" rack mounting
Designed for CSA, UL, CE, FCC and C-Tick standards

Cordex 24-400W Rectifier Shelves

<table>
<thead>
<tr>
<th>Model</th>
<th>Rectifiers</th>
<th>Controller</th>
<th>Distribution</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>19/23&quot; 2RU universal mount</td>
<td>4 x CXRC 24-400W</td>
<td>1 x CXCI</td>
<td>(4) AM bullet type breakers</td>
<td>030-763-20</td>
</tr>
<tr>
<td>19/23&quot; 2RU universal mount</td>
<td>5 x CXRC 24-400W</td>
<td>1 x CXCI</td>
<td>Bulk power for external distribution panel</td>
<td>030-773-20</td>
</tr>
</tbody>
</table>

19/23" Shelf Systems

P/N 030-763-20
Cordex 1.6kW shelf power system with CXCI controller & bullet breaker distribution

P/N 030-773-20
Cordex 2kW bulk power system with CXCI controller

Shelves

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

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 41
Cordex controller CXCI: See page 7
AM plug-in breakers: See page 37
> Integrated 48VDC shelf power systems up to 2.6kW
> Bulk 48VDC power systems up to 3.2kW
> Distribution modules available with optional LVD and shunts
> Rear access 19/23” and front access 19” and 23” solutions
> Designed for CSA, UL, CE, FCC and C-Tick standards

### Cordex 48-650W Rectifier Shelves

<table>
<thead>
<tr>
<th>Model</th>
<th>Rectifiers</th>
<th>Controller</th>
<th>Distribution</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>19/23” 2RU universal mount</td>
<td>4 x CXRC 48-650W</td>
<td>1 x CXCI</td>
<td>(4) AM bullet type breakers</td>
<td>030-728-20</td>
</tr>
<tr>
<td>19/23” 2RU universal mount</td>
<td>5 x CXRC 48-650W</td>
<td>1 x CXCI</td>
<td>Bulk power for external distribution</td>
<td>030-782-20</td>
</tr>
<tr>
<td>23” 2RU front access</td>
<td>4 x CXRC 48-650W</td>
<td>1 x CXCI</td>
<td>(4) AM (10) GMT fuse</td>
<td>030-722-20</td>
</tr>
<tr>
<td>19” 2RU front access</td>
<td>3 x CXRC 48-650W</td>
<td>1 x CXCI</td>
<td>(4) AM plug-in (10) GMT fuse</td>
<td>030-727-20</td>
</tr>
</tbody>
</table>

### 19/23” Shelf Systems

- **P/N 030-728-20**
  - Cordex 2.6kW shelf power system with CXCI controller & bullet breaker distribution
- **P/N 030-782-20**
  - Cordex 3.2kW bulk power system with CXCI controller
  - Optional LVD shunt with battery breaker
- **P/N 030-722-20**
  - Cordex 2.6kW front access shelf power system with CXCI controller and breaker/fuse distribution
- **P/N 030-727-20**
  - Cordex 1.9kW front access shelf power system with CXCI controller and breaker/fuse distribution

### Shelves

<table>
<thead>
<tr>
<th>19” Shelves</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions:</strong></td>
</tr>
<tr>
<td>mm: 89H x 435W x 302D</td>
</tr>
<tr>
<td>inches: 3.5H x 17.1W x 11.9D</td>
</tr>
<tr>
<td>Weight: 6.9kg (15.5lb)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>23” Front Access Shelf</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions:</strong></td>
</tr>
<tr>
<td>mm: 89H x 544W x 307D</td>
</tr>
<tr>
<td>inches: 3.5H x 21.42W x 12.0D</td>
</tr>
<tr>
<td>Weight: 16.8kg (37lb) (fully equipped with four rectifiers)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Temperature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard: -40 to 50°C (-40 to 122°F)</td>
</tr>
<tr>
<td>Storage: -40 to 85°C (-40 to 185°F)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Humidity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 95% RH non-condensing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-500 to 3000m (-1640 to 9840ft)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cooling:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural or forced convection, vertical airflow</td>
</tr>
</tbody>
</table>

### Related Components
- Cordex rectifier CXRC 48-650W: See page 42
- Cordex controller CXCI: See page 7
- AM plug-in breakers: See page 37
- GMT style fuses: See page 37
Integrated 48VDC shelf power systems up to 4kW
Bulk 48VDC power systems up to 6kW
Distribution modules available for plug-in breakers and GMT fuses
19" and 23" rack mounting solutions
Designed for CSA, UL, CE and C-Tick standards

Cordex™ 1kW Modular Rectifier Shelf Systems

![Cordex 4kW Shell Power System](image)

- **Integrated 48VDC shelf power systems up to 4kW**
- **Bulk 48VDC power systems up to 6kW**
- **Distribution modules available for plug-in breakers and GMT fuses**
- **19" and 23" rack mounting solutions**
- **Designed for CSA, UL, CE and C-Tick standards**

### Cordex 48-1kW Rectifier Shelves

<table>
<thead>
<tr>
<th>Model</th>
<th>Rectifiers</th>
<th>Controller</th>
<th>Distribution</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>19&quot; flush mount</td>
<td>5 x CXRC 48-1kW</td>
<td>CXCM</td>
<td>Bulk power for external distribution panel</td>
<td>030-707-20 L0</td>
</tr>
<tr>
<td>19&quot; flush mount</td>
<td>6 x CXRC 48-1kW</td>
<td>Requires CXCR rack mount controller</td>
<td>Bulk power for external distribution panel</td>
<td>030-707-20 L81</td>
</tr>
<tr>
<td>23&quot; center mount</td>
<td>4 x CXRC 48-1kW</td>
<td>1 x CXCM</td>
<td>Integrated plug-in breakers &amp; GMT fuse option</td>
<td>030-704-20 L0</td>
</tr>
</tbody>
</table>

### 19/23" Shelf Systems

**19/23" Shelf Systems**

**19" flush mount**

- **Model**: 030-707-20 L0 (flush mount) Cordex 5kW bulk power system with plug in controller
- **Part number**: 030-707-20 L0

**23" center mount**

- **Model**: 030-704-20 L0 (center mount) Cordex 4kW shelf power system with plug in controller & bullet type breaker distribution
- **Part number**: 030-704-20 L0

### Shelves

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

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

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 43
- Cordex controller CXCM: See page 9
- AM plug-in breakers: See page 37
- GMT style fuses: See page 37
CXPS 24-2T
Standard 24VDC System

- 24VDC systems using high density 3.1kW rectifiers
- Front access DC connections
- CXCM4 advanced modular controller
- Flexible integrated rack options
- Optional DC-DC converter upgrade kit
- Integrated system shunt and LVD

Features

Part number: 053-390-20

Configurations:
- 053-390-20-000: Base system with 23” mounting
- 053-390-20-010: System mounted in 22RU (¾ height) battery mount rack
- 053-390-20-020: System mounted in 44RU Zone 4 seismic rack

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

Distribution:
- 38x AM plug-in breaker positions
- 10x GMT type fuse positions

Controller:
- CXCM4 modular controller

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

Environmental

- Temperature: -40 to +65°C (-40 to 149°F)
- Humidity: 0 to 95% RH non-condensing
- Elevation: -500 to +2800m (-1640 to 9186ft)

Connections:
- Load breaker: Hot: ¼"-20 studs on ¾" centers
- Return: ¼" holes on ¾" 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

Dimensions:
- mm: 755H x 584W x 477D
- inches: 29.7H x 23W x 18.8D

Weight: 70.3kg (155lbs)

Mounting: 23” center mount

Related Components
- 038-257-20: Cordex converter CXDF 24-48/2kW upgrade kit: See page 59
- Cordex rectifier 24-3.1kW: See page 45
- Cordex controller CXCM4: See page 12
- AM plug-in breakers: See page 37
- GMT style fuses: See page 37
24VDC systems using high density 3.1kW rectifiers
Front access DC connections
CXCM4 advanced modular controller
Includes 7ft seismic rack
Optional DC-DC converter upgrade kits
Integrated system shunt and LVD

Features

Part number: 053-391-20

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

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: 34.1kW (expandable to 48.0kw)
Rectifier: 115A @ 27VDC

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 +2800m (-1640 to 13124ft) with de-rated output

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

Connections:
Load breaker: Hot: 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
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

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 45
Cordex controller CXCM4: See page 12
AM plug-in breakers: See page 37
GMT style fuses: See page 37
CXPS 48-1T
Standard 48VDC System

- 48VDC systems using high density 3.6kW rectifiers
- Front access DC connections
- CXCM4 advanced modular controller
- Flexible integrated rack options
- Integrated system shunt and LVD

Features

Part number: .................053-392-20

Configurations:
- 053-392-20-000: .........Base system with 23” mounting
- 053-392-20-010: .........System mounted in 22RU (½ height) battery mount rack
- 053-392-20-020: .........System mounted in 44RU zone 4 seismic rack
- 053-392-20-030: .........System mounted in 44RU Z4 rack with 3x battery trays for 3x 48V strings

Rectifier: Up to 5x 48V-3.6kW rectifier positions

Distribution: 18x AM plug-in breaker positions
- 10x GMT type fuse positions
- Shunt
- Low voltage disconnect

Controller: CXCM4 modular controller

Electrical

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

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

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

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 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
- Alarm connections: ......Screw terminal 1.31mm² to 0.128mm² (#16 to #26 AWG)
- Access: ................Cable: top or bottom
- User: front access after installation

Related Components

058-716-70 ...............Cordex rectifier CXRF 24-3.1kW expansion shelf kit

Cordex rectifier 48-3.6kW: See page 45
Cordex controller CXCM4: See page 12
AM plug-in breakers: See page 37
GMT style fuses: See page 37
CXPS 48-2T
Standard 48VDC System

- 48VDC systems using high density 3.6kW rectifiers
- Front access DC connections
- CXCM4 advanced modular controller
- Flexible integrated rack options
- Integrated system shunt and LVD

Features

| Part number: | 053-393-20 |
| Configurations: | 053-393-20-000 - Base system with 23" mounting |
| | 053-393-20-010 - System mounted in 22RU (1/2 height) |
| | 053-393-20-020 - System mounted in 44RU zone 4 seismic rack |
| | 053-393-20-030 - System mounted in 44RU Z4 rack with 3x battery trays for 3x 48V strings |
| Rectifier: | Up to 11x 48V-3.6kW rectifier positions |
| Distribution: | 38x AM plug-in breaker positions |
| | 10x GMT type fuse positions |
| | Shunt |
| | Low voltage disconnect |
| Controller: | CXCM4 modular controller |

Electrical

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

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

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

Mechanical

- Dimensions: 755H x 584W x 477D
- Weight: 70.3kg (155lbs)
- Mounting: 23" center mount

Connections:
- Load breaker: Hot: ¼"-20 studs on ¾" centers
- Return: ¼" holes on ¾" 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

Related Components

- 058-716-70 - Cordex rectifier CXRF 24-3.1kW expansion shelf kit
- Cordex rectifier 48-3.6kW: See page 45
- Cordex controller CXCM4: See page 12
- AM plug-in breakers: See page 37
- GMT style fuses: See page 37
CXPS 48-1.8-i
Standard 48VDC Power System

- 48VDC systems using high density 1.8kW rectifiers
- Front access DC connections
- Integrated CXCI advanced digital controller
- Wide range AC input
- Optional integrated systems with battery trays
- Integrated system shunt and LVD

Features

Part number: 053-990-20

Configurations:

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

Rectifier: Up to 4x 48V-1.8kW rectifier positions

Distribution: 14x load breaker positions (mid-trip, plug-in style)

Controller: CXCI integrated controller

Electrical

Input:

- Voltage: 176 to 312VAC (nominal)
- Current: 14.6A @ 240VAC (per module)
- Frequency: 45 to 66Hz
- Efficiency: >91% (50-100% load @ nominal voltage)
- Power factor: >.99

Output:

- Current:
  - System: 150A max @ nominal I/P
  - Rectifier: 37.5A @ 48VDC (nominal I/P)
  - 24A @ 48VDC (115 to 135VAC)
  - (de-rated linearly to 18.75A @ 90VAC)

- System: 7200W max @ nominal I/P
- Rectifier: 1800W max @ nominal I/P
- 1100W (115 to 135VAC)
  - (de-rated linearly to 900W @ 90VAC)

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 (42lb)
- Rectifier: 2.8kg (6.2lb) 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, ⅝" 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

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)

Related Components

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

Cordex rectifier 48-1.8kW: See page 44
Cordex controller CXCI: See page 7
AM plug-in breakers (load): See page 37
CXPS 48-1.8-M2
Standard 48VDC Power System

- 48VDC systems using high density 1.8kW rectifiers
- Front access DC connections
- Integrated CXCM2 modular digital controller
- Wide range AC input
- Optional integrated systems with battery trays
- Integrated system shunt and LVD

Features

Part number: .................053-991-20

Configurations:
053-991-20-000: ............Base system with 19/23" universal mounting
053-991-20-040: ............System mounted in 23", 44RU Z4 rack with
2x battery trays for 2x 48V strings
053-991-20-031: ............System mounted in 19", 44RU Z4 rack with
3x battery trays for 3x 48V strings
Rectifier: ........................Up to 7x 48V-1.8kW rectifier positions
Distribution: ....................14x load breaker positions (mid-trip, plug-in style)
                          4x battery breaker positions
                          (series-trip, plug-in style)
                          Low voltage disconnect
                          Shunt
Controller: ......................CXCM2 modular controller

Electrical

Input:
Voltage: .....................176 to 312VAC (nominal)
90 to 176VAC (de-rated O/P power)
Current: .............14.6A @ 240VAC (per module)
12.2A @ 120VAC (per module)
Frequency: .............45 to 66Hz
Efficiency: .............>91% (50-100% load @ nominal voltage)
Power factor: .............>0.99

Output:
System: .............262.5A max @ nominal I/P
168A max @ 120VAC I/P
Rectifier: .............37.5A @ 48VDC (nominal I/P)
24A @ 48VDC (115 to 135VAC)
(de-rated linearly to 18.75A @ 90VAC)

Power:
System: .............12600W max @ nominal I/P
8050W @ 120VAC I/P
Rectifier: .............1800W max @ nominal I/P
1150W (115 to 135VAC)
(de-rated linearly to 900W @ 90VAC)

Mechanical

Dimensions:
mm: .....................222H x 438W x 310D
inches: .....................8.75H x 17.24W x 12.2D
(-000 configuration - excludes mounting
brackets, rear cover, and module handle)
Weight:
System: .....................28kg (62lb)
Rectifier: .....................2.8kg (6.2lb) 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, ⅝ holes on ⅝" centers
Rectifier input: .............HOT: 2x sets, ⅜ holes on 1" centers
                          RTN: 2x sets, ⅜ holes on 1" centers
Alarm: .............Screw terminal 1.31mm² to 0.128mm²
                          (#16 to #26 AWG)
CXCM2 input: .............3x DB-style cable connections
Access: ......................Front access after installation

Environmental

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

Related Components

058-156-20..................23" battery tray expansion kit
                          (for use with -040 configuration)
058-157-20..................19" battery tray expansion kit
                          (for use with -031 configuration)
470-347-10 ..................100A battery breaker
747-503-20 ..................150A battery breaker
747-504-20 ..................250A battery breaker
Cordex rectifier 48-1.8kW: See page 44
Cordex controller CXCM2: See page 10
AM plug-in breakers (load): See page 37
Cordex™ 432kW
Large Power System

- 8,000A capacity
- Designed for MSCs, COs, and Cable Headend facilities
- Cordex 3.6kW modular rectifiers
- Circuit breaker and TPL fuse options
- Compact footprint
- Internal bay-to-bay copper busswork
- Expandable power and distribution bays

**Electrical**

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

**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 ¼” dia. on ⅜” centers or 2 hole ¾” dia. on 1” centers
  - GJ breaker: 1 pole and 2 pole are ¾” to 16, 3 pole are 2 hole, ½” dia. on 1¼” centers or ¾” dia. on 1¼” centers
  - Ground bar: Overhead buss ground, 15 sets of 2 hole ¼” dia. on ⅜” centers (basic system)

**Mechanical**

- **Part number:** 025-999-20
- **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 (600lb) 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)

**Features**

- **System level alarms/controls:** Alarms/control parameters are user-programmable through built-in digital supervisory unit.
- **Indicators:**
  - LCD with touch screen
  - System OK (green LED)
  - System minor alarm (yellow LED)
  - System major alarm (red LED)
- **Alarm connections:** 0.34 to 2.5mm² (14 to 22AWG)
- **Load disconnect:** 48VDC/1200A x N mounted on load side (optional)

**Related Components**

- Cordex rectifier CXRF 48-3.6kW: See page 45
- Cordex controller CXCR: See page 8
- GJ breakers: See page 37
- TPL fuses: See page 37
Distribution

Argus offers a wide variety of DC 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 DC power systems to specific customer requirements. Panels are available with several options including front access, ground bars, integrated shunts, LVD’s, and several other features.

Argus also offers a variety of Universal Distribution Centers that accommodate system control, distribution, battery connections, and other system elements in a single rack mount package. Combining with a Cordex rectifier system allows for a completely integrated solution in a very compact solution.

Argus distribution panels have the flexibility to be configured as a solution to practically any DC 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

<table>
<thead>
<tr>
<th>Part number</th>
<th>Breakers</th>
<th>Positions</th>
<th>Capacity</th>
<th>Mounting</th>
<th>RU</th>
</tr>
</thead>
<tbody>
<tr>
<td>020-107-20</td>
<td>AM bolt-in</td>
<td>16/22</td>
<td>550A</td>
<td>19/23&quot;</td>
<td>3</td>
</tr>
<tr>
<td>020-588-20</td>
<td>AM plug-in</td>
<td>16</td>
<td>400A</td>
<td>19&quot;</td>
<td>5</td>
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<tr>
<td>020-589-20</td>
<td>AM plug-in</td>
<td>20</td>
<td>400A</td>
<td>23&quot;</td>
<td>5</td>
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<tr>
<td>020-671-20</td>
<td>AM plug-in</td>
<td>24</td>
<td>600A</td>
<td>23&quot;</td>
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<tr>
<td>020-675-20</td>
<td>AM plug-in</td>
<td>18</td>
<td>600A</td>
<td>19&quot;</td>
<td>3</td>
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<tr>
<td>020-534-20</td>
<td>GJ</td>
<td>3</td>
<td></td>
<td>19/23&quot;</td>
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</tr>
<tr>
<td>020-578-20</td>
<td>GJ</td>
<td>4</td>
<td></td>
<td>23&quot;</td>
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</tr>
</tbody>
</table>
GMT and TPL fuse panel options
TPS fuse options using fuse mount breaker cartridges
19” and 23” rack mount models
12, 24 or 48V configurations
Designed for flexible and custom DC distribution

Fuse Panel Options

<table>
<thead>
<tr>
<th>Part number</th>
<th>Breakers</th>
<th>Positions</th>
<th>Capacity</th>
<th>Mounting</th>
<th>RU</th>
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<tbody>
<tr>
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<td>60A</td>
<td>19/23*</td>
<td>1</td>
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<tr>
<td>020-005-20</td>
<td>GMT</td>
<td>20</td>
<td>90A</td>
<td>19/23*</td>
<td>1</td>
</tr>
<tr>
<td>020-597-20</td>
<td>TPL</td>
<td>2</td>
<td>1200A</td>
<td>23”</td>
<td>5</td>
</tr>
<tr>
<td>020-588-20</td>
<td>TPS*</td>
<td>16</td>
<td>400A</td>
<td>19”</td>
<td>5</td>
</tr>
<tr>
<td>020-589-20</td>
<td>TPS*</td>
<td>20</td>
<td>400A</td>
<td>23”</td>
<td>5</td>
</tr>
<tr>
<td>020-671-20</td>
<td>TPS*</td>
<td>24</td>
<td>600A</td>
<td>23”</td>
<td>3</td>
</tr>
<tr>
<td>020-675-20</td>
<td>TPS*</td>
<td>18</td>
<td>600A</td>
<td>19”</td>
<td>3</td>
</tr>
</tbody>
</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>Part number</th>
<th>Breakers</th>
<th>Positions</th>
<th>Capacity</th>
<th>Mounting</th>
<th>RU</th>
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</thead>
<tbody>
<tr>
<td>Single tier</td>
<td>020-645-20</td>
<td>AM plug-in</td>
<td>20-24</td>
<td>600A</td>
<td>23&quot;</td>
<td>7</td>
</tr>
<tr>
<td>Two tier</td>
<td>020-646-20</td>
<td>AM plug-in</td>
<td>40-48</td>
<td>1200A</td>
<td>23&quot;</td>
<td>9</td>
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<tr>
<td>Four tier</td>
<td>020-635-20</td>
<td>AM plug-in</td>
<td>80-96</td>
<td>2000A</td>
<td>23&quot;</td>
<td>17</td>
</tr>
</tbody>
</table>

Modular Distribution Tier Options

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

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

Related Components

Cordex controller CXCP: See page 8
AM plug-in breakers: See page 37
GMT style fuses: See page 37
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

**Electrical**

Part number: 020-702-20

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

**Mechanical**

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

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 ¼” holes on 1” centers
Return: 2x sets ¼” holes on 1” centers
Alarm: Terminal blocks: Internal I/O
Communications: 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)
## Distribution Panel Overview

### DC Distribution Options

<table>
<thead>
<tr>
<th>Part number</th>
<th>Fuse position</th>
<th>Fuse type</th>
<th>Breaker position</th>
<th>Breaker type</th>
<th>Capacity</th>
<th>Mounting</th>
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<th>Additional options</th>
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<tr>
<td>020-107-20</td>
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<td>AM bolt-in</td>
<td>16/22</td>
<td>AM plug-in</td>
<td>550A</td>
<td>19/23'</td>
<td>No</td>
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<td>Gnd bar</td>
</tr>
<tr>
<td>020-588-20</td>
<td>16*</td>
<td>TPS*</td>
<td>16</td>
<td>AM plug-in</td>
<td>400A</td>
<td>19/23'</td>
<td>Yes</td>
<td>5</td>
<td>Gnd bar, LVD</td>
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<td>020-589-20</td>
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<td>AM plug-in</td>
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<td>23'</td>
<td>Yes</td>
<td>5</td>
<td>Gnd bar, LVD</td>
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<tr>
<td>020-671-20</td>
<td>24*</td>
<td>TPS*</td>
<td>24</td>
<td>AM plug-in</td>
<td>600A</td>
<td>23'</td>
<td>No</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>020-675-20</td>
<td>18*</td>
<td>TPS*</td>
<td>18</td>
<td>AM plug-in</td>
<td>600A</td>
<td>19/23'</td>
<td>No</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>020-534-20</td>
<td>0</td>
<td>GJ bolt-in</td>
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<td>19/23'</td>
<td>No</td>
<td>3</td>
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<td>Gnd bar</td>
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<td>90A</td>
<td>19/23'</td>
<td>No</td>
<td>1</td>
<td>Gnd bar</td>
</tr>
<tr>
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<td>2 TPL</td>
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<td>1200A</td>
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<td>Shunt</td>
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<td>TPS*</td>
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<td>Controller I/O, LVD, Shunt, Batt breakers</td>
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<td>020-645-20</td>
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<td>TPS*</td>
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<td>40-48*</td>
<td>TFS*</td>
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<td>80-96*</td>
<td>TPS*</td>
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<td>AM plug-in**</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 and Fuses
### DC Distribution Options

### Breakers

<table>
<thead>
<tr>
<th>AM Series, Bolt-In Style Breakers</th>
<th>GJ Series, Bolt-In Style Breakers</th>
<th>AM Series, Plug-In Style Breakers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part number</strong></td>
<td><strong>Description</strong></td>
<td><strong>Part number</strong></td>
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<tr>
<td>747-011-20</td>
<td>5 Amp w/ Jumper Kit</td>
<td>470-101-10</td>
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<td>747-012-20</td>
<td>10 Amp w/ Jumper Kit</td>
<td>470-125-10</td>
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<tr>
<td>747-013-20</td>
<td>15 Amp w/ Jumper Kit</td>
<td>470-188-10</td>
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<tr>
<td>747-014-20</td>
<td>20 Amp w/ Jumper Kit</td>
<td>470-171-10</td>
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<td>747-015-20</td>
<td>25 Amp w/ Jumper Kit</td>
<td>470-121-10</td>
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<td>747-016-20</td>
<td>30 Amp w/ Jumper Kit</td>
<td>470-081-10</td>
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<td>40 Amp w/ Jumper Kit</td>
<td>470-228-10</td>
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<td>747-018-20</td>
<td>50 Amp w/ Jumper Kit</td>
<td>470-122-10</td>
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<td>60 Amp w/ Jumper Kit</td>
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<td>470-210-10</td>
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<td>80 Amp w/ Jumper Kit</td>
<td>470-123-10</td>
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<td>90 Amp w/ Jumper Kit</td>
<td>470-219-10</td>
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<td>747-023-20</td>
<td>100 Amp w/ Jumper Kit</td>
<td>470-208-10</td>
</tr>
<tr>
<td>747-146-20</td>
<td>110 Amp, Mid-Trip (2-Pole)</td>
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<tr>
<td>747-147-20</td>
<td>125 Amp, Mid-Trip (2-Pole)</td>
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<td>747-148-20</td>
<td>150 Amp, Mid-Trip (2-Pole)</td>
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<td>747-149-20</td>
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<td>225 Amp, Mid-Trip (3-Pole)</td>
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<td>250 Amp, Mid-Trip (3-Pole)</td>
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<td>425 Amp, Mid-Trip (3-Pole)</td>
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### Fuses

<table>
<thead>
<tr>
<th>GMT Series Fuses</th>
<th>TPL Series Fuses</th>
<th>TPS Series Fuses</th>
</tr>
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<tbody>
<tr>
<td><strong>Part number</strong></td>
<td><strong>Description</strong></td>
<td><strong>Part number</strong></td>
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<td>1.33 Amp</td>
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<td>460-082-10</td>
<td>1.5 Amp</td>
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<td>7.5 Amp</td>
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<td>10 Amp</td>
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<td>GMT Fuse Cover</td>
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</table>
Cordex Rectifiers

Cordex rectifiers feature some of the most innovative DC power technology today. Expert engineering combines the maximum in efficiency and reliability into one compact unit. The new Cordex series have power density improvements of 200-300% over previous rectifiers and incorporate many new features.

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 rectifiers are designed to operate seamlessly with the Cordex CXC system controllers for advanced configuration and local or remote system control and monitoring.
Cordex™ 250W
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

### Electrical

**Part number:** 010-587-20

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

### Mechanical

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

### 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

### Environmental

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

### Standards

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
- 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
## Electrical

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part number</td>
<td>010-582-20</td>
</tr>
<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>
<tr>
<td>Load regulation</td>
<td>Static &lt;0.5%</td>
</tr>
<tr>
<td></td>
<td>Dynamic &lt;4.2% for 50 to 100% load step</td>
</tr>
<tr>
<td>Line regulation</td>
<td>Static &lt;0.1%</td>
</tr>
<tr>
<td></td>
<td>Dynamic &lt;1% for any change within rated limits</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>
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</table>

## Mechanical

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (mm)</td>
<td>88.4H x 71.6W x 242D</td>
</tr>
<tr>
<td>Dimensions (inches)</td>
<td>3.4H x 2.8W x 9.5D</td>
</tr>
<tr>
<td>Weight</td>
<td>1.4kg (3lb)</td>
</tr>
</tbody>
</table>

## Features

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

## Environmental

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-40 to 50°C (-40 to 122°F) (power derated up to 70°C/158°F)</td>
</tr>
<tr>
<td>Storage</td>
<td>0 to 95% RH non-condensing</td>
</tr>
<tr>
<td>Elevation</td>
<td>-500 to 3000m (-1640 to 9840ft)</td>
</tr>
<tr>
<td>Heat dissipation</td>
<td>&lt;94BTU per hour</td>
</tr>
</tbody>
</table>

## Standards

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
- 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
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

<table>
<thead>
<tr>
<th>Electrical</th>
</tr>
</thead>
</table>
| Part number: 120V model: 010-571-20  
Universal 120/240 model: 010-570-20 |
| 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: 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 56VDC  
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 |

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

<table>
<thead>
<tr>
<th>Features</th>
</tr>
</thead>
</table>
| Indicators: AC mains OK — green LED  
Module alarm — red LED |
| Cooling: Natural convection |
| 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 |

<table>
<thead>
<tr>
<th>Environmental</th>
</tr>
</thead>
</table>
| 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: <94BTU per hour |

<table>
<thead>
<tr>
<th>Standards</th>
</tr>
</thead>
</table>
| 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 61000-4-6  
EN 61000-4-11  
ANSI/IEEE C62.41 Cat B3 |
Cordex™ 1kW
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

Electrical

Part number: .....................010-566-20

Input voltage:
Nominal: .........................208 to 277VAC
Operating: ......................150 to 320VAC
Extended: ......................150 to 90VAC (de-rated power)
Input frequency: .................45 to 66Hz
Power factor: ..................>0.99
Efficiency: ......................>92%
Power output: .................1000W continuous/module
Output voltage: .................42 to 60VDC
Output current: .................18.5A @ 54VDC (20.8A max)
Load regulation: ..............<0.5% (static)
Line regulation: ...............<0.1% (static)
Transient response: ..........±1% for 50 to 100% load step,
                           2ms recovery time
Noise:
  Voice band: ..................<32dBmC
  Wide band: .................<5mVrms
  Psophometric: ..............<1mV

Mechanical

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

Features

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

Cooling: .........................Natural convection

Adjustments:
  Float and equalize voltage
  Battery test voltage
  High and low voltage alarms
  High voltage shutdown
  Current limit
  Start delay timers
  Slope %

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

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 4000m (-1640 to 13120ft)
  Heat dissipation: ............<295BTU per hour

Standards

The Cordex 1kW is designed to meet the following:

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

EMC: .........................ETSI 300 386
  ICES-03 Class B
  EN50022 (CISPR 22) Class B
  C-Tick (Australia)
  EN 61000-3-2
  EN 61000-3-3

Immunity: .......................EN 61000-4-2
  EN 61000-4-3
  EN 61000-4-4
  EN 61000-4-5
  EN 61000-4-6
  EN 61000-4-11
  ANSI/IEEE C62.41 Cat B3
  EN 61000-4-11
  ANSI/IEEE C62.41 Cat B3
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>Part number:</th>
<th>.........................010-580-20</th>
</tr>
</thead>
</table>
| Input voltage: | Nominal: 208 to 277VAC  
Operating: 176 to 321VAC  
Extended: 176 to 90VAC (de-rated power) |
| Input frequency: | 45 to 66Hz |
| Power factor: | >0.99 (50 to 100% load) |
| Efficiency: | >91% |
| Output voltage: | 42 to 60VDC |
| Output current: | 37.5A @ 48VDC (nominal I/p)  
24A @ 48VDC (115 to 135VAC) |
| Output power: | 1800W continuous @ nominal I/p |
| Load regulation: | <±0.5% (static) |
| Line regulation: | <±0.1% (static) |
| Noise: | Voice band: <32dBm |
| | Wide band: <30mV RMS (10kHz to 10MHz) |
| Psophometric: | <1mW |
| Acoustic: | <60dBa @ 1m (3ft) |

### Mechanical

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

### Features

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

### Environmental

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

### Shelves

| 19/23" shelf: | Part number: 19/23" 4-module: 030-749-20 |
| Dimensions: | mm: 89H x 438W x 310D  
inches: 3.5H x 17.2W x 12.2D |
| Weight: | 8.5kg (19lb) |

| 23" shelf: | Part number: 23" 5-module: 030-747-20 |
| Dimensions: | mm: 89H x 541W x 310D  
inches: 3.5H x 21.3W x 12.2D |
| Weight: | 10kg (22lb) |

### Connections:

| Input: | Terminal blocks  
Mini-fit connectors (23" only) |
| Output: | Bus adapters with ⅜" on ⅛" centers |
| Chassis ground: | ¼" studs on ⅝" centers |
| CAN communication: | RJ12 offset |

### Standards

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™ 3.1/3.6kW
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

### Electrical

#### 3.1kW Rectifier Module(s)
Part number: 010-572-20

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

- **Input frequency:** 45 to 70Hz
- **Power factor:** >0.99 (50 to 100% load)
- **THD:** <5%
- **Efficiency:** >90%
- **Output voltage:** 21 to 29VDC
- **Output power:** 3100W continuous/module
- **Output current:** 115A @ 27VDC (130A max. 24V)
- **Load regulation:** <±0.5% (static)
- **Line regulation:** <±0.1% (static)
- **Transient response:** 2% for 50 to 100% load step, 2ms recovery time
- **Noise:**
  - Voice band: <32dBm
  - Wide band: <30mV RMS (10kHz to 10MHz)
  - <150mV pk to pk (10kHz to 100MHz)
- **Psophometric:** <1.0mV
- **Acoustic:** <60dBA @ 1m (3ft)

#### 3.6kW Rectifier Module(s)
Part number: 010-567-20

- **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: <32dBm
  - Wide band: <30mV RMS (10kHz to 10MHz)
  - <150mV pk to pk (10kHz to 100MHz)
- **Psophometric:** <1mV
- **Acoustic:** <60dBA @ 1m (3ft)

### Mechanical

- **Dimensions:**
  - mm: 160H x 87W x 300D
  - inches: 6.3H x 3.4W x 11.8D
- **Weight:** 4.6kg (10lb)

### Features

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

### 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:** <1176BTU per hour

### Standards

- **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
  - EN 61000-4-2
  - EN 61000-4-3
  - EN 61000-4-4
  - EN 61000-4-5
  - EN 61000-4-6
  - EN 61000-4-11
  - ANSI/IEEE C62.41 Cat B3
- **NEBS:**
  - GR-1089 CORE
  - GR-69 CORE
High Voltage Solutions

Argus High Voltage DC rectifiers and systems bring advanced Cordex technology and features to the utility and industrial markets.

Available in both 125VDC and 220VDC output, Cordex high voltage modules are a perfect fit for many applications including power utility and petrochemical switch gear control systems. High density switch mode rectifier modules provide substantial space savings over traditional ferro resonant designs.

The Cordex CXC controller provides the high voltage rectifiers with a single point setup for alarming and control, along with many advanced features including remote IP and SNMP connectivity. Multiple battery monitoring features are standard with the CXC including capacity and runtime prediction. Multiple CXC peripherals are optionally available for detailed monitoring of cell voltage, string voltage, temperature and string current on high voltage DC battery strings.

Available in 1.1kw and 4.4kw modules, the Cordex 125/220V rectifiers provide a great combination of advanced features and high power density for a wide range of high voltage DC power system capacities.
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

**Electrical**

Part number: .....................010-579-20

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

Input frequency: .................45 to 66Hz

Power output: .........................1100W continuous/module
Power factor: .........................>0.99 (input current)

THD: ..................................<5%
Efficiency: ...........................>93%

Output voltage: .......................90 to 180VDC
Output current: ....................8.8A @ 125VDC (11A max)

Load regulation: ..............Static <±0.5%
Line regulation: .................Static <±0.1%

Transient response: ........<±2% for 50 to 100% load step,
10ms recovery time

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

Insulation: ..........................
2.5kVAC input-earth
3kVAC input-output
2kVAC output-earth
0.5kVAC signals-earth

**Mechanical**

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

Weight: ..............................2.9kg (6.4lb)

**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)
(upto 70°C/158°F power de-rated)
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: .............<282BTU per hour (max)

**Shelves**

›19” shelf (6 module)
Part number: .....................030-740-20

Dimensions:
mm: .................................177H x 444W x 303D
inches: .............................6.9H x 17.5W x 11.9D

Weight: ..............................7.3kg (16lb)

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

**Standards**

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
CISPR 22 Class A
C-Tick (Australia)
EN 61000-3-2
EN 61000-3-2

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
## Electrical

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part number</td>
<td>010-569-20</td>
</tr>
</tbody>
</table>
| 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| 5A @ 220VDC (5.5A max) |
| Load regulation| Static <0.5%  
Line regulation: Static <0.1% |
| Transient response | <2% for 50 to 100% load step, 10ms recovery time |
| Wide band noise | <30mVrms  
<150mVp-p |
| Insulation    | 2.5kVAC input-earth  
2kVAC output-earth  
0.5kVAC signals-earth |

## Mechanical

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
</table>
| Dimensions    | mm: 177H x 71W x 250D  
inches: 6.9H x 2.8W x 9.8D |
| Weight        | 2.9kg (6.4lb) |

## Features

- Indicators: AC mains OK — green LED  
Module OK — green LED  
Module alarm — red LED
- Cooling: Natural convection
- 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  
Earth leakage alarm

## Environmental

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
</table>
| Temperature   | Operation: -40 to 50°C (-40 to 122°F)  
Storage: -50 to 85°C (-58 to 185°F) (up to 70°C/158°F power de-rated) |
| Humidity      | 0 to 95% RH non-condensing |
| Elevation     | -500 to 4000m (-1640 to 13120ft) |
| Heat dissipation | <282BTU per hour (max) |

## Shelves

### >19" shelf (6 module)

<table>
<thead>
<tr>
<th>Part number</th>
<th>030-718-20</th>
</tr>
</thead>
</table>
| Dimensions  | mm: 177H x 444W x 303D  
inches: 6.9H x 17.5W x 11.9D |
| Weight      | 7.3kg (16lb) |
| 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 ¼" centers  
Chassis ground: ¼" stud  
CAN communication: RJ 12 offset |

## Standards

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

- 26.4A system capacity @ 125V
- 15A system capacity @ 220V
- Cordex 1.1kW modular rectifiers (125 or 220V)
- Wide range AC input
- Front accessible for rack or wall mounting
- Ethernet and SNMP communications
- Designed for industrial and utility applications

**Electrical**

<table>
<thead>
<tr>
<th>Part number:</th>
<th>125V: 030-788-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>220V: 030-789-20</td>
<td></td>
</tr>
<tr>
<td>Input voltage:</td>
<td>Nominal: 208 to 277VAC</td>
</tr>
<tr>
<td>Operating:</td>
<td>176 to 320VAC</td>
</tr>
<tr>
<td>Extended:</td>
<td>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% (60 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, &lt;80mVp-p</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>

**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 (27.76lb)* |
| Enclosure: | NEMA 1 (charcoal finish) |

**Features**

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

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

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

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

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

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

**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: <900BTU per hour/system

**Standards**

<table>
<thead>
<tr>
<th>Safety:</th>
<th>UL 60950 3rd editions, CSA C22.2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. 60950-00 3rd edition</td>
</tr>
<tr>
<td></td>
<td>EN 60950</td>
</tr>
<tr>
<td></td>
<td>CE</td>
</tr>
</tbody>
</table>

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

*Rectifier module not included system weight
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

### Electrical

<table>
<thead>
<tr>
<th>Part number:</th>
<th>125V: 010-589-20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>220V: 010-588-20</td>
</tr>
<tr>
<td>Input voltage: Nominal:</td>
<td>208 to 240VAC</td>
</tr>
<tr>
<td>Operating:</td>
<td>187V to 312VAC</td>
</tr>
<tr>
<td>Extended:</td>
<td>187 to 90VAC (de-rated)</td>
</tr>
<tr>
<td>Input 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>Output voltage: 125V module:</td>
<td>90 to 160VDC</td>
</tr>
<tr>
<td>220V module:</td>
<td>180 to 320VDC</td>
</tr>
<tr>
<td>Output current: 125VDC module:</td>
<td>35A @ 125VDC (40A @ 110VDC max)</td>
</tr>
<tr>
<td>220VDC module:</td>
<td>20A @ 220VDC</td>
</tr>
<tr>
<td>Load regulation: Static</td>
<td>&lt;±0.5%</td>
</tr>
<tr>
<td>Line regulation: Static</td>
<td>&lt;±0.1%</td>
</tr>
<tr>
<td>Transient response: 220VDC module:</td>
<td>&lt;±5% for 40 to 90% load step, 30ms recovery time</td>
</tr>
<tr>
<td>Wide band noise: 125VDC module:</td>
<td>&lt;300mVrms</td>
</tr>
<tr>
<td>220VDC module:</td>
<td>&lt;90mVrms</td>
</tr>
<tr>
<td>Insulation: 2.5kVAC input-earth</td>
<td></td>
</tr>
<tr>
<td>3kVAC input-output</td>
<td></td>
</tr>
<tr>
<td>2kVAC output-earth</td>
<td></td>
</tr>
<tr>
<td>0.5kVAC signals-earth</td>
<td></td>
</tr>
<tr>
<td>Acoustic:</td>
<td>&lt;60dBa @ 1m (3ft)</td>
</tr>
</tbody>
</table>

### Mechanical

| Dimensions: mm: | 160H x 87W x 300D |
|               | 6.3H x 3.4W x 11.8D |
| Weight: | 4.65kg (10.57lb) |

### 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 alarms
- High voltage shutdown
- Current limit
- 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

### Environmental

- Temperature: Standard: -40 to 50°C (-40 to 130°F)
- Extended: 40 to 75°C (-40 to 167°F)
- Humidity: 0 to 95% RH non-condensing
- Elevation: -500 to 2800m (-1640 to 9186ft)
- Heat dissipation: <1080BTU per hour

### Shelves

- **19/23" shelf**
  - Part number: 125V 19" 5-module: 030-769-20
  - 220V 19" 5-module: 030-768-20
  - Dimensions: mm: 177H x 442W x 389D
  - Weight: 8.5kg (19lb)
  - Mounting: Fits 19" rack flush/center mount (5 modules) Fits 23" rack center mount only

- **23" shelf**
  - Part number: 125V 23" 6-module: 030-767-20
  - 220V 23" 6-module: 030-766-20
  - Dimensions: mm: 177H x 530W x 389D
  - Weight: 9.5kg (21lb)
  - Mounting: Fits 23" racks only flush/center mount (6 modules)

### Connections

- Input: Box type terminal block
- 6 to 16mm² (10 to 6AWG)
- Output: Bus adapters with ¼” studs on 1” centers
- Chassis ground: Compression lug
- 6 to 16mm² (10 to 6AWG)
- CAN communication: RJ12 offset

### Standards

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

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

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

Argus CSM35 and CSM36 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 infra-structure, these converters are a great solution for remote site powering where AC utility is not available, or battery maintenance is cost prohibitive. CSM3x converters are perfect for FTTx, FITL (Fiber In The Loop), xDSL, and many other applications.

Whether to allow dual voltage system support, or providing network powering services, Argus converters provide a cost effective and reliable option for DC power systems.
CSM01 Modular DC to DC Converter

- 24VDC to 48VDC, 5A output
- 4RU vertical mount — 5 modules in 19", 6 modules in 23"
- 2RU horizontal mount — 2 modules in 19", 3 modules in 23"
- Scalable hot plug-in operation
- Convection cooled

### Electrical

**Part number:**
- Horizontal: 012-512-20
- Vertical: 012-501-20

**Input voltage:** 20 to 30VDC
**Output voltage:** 44 to 52VDC
**Output current:** 5A
**Efficiency:** >85% (100% load)
**Regulation:**
- <1%, +/-0.1% load (static)
- <2% deviation for 50 to 100% load step (dynamic)
**Response time:** 2ms to 0.1% of output for 50 to 100% load step
**Noise:**
- Voice band: <22dBrnC
- Wide band: <10mV RMS (10kHz to 10MHz)
- <150mV pk to pk (10kHz to 100MHz)
**Acoustic:** 45 dBa at 1m (3ft)

### Environmental

**Temperature:** 0 to 50°C (32 to 122°F) with specified ventilation
**Humidity:** 0 to 95% RH non-condensing
**Elevation:** -500 to 2800m (-1640 to 9186ft)
**Indicators:**
- Power on
- Output over voltage protection trip
- Bar graph output current
- Converter fail
- Current limit
**Alarms:**
- Converter fail alarm†

### Shelves

**Mechanical**

**Connections:**
- Input/output: Two ¼" studs on ¾" centers
- Alarm/control: Terminal block 0.5mm² to 1.5mm² (#20 to 16AWG)

**10A (2-module horizontal 19")**

**Part number:** 030-529-20
**Dimensions:**
- mm: 90H x 432W x 305D
- inches: 3.5H x 17W x 12D
**Weight:** 8.4kg (18.5lb) e/w 2 power modules

**15A (3-module horizontal 23")**

**Part number:** 030-528-20
**Dimensions:**
- mm: 90H x 508W x 305D
- inches: 3.5H x 20W x 12D
**Weight:** 10.9kg (24lb) e/w 3 power modules

**25A (5-module vertical 19")**

**Part number:** 030-526-20
**Dimensions:**
- mm: 178H x 432W x 305D
- inches: 7H x 17W x 12D
**Weight:** 16.6kg (36lb) e/w 5 power modules

**30A (6-module vertical 23")**

**Part number:** 030-523-20
**Dimensions:**
- mm: 178H x 508W x 305D
- inches: 7H x 20W x 12D
**Weight:** 19.5kg (43lb) e/w 6 power modules

**Input Module 25 and 30A versions**

**Part number:** 012-507-20
**Indicators:** Circuit breaker trip
**Alarms:** Circuit breaker trip alarm†

**Distribution Fuse Module 10, 25 and 30A versions**

**Part number:** 012-509-20
**Indicators:**
- Output fuse fail
- Output fuse alarm†
**Fuse block:** 8 position 0 to 10A GMT fuses (25 & 30A versions)
- 4 position 0 to 10A GMT fuses (10A version)
**Connections:**
- Terminal block 0.75 mm² to 4 mm² (#18 to #12 AWG)

**Analog Supervisory Module 25 and 30A versions**

**Part number:** 012-508-20
**Indicators:**
- Major alarm†
- Low voltage alarm†
- High voltage alarm†
**Alarms:**
- Over voltage protection
- High voltage alarm
- Low voltage alarm
- Test/normal selector

† Jumper selectable form A/B contacts

### Standards

EN: 55022 - Class A (radiated)
FCC: Part 15 Class A (radiated)
Modular DC to DC Converter

- 48VDC to 24VDC, 10A output
- 4RU vertical mount — 5 modules in 19”, 6 modules in 23”
- 2RU horizontal mount — 2 modules in 19”, 3 modules in 23”
- Scalable hot plug-in operation
- Convection cooled

### Electrical

**Part number**
- Horizontal: 012-514-20
- Vertical: 012-502-20

**Input voltage:** 40 to 60VDC
**Output voltage:** 22 to 26VDC
**Output current:** 10A
**Efficiency:** >85% (100% load)
**Regulation:** -1%, +/-0.1% load (static)
**Response time:** 2ms to 0.1% of output for 50 to 100% load step
**Noise:**
- Voice band: <22dBnC
- Wide band: <10mV RMS (10kHz to 10MHz)
- <150mV pk to pk (10kHz to 100MHz)
**Acoustic:** 45 dBa at 1m (3ft)

### Environmental

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

### Shelves

- **20A (2-module horizontal 19”)**
  - Part number: 030-538-20
  - Dimensions:
    - mm: 90H x 432W x 305D
    - inches: 3.5H x 17W x 12D
  - Weight: 8.4kg (18.5lb) e/w 2 power modules

### Standards

- **EN:** 55022 - Class A (radiated)
- **FCC:** 15 Class A (radiated)
CSM11
Modular DC to DC Converter

➤ 24 to 48VDC, 24A output
➤ 3RU high-density module
➤ Up to 3 modules per 19” or 4 modules per 23” shelves
➤ Scalable hot plug-in operation
➤ Bar graph output current indicator

Electrical

Part number: .....................012-548-20
Input voltage: .....................20 to 30VDC
Output voltage: ..................44 to 52VDC
Output current: ..................24A max
Power: ..............................1250W max
Efficiency: ..................>88% (50 to 100% load)
90% typical
Regulation: ..................±1% ±0.1% line (static)
±0.1% load (static)
<1% load deviation for 50 to 100% load step (dynamic)
Response time: ..................<2ms to 0.1% of output for 50 to 100% load step
Noise:
  Voice band: ..................<22dBrnC
  Wide band: ...................<10mV RMS to 10MHz
  <150mVp-p to 100MHz
Psophometric: ..................<0.5mV
  Acoustic: ....................<60dBa @ 1m (3ft)

Mechanical

Connections: .....................Bullet terminals
Weight: .........................4.6kg (10lb)
Dimensions:
  mm: ............................127H x 130W x 349D
  inches: .........................5H x 5.12W x 13.75D

Features

Indicators: .....................Power on
  DC input OK
  Bar graph output current
  Converter fail alarm major
  Converter fail alarm minor
  Current limit
Adjustments: ..................Output voltage
  Current limit
Test points: ....................Module voltage
Protection: .....................Input fuse
  Input inrush current limiting
  Output fuse
  Output paralleling diode
  Over temperature limiting
  Input high and low voltage shutdown
  Current limit/short circuit protection

Environmental

Temperature: ..................0 to 65°C (32 to 149°F) (standard operating)
Optional: ......................-40 to 65°C (-40 to 149°F) (extended operating)
Humidity: ......................0 to 95% RH non-condensing
Elevation: ...................-500 to 2800m (-1640 to 9186ft)

Shelves

➤ 19" shelf (3 modules)
  Part number: .....................030-650-20
  Dimensions:
    mm: ............................132H x 432W x 362D
    inches: .........................5.2H x 17W x 14.25D
  Weight: .........................8.2kg (18lb)

➤ 23" shelf (4 modules)
  Part number: .....................030-651-20
  Dimensions:
    mm: ............................132H x 533W x 362D
    inches: .........................5.2H x 21W x 14.25D
  Weight: .........................9.1kg (20lb)

Connections

Input: ......................2-hole ¼” studs on ⅝” centers (per module)
Output: ......................2 x ⅜” threaded inserts on 1” centers
Alarms: .......................Terminal block
  0.34 to 2.5mm² (22 to 14AWG)

Features

Alarms: ......................Converter fail alarm major
  Converter fail alarm minor
  (jumper selectable form A/B contacts)

Standards

CSA: ..................C22.2 950-95 (NRTL/C)
UL: .....................1950 (NRTL)
CE: ......................IEC/EN 60950
FCC: ......................47 CFR part 15
  Class A radiated EMI
  Class B conducted EMI
EN: ..........................55022 (CISPR 22)
  Class A radiated EMI
  Class B conducted EMI
  61000-4-2, -3, -4, -6
  60950 (CE)
ENV: ......................50204
Bellcore: .....................GR-63-CORE
  Vibration and shock
NEBS: .......................Certified for 19" shelf configuration
### Electric<br>Shelves<br><br>**CSM35** CSM36<br><br>Part number: CSM35: 012-550-20<br>CSM36: 012-552-20<br><br>Input voltage: 40 to -60VDC<br>Output voltage: ±137VDC (CSM35)<br>±190VDC (CSM36)<br><br>Power: 90W minimum per output<br>Efficiency: >88% (50 to 100% load)<br>90% typical<br><br>Regulation: <0.5% no load to full load<br><0.05% line<br><br>Noise:<br>Wide band: <300mVp-p to 100MHz<br><100mVRMS to 10MHz<br><br>Acoustic: <60dBa @ 1m (3ft)<br><br>### Mechanical<br><br>**Power module<br>**<br><br>Dimensions:<br>mm: 114H x 31.75W x 254D<br>inches: 4.5H x 1.25W x 10D<br><br>### Features<br><br>Indicators:<br>Power on<br>DC input OK<br>Converter fail alarm major<br>Converter fail alarm minor<br>Current limit<br><br>Protection:<br>Power limiting<br>Input/output fuses<br>Input transient and OSP<br>Input high and low voltage shutdown<br>Current limit/short circuit fold back<br>Thermal shutdown<br>Input transient<br>5mA ground fault interrupt option<br><br>### Environmental<br><br>Temperature:<br>Optional: -40 to 65°C (-40 to 149°F)*<br>Humidity: 0 to 95%RH non-condensing<br>Elevation: 500 to 2800m (-1640 to 9186ft)<br><br>*Fan module required for high temp operation above 50°C (122°F)
**CSM46**

*+/-190VDC to -48VDC Converter*

- Down converter for line powering solutions
- 2x +/-190V, 100VA inputs per module
- Compact 1RU, scalable hot plug-in operation
- Front access test points and LED indication
- High reliability convection-cooled design

### Electrical

<table>
<thead>
<tr>
<th>Part number: 012-554-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage: 195 to 380V DC (+/- 97.5 to +/- 190VDC)</td>
</tr>
<tr>
<td>Input current: 240mA +/- 2%</td>
</tr>
<tr>
<td>Efficiency: &gt;85%</td>
</tr>
<tr>
<td>Output power: Up to 75 watts (de-rates linearly with input voltage)</td>
</tr>
<tr>
<td>Output voltage: -50 to -55V DC</td>
</tr>
<tr>
<td>Output current: 1.5A max (de-rates linearly with input voltage)</td>
</tr>
<tr>
<td>Noise: &lt;500mV p-p to 20MHz</td>
</tr>
</tbody>
</table>

### Mechanical

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

### Environmental

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

### Features

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

**Test points:**
- Converter A: I/P voltage
- Converter B: O/P voltage

**Protection:**
- Input fuses
  - Input current limit
  - Input transient protection
  - Input high and low voltage shutdown
  - Thermal shutdown
  - Output or’ing diodes
  - Output OVP
  - Reverse polarity protection

**Miscellaneous:**
- Alarm masking switch for disabling shelf level alarming

### Shelves

**10-Module shelf part number:** 030-831-20

*Mechanical*

| Dimensions: |
| mm: 45H x 273W x 311D |
| in: 1.75H x 10.75W x 12.25D |
| Weight: 4.87kg (10.8lb) |

*Features*

**Access:** Front access

**Connections:**
- Input: 50-pin amp-champ style connector and wireharness
- Output: Anderson SBS50 and molex style options and wireharness
- Alarm: Flying leads or molex style connector and wireharness

**Chassis gnd:** ¼” studs on ⅝” C

**Alarms:** Major form C relay Minor form C relay

*Note: Relays are field replaceable*

### Standards

**Safety:** CSA/UL 60950-1
- CSA/UL 60950-21
- CE IEC/EN 60950

**EMI:** Class A radiated
- GR-1089 issue 3 (applicable sections)
# Cordex Series DC-DC Converters

## CXDF 24-48/2kW

- 24V to 48VDC, 2kW output per module
- High power density, hot swappable converters
- Control and monitor via Cordex controller
- Optional integrated CXCI controller option
- Optional busbar integration into Argus CXPS systems

## Electrical

<table>
<thead>
<tr>
<th>Part number</th>
<th>012-526-20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input voltage</strong></td>
<td>21 to 30VDC</td>
</tr>
<tr>
<td><strong>Input current</strong></td>
<td>Up to 94A @ 24V</td>
</tr>
<tr>
<td><strong>Efficiency</strong></td>
<td>&gt;88%</td>
</tr>
</tbody>
</table>
| **Input noise**  | - Voice band: <32dBrnC 
|                  | - Wide band: <10mV RMS to 10MHz 
|                  | - <150mVp-p to 100MHz |
| **Output power** | 2000W max @ -54V |
| **Output voltage** | -54VDC nominal |
| **Output current** | 37A max |
| **Regulation**   | -1% +/-0.1% load (static) 
|                  | +/- 0.1% line (static) |
| **Output noise** | - Voice band: <38dBrnC |
|                  | - Wide band: <10mV RMS to 10MHz 
|                  | - <150mVp-p to 100MHz |
| **Acoustic noise** | <60dBA @ 1m (3ft) |

## Mechanical

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

## 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)

## Environmental

<table>
<thead>
<tr>
<th>Temperature</th>
<th>-40 to +55°C (de-rated power up to 75°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humidity</td>
<td>0 to 95% NC</td>
</tr>
</tbody>
</table>

## Shelves

- 24-48V 5-Mod 23” shelf part number: 030-900-20

## Mechanical

- **Dimensions**:
  - mm: 88.4H x 584W x 304D
  - in: 3.48H x 23.0W x 12.0D
- **Weight**: 10.4kg (23.0lb)

## Features

- CAN bus communication
- Optional integrated CXCI controller option
- +/- Input busbar integration with standard 3.6kw and 3.1kw systems

## Standards

- **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)
INEX Inverter System

Argus offers the latest technology in inverters to the telecommunications market. The INEX inverter is a fully integrated inverter system specifically designed for backup of critical AC loads.

INEX systems provide reliability and flexibility through pure sine wave AC power output and an N+1 redundancy design, and offer protection of connected equipment during power failures with an optional static transfer switch that transfers power automatically in less than a quarter of a cycle.

A friendly interface displays real time information, making the management of settings quick and easy. The INEX monitoring software supports stand-alone or networked computers making the inverter series a leader in the industry as the most versatile modular system for critical telecommunications backup power.
Versatile modular design provides flexibility for different power applications
Expandable capacity up to 24KVA 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. The INEX inverter module is specially designed with compact size of maximized power density and can reach up to 5.57W/inch³ for INEX 1000 and 8.36W/inch³ for INEX1500. A 1U height design allows the module to be installed onto a standard ETSI 300mm Rack. The INEX module is a revolutionary telecom power solution in terms of maximum flexibility and reliability.

- 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)

STS Module

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

- Universal input range
- Hot swappable with MBS option
- Back-feed protection
- Redundant fan design
- Redundant power supply design
- Operation Priority Setup of transfer side by setting in control module
- Fast transfer time, typically less than ¼ cycle
- Wide operation temperature range, -20 to 70˚C (-4 to 158˚F)
- Lower audible noise <55dBA
- No-cross connect
- Optional maintenance bypass switch function
- CAN bus interface embedded

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. With a user-friendly interface design, 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.

- CAN bus protocol for module communication
- 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
### Electrical

**Inverter Module**

**DC input:**
- Nominal voltage: 48VDC
- Operating range: 40.5VDC – 58VDC
- Input protection: Reverse polarity protection
- Psophometric noise voltage: $\leq 1.0\text{mV ITU-T O.41 (16.66–6000Hz)}$

**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 $\pm 2\%$
- Output frequency: 50/60Hz
- Crest factor: 3:1
- THD: $\leq 3\%$, linear load
- Efficiency: Min 88%
- Isolation AC-enclosure: Basic isolation (Pri-Gnd) 2121VDC/1min
- Dynamic response: $\leq 10\%$
- Over load protection: 1.5*Inom $> 20\text{s}$ 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 $\pm 2.5\%$
- Transfer time: Typical 1/4 cycle
- Rated power: 50A for 110/115/120VAC & 208/220/230/240VAC
- 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 (5.5lb)

**Controller Module**

**Dimensions:**
- mm: 277D x 87.9W x 43.5H
- inches: 10.9D x 3.46W x 1.71H
- Weight: 1.0kg (2.2lb)

**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 (5.5lb)

**STS & controller chassis**

**Dimension:**
- mm: 329.5D x 440W x 44H
- inches: 13D x 17.32W x 1.73H
- Weight: 3.4kg (7.5lb)

### 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

### Standards

UL, CE, RoHS
ALPHAGEN
Generators

The AlphaGen™ curbside DC generator system is specifically designed for outside plant communication networks requiring -48VDC power. DC generators allow for minimal battery backup installation while still providing extended runtime to critical loads.

Every DC generator system incorporates industry leading power technology, including: natural gas or propane powered engine generators, exclusive audible noise baffling, remote status monitoring features, and durable weather resistant enclosures.

AlphaGen™ offers quiet operation, small size, and low profile for easier installation in populated areas. Generator systems have several built-in safeguards to protect the system, operators and the public.

Alpha offers a full line of AlphaGen™ systems specifically designed for telecommunication applications.
Cost effective extended runtime solution for telecom powering applications
Quiet operation, small size, and low profile allow for easier installation in populated areas
Eliminates large quantities of batteries otherwise required for extended runtime
Designed for stand-alone or collocated powernode applications
Built-in safeguards to protect the system, operators and the public
Safe unattended operation designed to UL2200, NFPA 37, 54, 58 and 70 standards

All Models

- **Gas inlet pressure:** 0.5 to 2 PSI inlet pressure (see note 1)
- **Ign charger voltage:** 13.5VDC
- **Ign charger current:** 6A max
- **Remote interface length:** 75ft max
  Distance depends upon proper installation, de-rating and wire gauge (see note 2)
- **Agency compliance:** UL1778, UL2200, NFPA 37/54/58/70, CSA C22.2 No.107.1, EMC/FCC Part 15 Class A
- **Fuel system, controls & monitoring:** The controls and fuel system meet applicable sections of NFPA 37, 54 and 58 for automatic unattended operation of remotely located generators. Full system control and status monitoring included.
- **Sensors:** Gas hazard, Pad shear, Water intrusion, Tamper

Safety shutdowns

- **All models:** Low oil pressure, Over temp, Low fuel pressure shutdown (propane only), Water intrusion, Pad shear, Gas hazard (propane or natural gas), Over speed, Over crank

Optional feature: Cold start kit: Provides additional starting capability at temperatures below 17.7°C (0°F).

Note: Contact Alpha Technologies for the following:
1. Low pressure
2. Remote interface length distance
## Specifications

<table>
<thead>
<tr>
<th>Model:</th>
<th>3.5kW</th>
<th>5.0kW</th>
<th>7.5kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC output voltage</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>DC output load regulation</td>
<td>0.5V</td>
<td>0.5V</td>
<td>0.5V</td>
</tr>
<tr>
<td>Output current</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>Engine</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>RPM: (variable speed)</td>
<td>2800 to 3600RPM</td>
<td>2800 to 3600RPM</td>
<td>2800 to 3600RPM</td>
</tr>
<tr>
<td>Acoustical noise</td>
<td>dBA 10' @ 100% rated load</td>
<td>68.7Ave</td>
<td>68.5Ave</td>
</tr>
<tr>
<td></td>
<td>dBA 20' @ 100% rated load</td>
<td>63.0Ave</td>
<td>62.5Ave</td>
</tr>
<tr>
<td></td>
<td>dBA 10' @ 70% rated load</td>
<td>68.3Ave</td>
<td>66.9Ave</td>
</tr>
<tr>
<td></td>
<td>dBA 20' @ 70% rated load</td>
<td>62.6Ave</td>
<td>60.9Ave</td>
</tr>
<tr>
<td>System size:</td>
<td>CE-3x</td>
<td>CE-9x</td>
<td>PN-4xL</td>
</tr>
<tr>
<td>Height (cm/in)</td>
<td>111.2/44</td>
<td>132.1/52</td>
<td>81.3/32</td>
</tr>
<tr>
<td>Width (cm/in)</td>
<td>66/26</td>
<td>132.1/52</td>
<td>81.3/32</td>
</tr>
<tr>
<td>Depth (cm/in)</td>
<td>61/24</td>
<td>61/24</td>
<td>76.2/30</td>
</tr>
<tr>
<td>Weight (kg/lb)</td>
<td>174/383</td>
<td>187/413</td>
<td>177/390</td>
</tr>
<tr>
<td>APU fuel consumption</td>
<td>Natural gas: 1000BTU/ft³</td>
<td>60ft³/hr</td>
<td>80ft³/hr</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Propane gas: 2520BTU/ft³</td>
<td>0.82gal/hr</td>
<td>1.10gal/hr</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exchanger surface temperature</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>
AlphaGen™ Portable  
3.0kW Portable 36/48VDC Generator System

- 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

**Specifications**

<table>
<thead>
<tr>
<th>Part number:</th>
<th>013-018-10-010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine:</td>
<td>Honda GX 200 6.5hp, air-cooled, OHV, single cylinder, manual recoil starting, manual choke</td>
</tr>
<tr>
<td>Rated power:</td>
<td>2800W continuous, 3000W max</td>
</tr>
<tr>
<td>Alternator:</td>
<td>Permanent magnet, brushless, bearingless</td>
</tr>
<tr>
<td>Dual range selector:</td>
<td>36V: 39.5VDC nominal at generator output connector, 48V: 52.5VDC nominal at generator output connector</td>
</tr>
<tr>
<td>Output regulation:</td>
<td>1VDC</td>
</tr>
<tr>
<td>Control features:</td>
<td>Automatic voltage regulation, Electronic governor, Over current protection, Analog voltmeter with back light</td>
</tr>
<tr>
<td>Cable interface:</td>
<td>Anderson type SBE-80 connector</td>
</tr>
<tr>
<td>Fuel tank:</td>
<td>3.4 gallon metal tank with level gauge</td>
</tr>
</tbody>
</table>

**Runtime:**
- @ 25% load: 20hrs
- @ 80% load: 10hrs
- @ 100% load: 7.2hrs

**Audible noise:** Approx. 58dBA @ 7m under full load

**Frame:** Fully enclosed

**Dimensions:**
- mm: 569H x 480W x 655D
- inches: 22.4H x 18.9W x 25.8D

**Dry weight:** Less than 53.5kg (118lb)

**Agency:** CSA C22.2 No. 100-95, 107.1-01, 107.2-M89, 0.4  
FCC part 15B Class A
Required Accessories

Output interface cable: Available in 10’, 30’ or 50’ lengths
Battery interface cable: Choose ring lug, heavy-duty alligator clamp, or Y-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

<table>
<thead>
<tr>
<th>Feet</th>
<th>dB(A)</th>
<th>10</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>58.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>63.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Generator at 100% rated load

<table>
<thead>
<tr>
<th>Feet</th>
<th>dB(A)</th>
<th>10</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>49.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>54.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Generator at 100% rated load (typical)
Enclosures

From the smallest Te25 to the largest Te21, the Argus enclosure product line provides a full range of cabinet solutions for any outdoor equipment application.

All outdoor enclosures are equipped with control systems that maintain temperatures well within the specified operating ranges of internally mounted equipment in a clean and dry environment that uses both open and closed loop HVAC technologies.

Argus enclosures provide application flexibility with a variety of adjustable components including moveable equipment mounting racks, different types of equipment mounting hardware, swing racks, slide out equipment rails, different styles of cable entrance ports and many other options and features.

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

Argus enclosures are designed and tested to meet the highest standards of the telecommunications industry.
> Designed for outdoor or secure indoor applications
> Easily transportable
> Durable aluminum construction
> Pedestal, wall, pole or rack mount
> Compact footprint

**Electrical**

Consult factory on AC load center options for specific equipment requirements

**Enclosure Assembly**

Part number: .....................029-003-20

**Cabinet**

Dimensions:
- mm: .................................516H x 544W x 518D
- inches: ............................20.3H x 21.4W x 20.4D
- Weight: .............................29kg (65lb) approx without customer equipment

Options: ......................... Wall mount
- Pole mount
- Pedestal mount
- Rack mount
- AC distribution
- Meter base
- Generator connector and transfer switch
- GMT fuse block
- Surge arrester

Rack space: ..........................19” rails, 11RU

**Other Information**

Alarm:
- Connection: ....................Terminal block
- Description: ....................Intrusion

DC connections: ..................Multiple connection

Chassis ground: ..................Multiple connection
- Buss bar located in cabinet

Security: .......................Padlockable front door

**Standards**

CSA: ..................................C22.2 No 60950-01-03
UL: .....................................Std. No 60950-01
Cabinet: .............................NEMA type 3R (CSA C22.2 No 94-M91)
Seismic: .............................Designed to meet Zone 4 requirements

**Related Components**

Heating & Cooling:
Optional DC fan cooling option (standard design is vented with filters)
Designed for outdoor or secure indoor applications
Easily transportable
Durable aluminum construction
Pedestal, wall, pole or rack mount
Compact footprint

**Electrical**
Consult factory on AC load center options for specific equipment requirements

**Enclosure Assembly**
Part number: .................029-006-20

**Cabinet**
Dimensions:
- mm: .........................914H x 544W x 518D
- inches: ....................36H x 21.4W x 20.4D
Weight: .......................41kg (90lb) approx without customer equipment

Options: ......................Wall mount
- Pole mount
- Pedestal mount
- Rack mount
- AC distribution
- Meter base
- Generator connector and transfer switch
- GMT fuse block
- Surge arrestor
Rack space: .................19" rails, 20RU

**Other Information**
Alarm:
- Connection: ...............Terminal block
- Description: ..............Intrusion and high temp
DC connections: ............Multiple connection
Chassis ground: .............Multiple connection
- Buss bar located in cabinet
Security: .....................Padlockable front door

**Standards**
CSA: .........................C22.2 No 60950-01-03
UL: .........................Std. No 60950-01
Cabinet: ......................NEMA type 3R (CSA C22.2 No 94-M91)
Seismic: ......................Designed to meet Zone 4 requirements

**Related Components**
Heating & Cooling:
- Optional DC fan cooling option (standard design is vented with filters)
- Optional air conditioner
Modular design for single or multiple cabinet configurations
Welded aluminum construction
39RU of rack space
Heating and cooling options
Compact footprint

Electrical

Input voltage: 120/240VAC 200A 1 Ø
120VAC 100A 1 Ø
Number of breakers: 18 max
Transfer switch/generator connector: Optional
TVSS: Optional

Mechanical

Part number: 030-699-20

Top Compartment
Dimensions (optional):
mm: 203H x 813W x 813D
inches: 8H x 32W x 32D

Main Compartment
Dimensions:
mm: 1753H x 813W x 813D
inches: 69H x 32W x 32D

Solar Shield
Dimensions:
mm: 76H x 813W x 813D
inches: 2H x 32W x 32D
Rack space: 23’ rails, 39RU

Standards

CSA: C22.2 No 60950-01-03
UL: Std. No 60950-01
Cabinet: NEMA 3R (CSA C22.2 No 94-M91)
Seismic: Designed to Zone 4 requirements

Related Components

Heating & Cooling:
Heater: 600W
Air conditioning: Up to 8000BTU
Fan cooling: Optional
Heat exchanger: Optional

Other Information

Alarm:
Connection: Terminal block
Description: High/low temp
Intrusion

Chassis ground:
Multiple connection
Buss bar located in bottom of cabinet

Security:
Padlockable doors
Tempest Te17 Outdoor Enclosure

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

**Electrical**
Consult factory on AC load center options for specific equipment requirements

**Mechanical**

Part number: .....................030-729-20

- **Main Compartment**
  Dimensions:
  - mm: ................................. 1092H x 762W x 711D
  - inches: ............................. 43H x 30W x 28D

- **Bottom Compartment**
  Dimensions:
  - mm: ................................. 356H x 762W x 711D
  - inches: ............................. 14H x 30W x 28D

- **Solar Shield**
  Dimensions:
  - mm: ................................. 25H x 762W x 711D
  - inches: ............................. 1H x 30W x 28D

- **Complete Enclosure Assembly**
  Dimensions:
  - mm: ................................. 1473H x 762W x 711D
  - inches: ............................. 58H x 30W x 28D
  - Rack units: ........................ 23" rack 23RU
  - Weight: .............................. 204kg (450lb) approx without customer equipment

**Other Information**

- **Alarm:**
  - Connection: ........................ Terminal block
  - Description: ...................... High/low temperature
  - Intrusion

- **Chassis ground:**
  - Multiple connection
  - Buss bar located in cabinet

- **Security:**
  - Padlockable doors with socket pin-head key

**Standards**

- CSA: .................................. C22.2 No 60950-01-03
- UL: ................................. Std. No 60950-01
- Cabinet: ......................... NEMA type 3R (CSA C22.2 No 94-M91)
- Seismic: ................................ Designed to Zone 4 requirements

**Related Components**

- Heating & Cooling:
  Contact factory on HVAC options for specific environmental conditions
Available in 24VDC (34.1kW) and 48VDC (39.6kW)
Designed for outdoor wireless applications
Air conditioned battery and customer equipment compartment
Fan cooled DC power equipment compartment
NEMA 3R rating

### Electrical
- **Input voltage:** 120/240VAC
  - Connected direct to site AC distribution panel
  - Option to mount external AC panel

### Mechanical
- **Part number:** 030-765-20

### Enclosure
- **Dimensions:**
  - mm: 2137H x 762W x 762D
  - inches: 84H x 30W x 30D
  - **Weight:** 379kg (828lb) no batteries

### Other Information
- **Alarm:**
  - Connection: Terminal block
  - Description: High/low temp
    - Intrusion
  - **Chassis ground:** Multiple connection
    - Buss bar located in bottom of cabinet
  - **Security:** Padlockable doors
  - **DC distribution:**
    - 1 x 1200A 20 position bullet breaker
    - 4 x 600A load shedding capability
  - **Batteries:** 3 shelves 4 battery/shelf
  - **Customer equipment:** 7RU available

### Cabinet Back-up Capacity
- **Number of batteries:** 12
- **Battery amp hour:**
  - A hr each: 150
  - **Runtime (°25°C/77°F to 175VPC 24V):**
    - 20 min: 1246A
    - 2 hrs: 332A
    - 4 hrs: 185A

### Standards
- **CSA:** C22.2 No 60950-01-03
- **UL:** Std. No 60950-01
- **Cabinet:** NEMA 3R (CSA C22.2 No 94-M91)
- **Seismic:** Designed to Zone 4 requirements

### Related Components
- **Heating & Cooling:**
  - **Heater:** 600W (optional)
  - **Air conditioning:** Up to 5000BTU (battery compartment)
  - **Fan cooling:** Power compartment

---

Tempest Te20
Power Enclosure

![Tempest Te20 Image](image-url)
Tempest Te20b Battery Enclosure

- 10 strings @ 24VDC, 5 strings @ 48VDC
- 1200A Buss
- Designed for outdoor wireless applications
- Optimum back-up power source
- Environmentally controlled
- Compact footprint

**Electrical**

- **Input voltage:** 120 or 240VAC single phase (air conditioner)
- **Output voltage:** Battery cabinet
  - 24 or 48VDC
- **Recommended feeder breaker:** 15A time delay breaker

**Mechanical**

- **Part number:** 030-780-20
- **Cabinet**
  - **Dimensions:**
    - mm: 2137H x 762W x 762D
    - inches: 84H x 30W x 30D
  - **Weight:** 318kg (700lb)

- **Enclosure**
  - Aluminium shell
  - Steel internal battery shelving

- **Battery Shelf**
  - **Dimensions:**
    - mm: 300H x 549W x 546D
    - inches: 11.8H x 21.6W x 21.5D

**Environmental**

- **Outdoor temperature:** -40 to 46°C (-40 to 115°F)

**Other Information**

- **Alarm**
  - **Connection:** Terminal block
  - **Description:** High/low temp
  - **Intrusion**
- **DC connections:** Multiple connection
  - Buss bar located in bottom of cabinet
- **Security:** Padlockable doors

**Standards**

- **CSA:** C22.2 No 60950-00
- **UL:** Std. No 60950-2000
- **Cabinet:** NEMA 3R (UL50)
- **Seismic:** Designed to Zone 4 requirements

**Related Components**

- **Heating & Cooling**
  - Optional heater: 600W
  - Air conditioning: 5000BTU

Tempest Te20b Battery Enclosure
Modular design for single or multiple cabinet configurations
Welded aluminum construction
Dual compartment system
Compact footprint
Up to 39.6kW @ 48V or 34.1kW @ 24V
Multiple point cable access

Electrical

- Input voltage: 120/240VAC
  - Connected direct to site AC distribution panel

Mechanical

- Part number: 030-778-20

Enclosure

- Dimensions:
  - mm: 2137H x 762W x 762D
  - inches: 84H x 30W x 30D
- Weight: 392kg (863lb) no batteries

Other Information

- Alarm:
  - Connection: Terminal block
  - Description: High/low temp Intrusion
- Chassis ground:
  - Multiple connection
  - Buss bar located in bottom of cabinet
- Security:
  - Padlockable doors
- DC distribution:
  - 2 x 1200A 20 position bullet breaker
  - 4 x 600A load shedding capability
- Batteries:
  - 2 shelves 4 battery/shelf
- Customer equipment: 8RU available

Standards

- CSA: C22.2 No 60950-01-03
- UL: Std. No 60950-01
- Cabinet: NEMA 3R (CSA C22.2 No 94-M91)
- Seismic: Designed to Zone 4 requirements

Related Components

- Heating & Cooling:
  - Heater: 600W (optional)
  - Air conditioning: Up to 5000BTU (battery compartment)
  - Fan cooling: Power compartment

Tempest Te21 Modular Enclosure
Radium MiniBay
Environmentally Controlled Enclosure

- Scalable, environmentally controlled enclosure system
- Fully integrated system and agency certified
- Ideal for remote optical transition applications
- High capacity 24 or 48VDC 3000BTU (879W)
  DC powered air conditioner
- Natural gas or propane DC generator system supports critical communications
- Reduces operational and recurring costs

### Nominal Specifications

#### Environmental rating:
- NEMA 3R when configured with door mounted fans and filter system
- NEMA 4X when configured with heat exchanger or air conditioning system

#### Seismic rating:
Consult factory. A seismic rating is based on a set system configuration with defined mounting locations and equipment types

#### Design standards:
Following NEC & Telcordia Technologies (Bellcore) GR-487, GR-63 and GR-108 guidelines

#### Compliance:
Third party approval from National Recognized Testing laboratory (NRTL)

#### Equipment Enclosure
- **Dimensions:** 812D x 2740H x 1936W (32D x 44H x 30W)
- **Weight:** 88.5kg (195lb)

#### Battery Storage Module
- **Dimensions:** 812D x 904H x 1936W (32D x 14H x 30W)
- **Weight:** 59kg (130lb)

#### Riser Module
- **Dimensions:** 812D x 904H x 1936W (32D x 14H x 30W)
- **Weight:** 46.3kg (102lb)

#### Side Chamber SC1
- **Dimensions:** 775D x 812H x 3330W (12D x 72H x 32W)
- **Weight:** 45.4kg (100lb)

#### Side Chamber SC2
- **Dimensions:** 775D x 812H x 3330W (12D x 72H x 32W)
- **Weight:** 40.4kg (89lb)

#### Material:
High strength corrosion resistant aluminium

#### Finish:
Almond color powdercoat finish

### Fans and Filters

The most basic thermal management system supporting the MiniBay utilizes conformal-coated, variable speed and alarm monitored fans with electrostatic air filters providing up to 500W thermal dissipation. This configuration has a NEMA 3R rating.

- Variable speed controlled DC fans continue to operate during a utility outage
- Conformal-coated fans
- Electrostatic and washable air filters
- Field replaceable fans

### Heat Exchanger

An airtight rear door and a heat exchanger equipped hinged front door providing over 500W thermal dissipation. With a 500W load, the internal ambient temperature will not exceed 9.4 to 2.7°C (15 to 27°F) above external ambient. With a 250W load, the internal ambient temperature will not exceed 7°C or 12.6°F above external ambient. This configuration has a NEMA 4X rating.

- Heat exchanger heat pipe technology provides efficient thermal transfer
- Minimizes internal temperature rise above external ambient
- Variable speed controlled DC fans continue to operate during a utility outage
- Field replaceable fans

### DC Air Conditioner

For applications requiring the most reliable below ambient cooling and dehumidifying system for supporting seamless performance through extended utility outages. Cooling capacity 878W dissipated at 43°C (109.4°F) outdoor ambient allowing a Maximum* internal ambient of 40°C (104°F).

- Variable speed brushless motor 24/48VDC compressor system assures optimum efficiency over the full range of thermal loading and ambient temperatures
- 3000BTU @ 43°C/110°F Rating
- Redundant conformal-coated fans have >50000hrs of life and low voltage disconnect circuitry

### AC Air Conditioner

Ideal for applications requiring cooling and dehumidifying with little or no standby runtime performance. Cooling capacity 1464W dissipated at 43°C (109.4°F) outdoor ambient allowing a Maximum* internal ambient of 40°C (104°F).

- 5000BTU @ 43°C/110°F Rating
- Washable electrostatic filters
- 240VAC

* Reducing the internal dissipated heat load reduces internal ambient.
Tempest Te30
Multi-functional Enclosure

- Modular enclosure design for mid size applications
- Provides multiple enclosure line-ups including power, battery and radio equipment installations
- Air conditioning, fan cooling and vented options available
- Nema 3R rating (IP55)
- Multiple cable access points

**Electrical**

<table>
<thead>
<tr>
<th>Input voltage</th>
<th>120/240VAC 100A 1 Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generator switch</td>
<td>Optional</td>
</tr>
<tr>
<td>Generator connector</td>
<td>Optional</td>
</tr>
<tr>
<td>TVSS</td>
<td>Optional</td>
</tr>
<tr>
<td>AC panels/breakers</td>
<td>Configurable - contact factory</td>
</tr>
</tbody>
</table>

**Mechanical**

<table>
<thead>
<tr>
<th>Part number</th>
<th>029-016-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions:</td>
<td></td>
</tr>
<tr>
<td>mm:</td>
<td>1483H x 762W x 762D, including 254mm plinth</td>
</tr>
<tr>
<td>inches:</td>
<td>58.4H x 30W x 30D, including 10” plinth</td>
</tr>
<tr>
<td>Weight:</td>
<td>Approx. 227 kg (500lb) no batteries, no rectifiers</td>
</tr>
<tr>
<td>Mounting:</td>
<td>Pad or platform</td>
</tr>
<tr>
<td>Enclosure:</td>
<td>Aluminum shell 5052-H32</td>
</tr>
<tr>
<td>Internal rack:</td>
<td>23”, 26RU</td>
</tr>
</tbody>
</table>

**Environmental**

| Operating temperature:        | -40 to +46°C (-40 to +115°F) |
| Storage temperature:          | -40 to +85°C (-40 to +185°F) |
| Humidity:                      | 0 to 95% non-condensing |
| Elevation:                     | 3600m, see operating temperature (12,000ft) |
| Weather tightness:             | NEMA Type 3R |
| Audible noise:                 | 44dBA @ 7 metres (23ft) (air conditioned system) |

**Other information**

| Alarm:                         | Terminal block |
| Connection:                    | High/low temp & intrusion |
| Description:                   | Multiple connection |
| Security:                      | Pad lockable doors |

**Standards**

- Enclosure ratings: CSA/UL type 3R
- Product safety: CSA/UL 60950
- Seismic: Designed to meet zone 4 requirements

**Related components**

- Cooling options: 5000 BTU/hr. air conditioner on front door
- DC fan cooling (and/or backup)
- Vented
- Heating: Up to 550W, 100-120VAC 50/60Hz
<table>
<thead>
<tr>
<th><strong>Te25</strong></th>
<th><strong>Te15</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Features:</strong></td>
<td><strong>Features:</strong></td>
</tr>
<tr>
<td>• Aluminum construction</td>
<td>• Aluminum construction</td>
</tr>
<tr>
<td>• Pedestal mount</td>
<td>• Pad or platform mount</td>
</tr>
<tr>
<td>• Rack mount</td>
<td>• Multi purpose</td>
</tr>
<tr>
<td>• Wall mount</td>
<td>• 23” rack 39RU</td>
</tr>
<tr>
<td>• Pole mount with ladder bracket option</td>
<td>• AC power options</td>
</tr>
<tr>
<td>• Multi purpose</td>
<td>• Fan cooled, vented or air conditioned (3500 to 8000BTU)</td>
</tr>
<tr>
<td>19” rack 11RU</td>
<td><strong>Dimensions:</strong></td>
</tr>
<tr>
<td>• AC power options</td>
<td>mm: 1829H x 813W x 813D</td>
</tr>
<tr>
<td>• Fan cooled or vented</td>
<td>in: 72H x 32W x 32D</td>
</tr>
<tr>
<td><strong>Dimensions:</strong></td>
<td></td>
</tr>
<tr>
<td>mm: 516H x 544W x 518D</td>
<td></td>
</tr>
<tr>
<td>in: 20H x 20W x 20D</td>
<td></td>
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<table>
<thead>
<tr>
<th><strong>Te25xh</strong></th>
<th><strong>Te20</strong></th>
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<tbody>
<tr>
<td><strong>Features:</strong></td>
<td><strong>Features:</strong></td>
</tr>
<tr>
<td>• Aluminum construction</td>
<td>• Aluminum construction</td>
</tr>
<tr>
<td>• Pedestal mount</td>
<td>• Pad or platform mount</td>
</tr>
<tr>
<td>• Rack mount</td>
<td>• Dual compartment system</td>
</tr>
<tr>
<td>• Wall mount</td>
<td>• Power in upper compartment &amp; 20 DC breakers</td>
</tr>
<tr>
<td>• Pole mount with ladder bracket option</td>
<td>• Three battery shelves and customer equipment in lower compartment</td>
</tr>
<tr>
<td>• Battery or equipment shelf option</td>
<td>• AC power options</td>
</tr>
<tr>
<td>• Multi purpose</td>
<td>• Upper compartment is fan cooled</td>
</tr>
<tr>
<td>36” rack 20RU</td>
<td>• Lower compartment is air conditioned (3500BTU)</td>
</tr>
<tr>
<td>• AC power options</td>
<td><strong>Dimensions:</strong></td>
</tr>
<tr>
<td>• Fan cooled, vented or air conditioned (2000BTU)</td>
<td>mm: 2137H x 762W x 762D</td>
</tr>
<tr>
<td><strong>Dimensions:</strong></td>
<td>in: 84H x 30W x 30D</td>
</tr>
<tr>
<td>mm: 914H x 544W x 518D</td>
<td></td>
</tr>
<tr>
<td>in: 20H x 20W x 20D</td>
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<table>
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<tr>
<th><strong>Te17</strong></th>
<th><strong>Te20b</strong></th>
</tr>
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<tbody>
<tr>
<td><strong>Features:</strong></td>
<td><strong>Features:</strong></td>
</tr>
<tr>
<td>• Aluminum construction</td>
<td>• Aluminum construction</td>
</tr>
<tr>
<td>• Pad or platform mount</td>
<td>• Pad or platform mount</td>
</tr>
<tr>
<td>• Optional bottom compartment</td>
<td>• Battery enclosure or multi-purpose</td>
</tr>
<tr>
<td>• Multi purpose (check dimensions)</td>
<td>• Up to five battery shelves</td>
</tr>
<tr>
<td>23” rack 23RU</td>
<td>• AC power options</td>
</tr>
<tr>
<td>• AC power options</td>
<td>• Upper compartment is fan cooled</td>
</tr>
<tr>
<td>• Fan cooled, vented or air conditioned (2500 to 5000BTU)</td>
<td>• Lower compartment is air conditioned (3500BTU)</td>
</tr>
<tr>
<td><strong>Dimensions:</strong></td>
<td><strong>Dimensions:</strong></td>
</tr>
<tr>
<td>mm: 1473H x 762W x 711D</td>
<td>mm: 2137H x 762W x 762D</td>
</tr>
<tr>
<td>in: 58H x 30W x 28D</td>
<td>in: 84H x 30W x 30D</td>
</tr>
<tr>
<td>Dimensions include 14” (356mm) high bottom compartment</td>
<td>Dimensions include 10” (356mm) high bottom compartment</td>
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</table>

<table>
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<tr>
<th><strong>Te30</strong></th>
<th><strong>Te21</strong></th>
</tr>
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<tbody>
<tr>
<td><strong>Features:</strong></td>
<td><strong>Features:</strong></td>
</tr>
<tr>
<td>• Aluminum construction</td>
<td>• Aluminum construction</td>
</tr>
<tr>
<td>• Pad or platform mount</td>
<td>• Pad or platform mount</td>
</tr>
<tr>
<td>• Optional bottom compartment</td>
<td>• Dual compartment system</td>
</tr>
<tr>
<td>• Multi-purpose</td>
<td>• Power in upper compartment &amp; 48 DC breakers</td>
</tr>
<tr>
<td>• Multiple cable entry ports (check dimensions)</td>
<td>• Two battery shelves and customer equipment in lower compartment</td>
</tr>
<tr>
<td>23” rack 26RU</td>
<td>• AC power options</td>
</tr>
<tr>
<td>• AC power options</td>
<td>• Upper compartment is fan cooled</td>
</tr>
<tr>
<td>• Fan cooled, vented or air conditioned (3500 to 5000BTU)</td>
<td>• Lower compartment is air conditioned (3500BTU)</td>
</tr>
<tr>
<td><strong>Dimensions:</strong></td>
<td><strong>Dimensions:</strong></td>
</tr>
<tr>
<td>mm: 1473H x 762W x 762D</td>
<td>mm: 2137H x 762W x 762D</td>
</tr>
<tr>
<td>in: 58H x 30W x 30D</td>
<td>in: 84H x 30W x 30D</td>
</tr>
<tr>
<td>Dimensions include 10” (356mm) high bottom compartment</td>
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</tr>
</tbody>
</table>
Fiber Power Systems

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 in 2006. This number is expected to double again by the spring of 2008.

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

- 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

Specifications

Part numbers:
- FlexNet FMPS, 120V Line cord, 150W, 48Vdc out, -40°C (-40°F), Verizon ............... 010-592-20-050
- FlexNet FMPS, FTTX Multipurpose PS, 120V line cord, 150W................................. 010-592-20-052
- FlexNet FMPS, FTTX Multipurpose PS, 120V line cord, -40°C (-40°F)........................ 010-592-20-053

> Input
- AC input voltage: .................90 to 320VAC
- AC input frequency: ..........45 to 66Hz
- Surge protection: ............... ANSI/IEEE Std. C62.41 to Category A, B, or C requirements, using a “Ring Wave” or “Combination” waveform, at a level of 6kV

> Output
- Operational
- Output power: .................150W continuous - 170W, 10 sec max.
- Output voltage: ............... 48 to 58VDC 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

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

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

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

> Physical
- FMPS dimensions:
  - in: .........................14W x 23.75H x 5.5D
  - cm: ............................35.6W x 60.3H x 14D
- Weight: ......................... 11.3kg (25lb)
- FMPS + shipping carton dimensions:
  - in: ..........................17W x 28.5H x 11.75D
  - cm: ............................35.6W x 60.3H x 14D
- Weight: ......................... 13.6kg (30lb)

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

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

> 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

> Warranty
- 3 year repair or replace

FMPS with cover removed and two 7.2Ah battery strings installed
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

### Specifications

**Output**
- Operational 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

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

**Visual Indicators**

**System:** Green LED, power is available at the output (AC, battery or auxiliary)

**Battery:** Green LED, battery discharging to 25% SOC (main or auxiliary)

**Green flash:** At 25% SOC (main battery) the indicator begins to flash

**Replace battery:** Red LED, battery not present or failed self test

**Auxiliary power source:** Green LED, valid auxiliary power source connected

**Audible Status Indicators**
- Loss of input power: Single, one second chirp
- Low battery: Single chirp every 15 seconds at 25% SOC
- Replace battery: Double chirp spaced fifteen minutes apart

**Push Buttons**
- Silence alarm: Suppresses the audible alarm for 24 hours
- Battery emergency use: Accesses reserve battery capacity

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

**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)

**Interface**
- DC output: Removable screw terminal plug accepts seven (2) 16AWG and (7) 24AWG wires
  - Coax F connector POS center (no remote alarms supported)
- Auxiliary DC input: 3.5mm (OD), 1.3mm (Pin, positive) coaxial barrel connector
- AC input: IEC320/C8 receptacle
- Line cord: NEMA 1-15 to IEC 320 C5 (other cords available upon request)

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

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

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

### Nominal Specifications

**Input**
- AC input voltage:
  - AX-30-12D-HC: 85 to 132VAC (120VAC nominal)
  - AX-30-12D-PC: 170 to 264VAC (230VAC nominal)
- AC input frequency: 50 to 60Hz
Note: International AC selections and line cords available.

**Output**
- 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

**Environment**
- Operating temperature range:
  - AX-30-12D-PC + BBPS: -40 to 65°C (-40 to 149°F)
  - AX-30-12D-HC + BBPS: -40 to 45°C (-40 to 113°F)
  - BBPS: -40 to 65°C (-40 to 149°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)
- Elevation storage max: 50000ft (15000m)

**Battery**
- Type: 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

**Regulatory Approvals**
- 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

### Warranty
Electronics: 2 years
Battery—standard: 1 year
Battery—long life: 3 years

### 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

### FlexPoint UPS runtimes (mins) over temperature

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<th>Load/Temp</th>
<th>-40°C/-40°F</th>
<th>-20°C/-4°F</th>
<th>25°C/77°F</th>
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<td>15W</td>
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<td>20W</td>
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<td>130</td>
<td>210</td>
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<td>25W</td>
<td>50</td>
<td>100</td>
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<td>30W</td>
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### 17Ah

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<tbody>
<tr>
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<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>
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</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.

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

**Dimensions:**
- **mm:** 120H x 178Dia
- **in:** 4.75H x 7.0Dia
- **Weight:** 0.68kg (1.5lb)

**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.

- **Model:** 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 (0.7lb)

**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.

- **Model:** 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 (0.7lb)

**Battery Modules**

The Battery Backup Power Supply (BBPS) module outputs 30W of continuous power and includes a microprocessor-based battery 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 ONU 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.

- **Model:** 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:** 6.8kg (1.5lb)

- **Model:** AX-12D-BBPS-17 — P/N 031-192-10-031

**Dimensions:**
- **mm:** 355 x 241 x 127
- **in:** 14H x 9.5W x 5.0D
- **Weight:** 2.04kg (4.5lb)

**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.

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

**Batteries**

The FlexPoint AX battery modules use maintenance-free sealed-lead acid.

- **Model:** AX-STDBAT-7 — P/N 181-318-10 Standard-life 7.2AH AGM battery, 1-year warranty
- **Model:** AX-LONGBAT-7 — P/N 181-319-10 Long-life 7.2AH AGM battery, 3-year warranty

**Dimensions:**
- **Weight:** 2.27kg (5lb)

- **Model:** AX-STDBAT-17 — P/N 181-345-10 Standard Life 17AH AGM Battery, 1-year warranty

**Dimensions:**
- **Weight:** 5.9kg (13lb)
Applications

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

Indoor Wall Mount Home Converter
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)

Indoor Wall Mount Home Converter
Two Wire 8ft
11.6 to 16VDC Three Conductor Wall Less than 10’ (3m)

7.2Ah or 17Ah Battery Module
10.5 to 14VDC 30W Output
Power + Alarms

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

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)

Meter Base and Meter
Outdoor Power-Ring Converter
11.6 to 16VDC Three Conductor
Less than 100’ (30m)

7.2Ah or 17Ah Battery Module
10.5 to 14VDC 30W Output
Power + Alarms
Less than 10’ (3m)
FTTx
Architecture Overview

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

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

OLT: Optical Line Terminal

WDM

Optical Splitter

GPON: Gigabit Passive Optical Networking

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

FMPS 48VDC
Fttx ONT UPS

Flexnet AX 12VDC
Fttx ONT UPS

SFU: Single Family Unit

Fiber Power Systems
Services and Support

Argus’ customer care services are matchless in the industry; and will help you improve productivity, work quality and user satisfaction. Our team of highly trained professionals are committed to the highest quality standards and are very knowledgeable in addressing your support requirements.

Core support components include: Comprehensive training courses, 24/7 technical support, EF&I, and full product warranty coverage. We also provide these high quality support services through a network of dedicated local centers worldwide.

First levels of support can easily be addressed through our website, 24/7 phone support, technical product documentation and customer care guides. If further support is required, custom service packages can be created to satisfy any issue. These fee-for-service options can include on-site technical support and/or training, emergency product replacement within 24 hours of request, and express repair of product within 2 working days of receipt.

Argus is always interested in delivering the best products and services, so we are constantly requesting feedback from our customers to better enhance our service levels.
Customer care services
Argus strives to provide the best customer and product support in the communications power industry, and is committed to helping customers achieve their business objectives.

› Free 24-hour telephone technical support
  Argus’ 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 GO ARGUS (462 7487)
    International: 1 604 436 5547
    E-mail: support@argusdcpower.com

› On-site technical assistance
  Argus offers on-site technical assistance upon request or if the situation dictates.

› On-site maintenance
  Argus provides various on-site maintenance and service programs.

› Installation certification
  Argus provides supervision and commissioning of customer installations to ensure that products are installed and functioning properly.

› Warranty coverage
  Argus products are warrantied for a minimum of 24 months. A convenient repair and return plan ensures prompt turnaround of damaged products whether in or out of warranty. Products are repaired within five working days of receipt.

Several “fee-for-service” repair options are also available, including:

› Express repair
  Products are repaired within two working days of receipt.

› Emergency product replacement
  Damaged units are replaced with working units within 24 hours of request, subject to product availability.

› Comprehensive user documentation
  Argus products are shipped with complete installation and instruction manuals. FAQ’s, technical advisories, manuals and brochures are available on Argus’ website at www.argusdcpower.com.

› Free software updates on the website
Engineer, Furnish and Install (EF&I)

» All-in-one DC power solutions
   As part of Argus’ commitment to complete customer satisfaction, Argus is with you every step of the way. Argus provides complete EF & I services.

» Cost efficiency, quality, and reliability
   Argus’ EF & I program will save you time and money, and give you the assurance you need that your project is being completely managed by experts.

   Our dedicated team will plan site-specific solutions that work within your budget and operational constraints, and keep in mind your current and future requirements.

» Expertise and experience
   Detailed drawings, scopes of work and methods of procedure, from site surveys to commissioning, ensure accurate installations.

   Argus’ engineering and technical teams offer complete installation, testing and maintenance, as well as 24 hour technical support and comprehensive documentation.

   With thousands of customer systems designed, built, installed, and operational around the globe, Argus has the experience and expertise to provide the perfect DC power system solution to meet your needs.

Training

» Comprehensive training of Argus products
   Argus offers comprehensive training covering all aspects of DC power systems including the engineering, installation, configuration, operation, and maintenance of Argus products. Training classes can be held in a traditional classroom setting or in a web-based environment that is easily capable of connecting multiple locations simultaneously.

» Customized DC power system course
   Courses are taught by industry experts at the Argus headquarters in Vancouver, BC, but arrangements can be made to hold classes at other locations. Instructors follow prepared curriculum or will custom tailor course material to meet the specific needs of your group. (Please refer to page 96 for more detail about the course content).

» Contacts
   For more information about Argus’ training, please contact Argus directly or visit our website at www.argusdcpower.com.
<table>
<thead>
<tr>
<th>Course Selection</th>
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<tr>
<th>Course 1</th>
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<th>Course 3</th>
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<td>Tutorial 2 hours Hands-on 2 hours</td>
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<td>Engineer or technician with minimal power experience</td>
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<td></td>
<td>Basic electrical understanding (AC/DC fundamental, etc.)</td>
<td>Basic electrical understanding (AC/DC fundamentals, etc.)</td>
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<td>Upon completion of the course, the participants will be able to:</td>
<td>Upon completion of the course, the participant will have an understanding of:</td>
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<tr>
<td></td>
<td>Design and size DC power systems and components</td>
<td>The requirements for installing DC power systems</td>
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<tr>
<td></td>
<td>Understand the functionality and operation of the individual components of the DC power system</td>
<td>The requirements for commissioning DC power systems</td>
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<td>Engineer site installations for DC power</td>
<td>How to work safely within a live DC power system environment</td>
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<td><strong>Course materials</strong></td>
<td>Overhead projector, Argus DC Power Systems Training Course Manual, storyboard, markers and miscellaneous course materials</td>
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<td>Initial and retrofit installation techniques for various DC power systems and components will be reviewed including:</td>
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<td>Power systems functionality and operation</td>
<td>Rectifiers</td>
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<td>Rectifiers</td>
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<td>Converters</td>
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<td>Fuses and circuit breakers</td>
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<td>Battery return bus</td>
<td>Ground bars</td>
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