



POWERING FOR TODAY AND THE FUTURE

ENERSYS ENERGY SYSTEMS | CATALOG 2023

SOLUTIONS FOR YOUR

TRAFFIC & ITS INDUSTRY

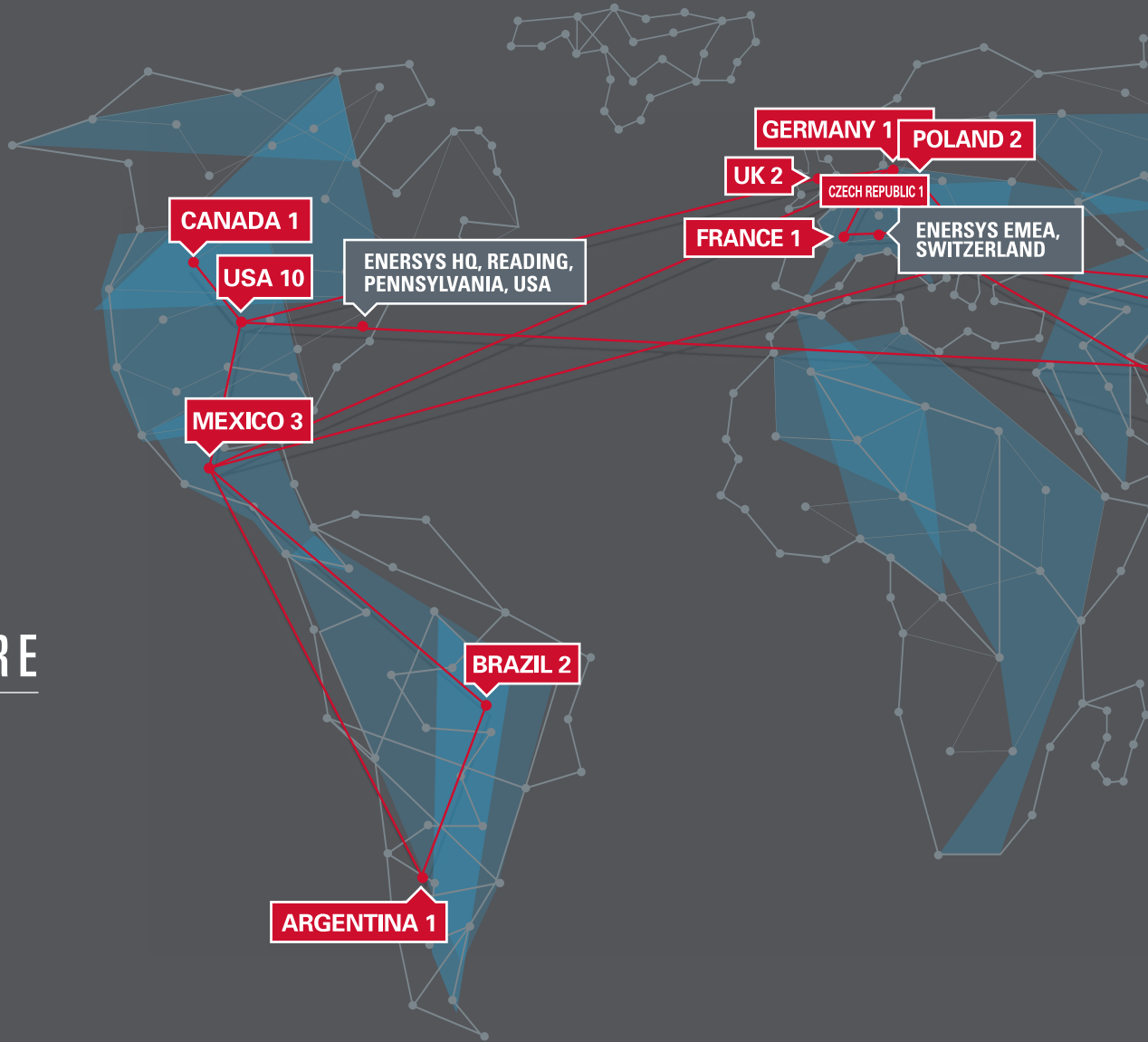
EnerSys[®]
Power/Full Solutions

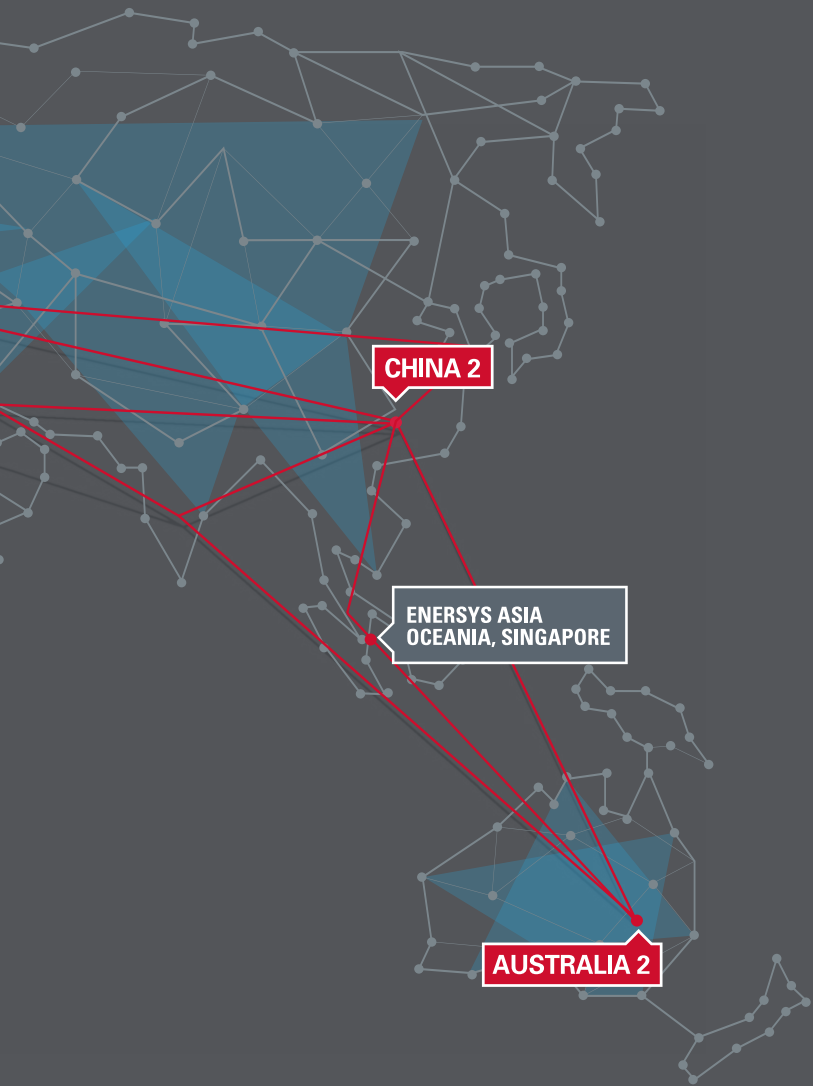




4. **GLOBAL OVERVIEW**
6. **TRAFFIC AND INTELLIGENT TRANSPORTATION SYSTEMS**
8. **ALPHA PRODUCT SOLUTIONS**
10. **THE NEXT GENERATION OF BATTERY BACKUP SYSTEMS**
12. **FXM HP RUGGED UPS MODULES**
14. **ALPHA BATTERY BACKUP SYSTEM**
POWER SOLUTIONS
16. FXM HP 2000 Rugged UPS Module
17. FXM HP 1100 Rugged UPS Module
18. FXM HP 650-24 24Vdc Rugged UPS Module
19. FXM HP 650-48 48Vdc Rugged UPS Module
20. FXM 350 24Vdc/48Vdc Rugged UPS Module
21. Transfer Switches
22. SE48-1616 48-inch Outdoor BBS Enclosure
23. SE48-2216 Outdoor BBS Enclosure
24. SE48-1909 Battery Side Mount/ Rack Mounted Battery Tray
25. Traffic Mini 350 BBS Battery Backup System
26. Traffic Mini 1000 BBS Battery Backup System
27. AlphaCell® XTV Extreme Temperature Batteries
28. Remote Battery Monitoring System Plus
29. AlphaGuard™ Battery Charge Management System
30. AMPS HP2 Modular Inverter System
31. **SERVICES AND SUPPORT**

POWERING THE FUTURE
everywhere for everyone





EnerSys® is an industrial technology leader serving the global community with mission critical stored energy solutions that meet the growing demand for energy efficiency, reliability, and sustainability. We are driven by a passion to provide people everywhere with accessible power to help them work and live better.

Ours is a world of continuous improvement, enabled by our extensive network of teams and partners around the globe utilizing the collective wealth of expertise they bring. We produce excellence today and work with our customers on new solutions helping them win tomorrow. We are never satisfied because we know that your world changes every day. To leverage that change we need to remain curious. That's why we are constantly innovating and exploring new ways of thinking to find solutions that address your challenges.

Our people are our strength, with diverse teams and close partner network, an endless resource for innovation, insight, and enthusiasm. We are committed to providing safe, accessible power around the world and ensuring it has a positive impact on our employees, our community, and our environment.

We've always provided exceptional technology, but now we combine the expertise of our global community to do much more than that.

From simple battery roller beds and indoor battery racks, through to street passive distribution cabinets, outdoor enclosures, indoor industrial systems, and slim street telecom cabinets. Our capability extends up to large power and battery cabinets, and outdoor line-ups, as well as more than one hundred customized designs to support specific project requirements.

We create holistic solutions that empower our customers and give them the courage to push the boundaries of their applications.

TRAFFIC AND INTELLIGENT TRANSPORTATION SYSTEMS

Power disturbances that impact traffic signals and Intelligent Transportation Systems (ITS) not only create potentially dangerous conditions for transportation users, but also often result in immediate gridlock and congestion on arterial roads and outlying intersections – impacting air quality, noise levels, and transit times. Year to year, traffic control system failures account for an immeasurable number of vehicle accidents, personal injury and fatalities, and insurance claims. While this is no surprise to those familiar with the challenges of transportation, many may be unaware that strategically deployed and reliable backup power can minimize or even neutralize the root cause of many of these problems.

To date, the majority of states and provinces in the US and Canada have standardized on the Alpha® UPS for their applications, resulting in Alpha® systems already backing up over 50,000 traffic intersections and ITS installations, as well as many other traffic markets around the world.

The ITS promises the benefit of providing real-time information access to operators of traffic management centers and end users, enabling them to make smarter, more efficient use of transportation networks. Without backup power, loss of these interfaces and critical communication devices may pose significant safety and security risks for the user and operator. The moment when communications are needed the most is often the time when there is an unexpected local power loss or interruption.

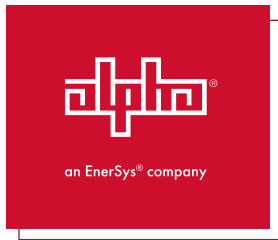




With more than 20 years of experience in the Traffic market, EnerSys continues to be the leader in providing backup power and power conditioning for traffic signalized intersections and ITS.

DESIGNED TO MEET THE CHALLENGES OF HARSH ENVIRONMENTS

For over 40 years, Alpha's line of rugged outdoor UPS and backup power solutions have been designed by outdoor power experts to meet the stringent requirements like those in the traffic industry, reliably performing in frigid temperatures, searing desert heat, snow and salt, and other environmentally harsh conditions.



Alpha® SE48-1616 enclosures and now SE48-2216 enclosures are the flagship Type 3R enclosures used in traffic, ITS, and industrial markets to protect rugged battery backup power system components from harsh outdoor elements. They easily accommodate a 350 to 2000 W Alpha® FXM UPS module, transfer switches, and up to four AlphaCell® 195XTV, 240XTV, 3.5HP, or 4.0HP batteries with room for additional components that may be required for your application.

Alpha® SE48-1909 battery side module for existing enclosures is ideal for critical, large intersections and corridors requiring extended runtime. It is a cost-effective method of adding capacity to any existing ground mount enclosure where space is premium. A compact design minimizes installation time and is engineered to minimize temperature differential between batteries.

Alpha® Traffic Mini BBS battery backup systems are compact, aesthetically pleasing Type 3R enclosures featuring an FXM UPS module along with a universal automatic transfer switch. This solution was developed in response to an emerging demand for a more compact, discreet, and budget friendly UPS cabinet, endowed with the outdoor ruggedness and reliability for which Alpha is known. Primary applications include powering traffic controller cabinets, including Advanced Transportation Controller (ATC), National Electrical Manufacturers Association (NEMA) M, P, and 336, as well as specialty ITS projects. The low-profile design meets the needs for urban intersections, where limited space is a concern, while the economics make it ideal for remote and rural intersections as well as urban applications.

By implementing battery backup/UPS solutions into your traffic networks, there is the potential to:

Condition and regulate incoming commercial power ensuring sensitive control equipment works efficiently.

Save lives and eliminate severe accidents due to power outages.

Sustain power to operating systems and controller electronics until utility power is restored.

Extend the life cycle and lower repair cost up to 70 percent of all protected traffic electronic equipment.

Maintain traffic flow and intersection safety.

Reduce expenses by eliminating ghost service call-outs or expensive after hours calls.

TRAFFIC BATTERY BACKUP - RURAL/URBAN

Alpha offers rugged battery backup systems for traffic infrastructure reliability, commuter safety, and reduced traffic congestion for critical large intersections and arterial roads.



SE48-1616 system: One of Alpha's most widely sold enclosures in traffic, outdoor distributed antenna systems (ODAS), and security applications. It is designed to accommodate a 350 to 2000 W FXM HP UPS module, transfer switches, and up to four BCI Group 31 batteries (55 to 112 Ah). A thermostat controlled fan and louvered vents ensure reliable operation of the system in high temperature environments. SE48-1616 is available in multiple options to meet regulatory requirements for the state, county, or city.

SE48-2216 enclosure: The design is based on the popular SE48-1616 enclosure with optional slide out battery trays for added convenience of battery maintenance.



Traffic Mini BBS system: Traffic grade consolidated battery backup system designed to power ATC, NEMA M, P, and 336 or similar style traffic controller cabinets, ideally for DOT/MOTs with limited budget and space restrictions. Systems can be ordered with 350 W or 1000 W FXM HP UPS modules. Battery capacity ranges from 4 x 55 Ah to 2 x 112 Ah.

PARKING AND SECURITY

Alpha offers rugged battery backup systems for parking and security devices uptime, monitoring, and data flow.



Micro 350/1000 system: Alpha® Micro Series systems provides constant, reliable backup power for access control, security, public utility, and telecommunications applications in a compact all-in-one Type 3R enclosure. Paired with 350 W or 1000 W FXM UPS module it offers configurable backup time by offering battery capacity from 18 to 112 Ah.



Micro 100 system: Alpha® Micro 100 offers a cost effective, compact, and rugged UPS solution featuring all weather protection with durable outdoor Type 3R rated plastic enclosure. It is an ideal UPS for security cameras, AC small cells, or other outdoor applications of 100 VA/W or less.

SMART CITY AND ITS

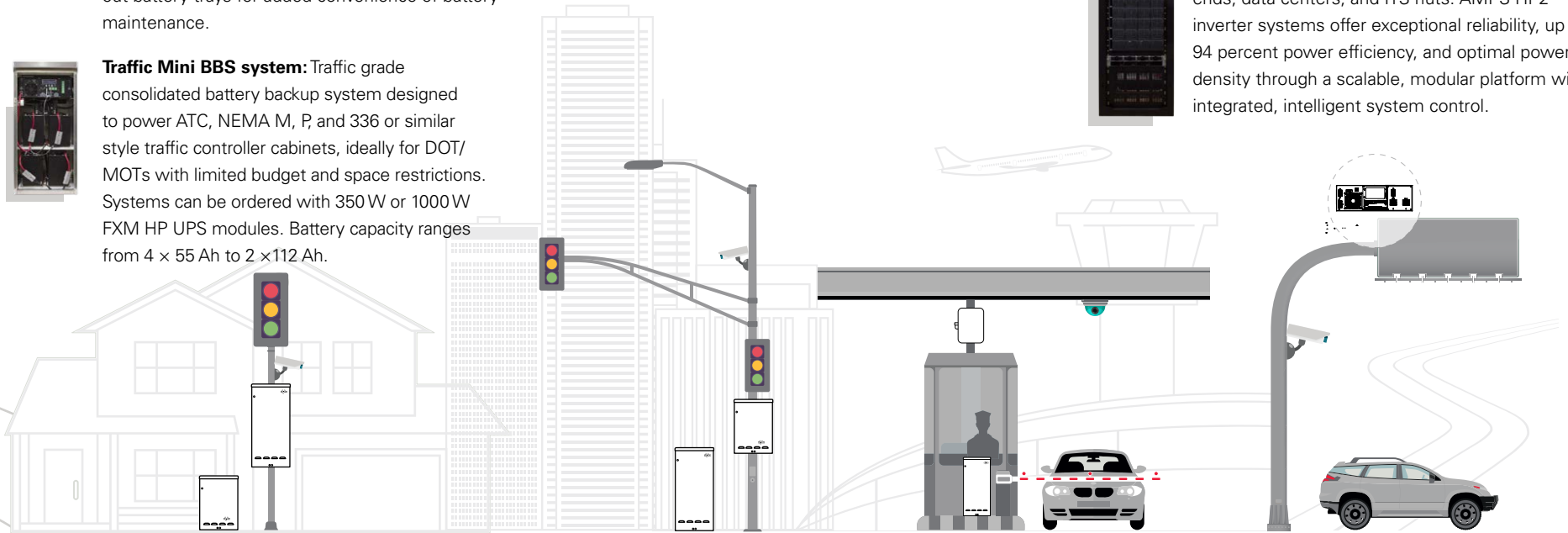
Alpha offers rugged battery backup systems for Smart City and ITS deployments connectivity and fidelity.



FXM UPS power module: Alpha® FXM UPS is a rugged line of UPS power modules designed to provide clean, reliable backup power for traffic, ITS, security, and ODAS applications. Choose the FXM 350 or FXM HP 650 UPS for ITS, the FXM HP 1100 UPS for standard signalized intersections or the FXM HP 2000 UPS for larger intersections or railway crossings with multiple turn lights, VMS signs, and other additional power requirements.



AMPS HP2 modular inverter system: The Alpha® modular inverter system (AMPS HP2) offers telecom grade AC power for critical loads in central office, switching centers, cable head ends, data centers, and ITS huts. AMPS HP2 inverter systems offer exceptional reliability, up to 94 percent power efficiency, and optimal power density through a scalable, modular platform with integrated, intelligent system control.





Designed with a purpose - Alpha® FXM HP UPS is the next generation of rugged UPS power modules for the most demanding environments where clean backup power is needed.



THE NEXT GENERATION OF BATTERY BACKUP SYSTEMS

Battery backup systems (BBS) are the foremost line of defense for keeping intersections safe during power outages. They not only make sure that critical traffic equipment remains operational during the outage, but they also increase overall reliability by protecting the equipment from power disturbances. These longstanding solutions for traffic intersections are important elements of Smart City and ITS deployments – without them, the data stops when the power goes out. Battery backup systems are vital building blocks for next generation networks, including surveillance and security, and 5G.

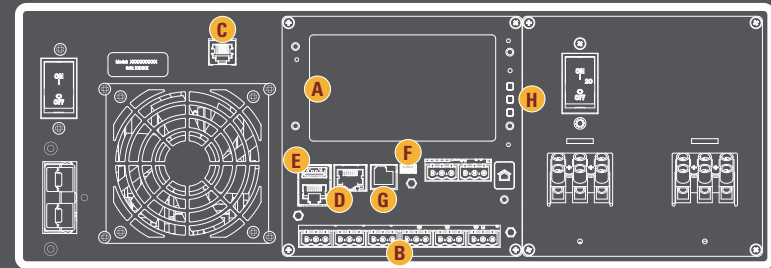
To meet the requirements of these emerging networking opportunities, a new generation of BBS is needed. Like the current generation, these systems need to be rugged, reliable, and able to withstand the whole range of outdoor environmental conditions. But the next generation BBS must provide more than just a reliable backup power. Users are looking for a smart BBS that offers in-depth status information, configurability, and secure communication. Systems that meet the capabilities outlined are well-suited to be essential building blocks for tomorrow's networks. Now, more than ever, they also need to be easy to use and provide important, useful information that aids decision makers.

FXM HP RUGGED UPS MODULES

Designed with a purpose - Alpha® FXM HP UPS is the next generation of rugged UPS power modules for the most demanding environments where clean backup power is needed. They offer a new user-friendly interface along with a proven building blocks for improved operational performance and integrity. While ensuring equipment in critical applications remains protected from power disturbances and outages it provides centralized setup, control and monitoring. Typical applications include traffic infrastructure, ITS equipment, security devices, parking gates, ticket dispensers, VMS signs, and AC small cell power backup.

The Alpha® FXM HP UPS continues Alpha's long legacy as the market leader in traffic and intelligent transportation systems.

It offers many advanced functions which many can only dream of. Features like built-in data loggers to monitor performance logs, user-configurable alarms, advanced equation editing for custom data and actions, multiple communication ports, USB port for backing up and restoring site configuration settings, and data logs and enhanced security are few to list. It continues Alpha's long legacy as a market leader in traffic and ITS battery backup solution space.



- A.** Advanced next-generation control and monitoring platform with high resolution color touchscreen LCD with advanced local UI. Provides access to multiple configurable tabs for quick system status, overview, and configuration without the need of a laptop. Intuitive UI that simplifies installation, turn on, and maintenance.
- B.** User customizable dry contacts for control and monitoring of key functions. Allows custom data and equation editing for advanced users.
- C.** Temperature compensated battery charging protects batteries from overcharging or undercharging at extreme temperatures, extending the life of batteries.
- D.** Dual Ethernet ports for remote or local communication. Built-in web pages are designed to provide a wealth of information.
- E.** Integrated USB host for local firmware upgrades, configuration updates, system backup, restore, and cloning.
- F.** USB Mini B port for controlled soft shutdown using MegaTec protocol compliant client.
- G.** CAN Bus port for communication with an external Alpha® analog digital input output (ADIO) device for monitoring via a single IP interface for additional monitoring and control.
- H.** Status and alarm LEDs for quick system status.



SECURITY

Modern encryption technology to ensure proper authentication and privacy. Central server authentication and authorization features for additional security layer.

- 256-bit encryption: Username and password
- SNMPv3: Authentication and privacy
- Configurable Ethernet port web access
- SSL ready for HTTPS connectivity



AUDITS

Built-in data loggers to monitor performance logs or configure the BBS to capture a host of parameters.

- Events and alerts
- Performance log
- Power outage log
- Battery log
- Data logs



COMMUNICATION

Multiple ports for local and remote connectivity. Advanced file management, system configuration management, backup, and restore functions.

- Web page
- SNMP



CUSTOMIZATION

Allows user configurable alarms, customizable LCD information tabs and advanced equation editing for custom data and actions.

- Custom data
- Timers
- Counters
- Scheduler
- Custom actions



ALARMING

Accurate and customizable reporting and notifications to provide the peace of mind.

- SNMP notifications: Passive and active monitoring
- Configurable meta data in notifications
- Email: with location provider
- Public SMTP capable (Gmail)



MULTIPLE USERS

Allows setting up multiple users and permissions, edit permissions, enabling and disabling users with ease.

- Administrator
- Account manager
- Operator
- Guest

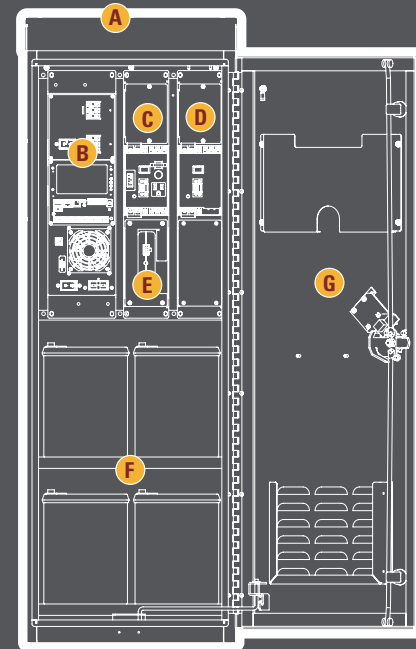


ALPHA BATTERY BACKUP SYSTEM

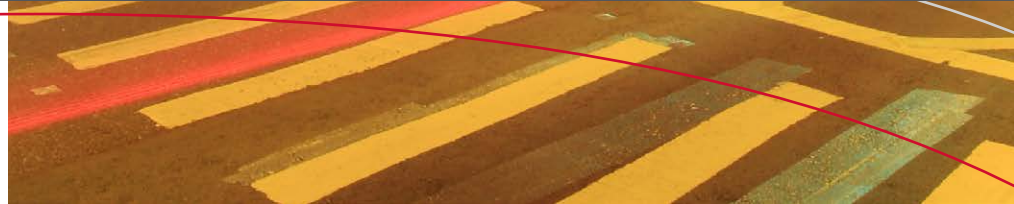
A high-quality, properly designed battery backup system keeps your traffic intersections and ITS equipment operational while maximizing battery life with temperature-compensated charging. A complete system provides reliable, clean power for eight hours or more after a utility power failure or a power shutoff. With low upfront procurement, installation, and maintenance costs, backup power is within reach of your operations budget. Alpha offers the ability to double your battery backup time with a cost-effective solution to your existing system using side-mount modules.

An Alpha® complete system provides reliable, clean power for 8 hours or more after a utility power failure or a power shutoff.

The battery monitoring system allows remote monitoring, reduced maintenance, trending of battery performance and budgeting for replacements. As a market leader with four decades of experience under our belt, we can offer the best solution matched with our exceptional warranty for your needs.



- A.** Traffic grade fan-cooled aluminum Type 3R enclosure designed to protect rugged battery backup power system components from harsh outdoor elements. Various mounting options provide a flexible solution. Enclosure can be provided without or with a quick connect generator receptacle with a lockable door.
- B.** Designed to easily accommodate a rugged 350 to 2000 W Alpha® FXM UPS power module.
- C.** Universal automatic transfer switch provides a fail-safe and manual operation ensuring critical loads are protected should the UPS require maintenance. Including a Simplex® convenience receptacle and options like surge arrestor assembly and a receptacle plate for multiple battery heating mats.
- D.** Universal generator transfer switch offers complete control over generator transfers. It allows an AC generator to recharge the batteries and power your systems during extended power outages.
- E.** AlphaGuard™ helps to balance and optimize battery performance or the Remote Battery Monitoring System (RBMS) Plus balances and offers detailed, real-time information on batteries remotely.
- F.** House up to four AlphaCell® 195XTV, 240XTV, 3.5HP, or 4.0HP batteries for longer runtimes to help system uptime. Offering one of the best full replacement warranties for an outdoor application.
- G.** Door with three-point latch with a Grade 2 keylock Corbin® slam latch integrated with the stainless-steel handle. The metal document holder offers space for manuals and maintenance records.





SECURITY

Industry standard locking mechanism and options.

- Three-point latching
- Corbin® Grade 2 keylock standard
- Pad lockable stainless-steel handle
- Stainless steel piano hinge on door
- BEST® lock optional



CUSTOMIZATION

Add-on available to meet DOT/MOT specifications.

- Generator port/transfer switch
- Surge arrester
- Custom color with MOQ
- Internal LED lamp
- Remote power outage indicator
- Battery slider plate (SE48-1616)
- Battery slide out tray (SE48-2216)



RELIABILITY

Backed up best in class warranty for complete systems.

- High MTBF
- Free 24/7 technical support



MONITORING

Local and remote monitoring for control and diagnostics.

- Local display or remote web interface (UPS)
- Dry contacts and user inputs (UPS)
- Remote monitoring for batteries
- Tilt switch
- Door tamper switch



ENVIRONMENTAL

Protects rugged battery backup power system components from harsh outdoor elements.

- Type 3R cabinet rating
- Fan-cooled
- Optional battery heater mats for colder regions



MOUNTING

Various options provide a flexible mounting solution in the field.

- Piggyback
- Pedestal
- Pole
- Wall

FXM HP 2000 Rugged UPS Module



- 2000 W/VA UPS designed to operate in extreme environments and provide maximum flexibility
- Advanced next-generation control and monitoring platform with high resolution color touchscreen LCD with advanced local UI
- Built-in data loggers to monitor performance logs, user configurable alarms, and advanced equation editing for custom data and actions
- Integrated USB host for local firmware upgrades, configuration updates, backup, restore, and cloning
- Wide range automatic voltage regulation (AVR) lengthens battery life by providing protection without transferring to backup mode during voltage surge or sag
- Independently programmable control and reporting dry contacts allow monitoring and controlling of key functions

The FXM HP UPS continues the longstanding excellence in battery backup systems by ensuring equipment in security, communications, traffic, industrial environments, and many other critical applications remain safe and protected from power disturbances and outages.

Thanks to its powerful programmable temperature compensated battery charger, the FXM HP UPS module is capable of providing the runtime and extended battery life you need. The color touchscreen LCD provides access to multiple configurable tabs for quick system status, overview and configuration without the need of a laptop.

ELECTRICAL

120 VAC MODEL

Battery	String voltage: 48 Vdc Battery breaker rating: 80 A Max. charging current: 15 A
Input	Nominal voltage: 120 Vac Voltage range: 85 to 150 Vac Frequency: 50 Hz or 60 Hz $\pm 5\%$ (autodetect frequency is the default configuration, can also be manually configured). Current: 20 A (at nominal voltage and max. battery charging current) AC breaker rating: 25 A
Output	Waveform: Pure sine wave Nominal voltage: 120 Vac Voltage regulation: $\pm 10\%$ on line mode, $\pm 2\%$ on inverter mode Power at 50°C (122°F): 2000 W/VA Frequency: Output frequency = Input frequency Frequency tolerance: Backup mode: ± 0.3 Hz

230 VAC MODEL

Battery	String voltage: 48 Vdc Battery breaker rating: 80 A Max. charging current: 15 A
Input	Nominal voltage: 210/220/230/240 Vac Voltage range: 153 to 322 Vac Frequency: 50 Hz or 60 Hz $\pm 5\%$ (autodetect frequency is the default configuration, can also be manually configured). Current: 12 A (at nominal voltage and max. battery charging current) Input breaker rating: 15 A
Output	Waveform: Pure sine wave Nominal voltage: 210/220/230/240 Vac (same as input) Voltage regulation: $\pm 10\%$ on line mode, $\pm 2\%$ on inverter mode Power at 55°C (131°F): 2000 W/VA Frequency: Output frequency = Input frequency Frequency tolerance: Backup mode: ± 0.3 Hz

MECHANICAL

Dimensions (H x W x D)	133 x 394 x 222 mm (5.22 x 15.5 x 8.75 in.)
Weight	18 kg (40 lb)

ENVIRONMENTAL

Operating temperature¹	-40 to 74°C (-40 to 165°F)
Relative humidity	Up to 95% (non condensing)
Elevation²	Up to 3,700 m (12,000 ft)
Audible noise³	45 dBA at 1 m (39 in.)
MTBF	250,000+ hours as per Telcordia SR-332, 100% duty cycle, full load, 40°C (104°F)
Heat dissipation	Normal mode 120 Vac model: 57 Watts (194.5 BTU/h) 230 Vac model: 48 Watts (163.8 BTU/h)
	Backup mode 120 Vac model: 361.94 Watts (1235 BTU/h) 230 Vac model: 347.3 Watts (1185 BTU/h)



¹ 120 Vac model derates after 50°C (122°F). 230 Vac model derates after 55°C (131°F).
Derates 1.4% per degree Celsius past listed temperature range until a max. of 74°C (165.2°F).
² Derates 2°C per 300 m (1,000 ft) above 1,400 m (4,500 ft)
³ Measured at 25°C (77°F) ambient temperature

PERFORMANCE

Typical output voltage THD (resistive load)	120 Vac model: <3% 230 Vac model: <5%
Typical efficiency¹ (resistive load)	120 Vac model: 97.5% 230 Vac model: 97%
Typical transfer time	<5 ms
Load crest factor	3:1 (load dependent)
Lightning/surge protection	ANSI/IEEE C62.41.2:2002, Criteria A & B

¹ At nominal AC input, full load and at 25°C (77°F) ambient temperature

AGENCY COMPLIANCE

Electrical safety	UL 1778, CAN/CSA-C22.2 No. 107.3, EN 62040-1 ¹
Marks	 
EMC	FCC CFR 47 PART 15/B - Class A, CAN ICES-003(A)/NMB-003(A) EN 62040-2 - UPS Category C2 ¹
RoHS	2011/65/EU with Amendment 2015/863 (ROHS 3)

¹ Applies to 230 Vac model only

FXM HP 1100 Rugged UPS Module



- 1100W/VA UPS designed to operate in extreme environments and provide maximum flexibility
- Advanced next-generation control and monitoring platform with high resolution color touchscreen LCD display with advanced local UI
- Built-in data loggers to monitor performance logs, user configurable alarms and advanced equation editing for custom data and actions
- Integrated USB host for local firmware upgrades, configuration updates, backup, restoration and cloning
- Wide range automatic voltage regulation (AVR) lengthens battery life by providing protection without transferring to backup mode during voltage surge or sag
- Independently programmable control and reporting dry contacts allow monitoring and controlling of key functions

The FXM HP UPS continues the longstanding excellence in battery backup systems by ensuring equipment in security, communications, traffic, industrial environments, and many other critical applications remain safe and protected from power disturbances and outages.

Thanks to its powerful programmable temperature compensated battery charger, the FXM HP UPS module is capable of providing the runtime and extended battery life you need. The color touchscreen LCD provides access to multiple configurable tabs for quick system status, overview and configuration without the need of a laptop.

ELECTRICAL

120 VAC MODEL

Battery	String voltage: 48 Vdc Battery breaker rating: 50 A Max. charging current: 15 A
Input	Nominal voltage: 120 Vac Voltage range: 85 to 171 Vac Frequency: 50 Hz or 60 Hz $\pm 5\%$ (autodetect frequency is the default configuration, can also be manually configured.) Max. current: 15 A (at nominal voltage and max. battery charging current) AC breaker rating: 20 A
Output	Waveform: Pure sine wave Nominal voltage: 120 Vac Voltage regulation: $\pm 10\%$ on line mode, $\pm 2\%$ on inverter mode Power at 50°C (122°F): 1100 W/VA Frequency: Output frequency = Input frequency Frequency tolerance: Backup mode: ± 0.3 Hz

230 VAC MODEL

Battery	String voltage: 48 Vdc Battery breaker rating: 50 A Max. charging current: 15 A
Input	Nominal voltage: 210/220/230/240 Vac Voltage range: 153 to 322 Vac Frequency: Nominal: 50 Hz or 60 Hz $\pm 5\%$ (autodetect frequency is the default configuration, can also be manually configured.) Current: 8 A (nominal voltage and max. battery charging current) Input breaker rating: 10 A
Output	Waveform: Pure sine wave Nominal voltage: 210/220/230/240 Vac (same as input) Voltage regulation: $\pm 10\%$ on line mode, $\pm 2\%$ on inverter mode Power at 55°C (131°F): 1100 at 220/230/240 Vac Frequency: Output frequency = Input frequency Frequency tolerance: Backup mode: ± 0.3 Hz

MECHANICAL

Dimensions (H x W x D)	133 x 394 x 222 mm (5.22 x 15.5 x 8.75 in.)
Weight	14 kg (31 lb)

ENVIRONMENTAL

Operating temperature¹	-40 to 74°C (-40 to 165°F)								
Relative humidity	Up to 95% (non condensing)								
Elevation²	Up to 3,700 m (12,000 ft)								
Audible noise³	45 dBA at 1 m (39 in.)								
MTBF	250,000+ hours as per Telcordia SR-332, 100% duty cycle, full load, at 40°C (104°F)								
Heat dissipation	<table border="1"> <tr> <td>Normal mode:</td> <td>120 Vac model: 18 Watts (61.42 BTU/h)</td> </tr> <tr> <td></td> <td>230 Vac model: 30 Watts (102.36 BTU/h)</td> </tr> <tr> <td>Backup mode:</td> <td>120 Vac model: 187.56 Watts (640 BTU/h)</td> </tr> <tr> <td></td> <td>230 Vac model: 197.82 Watts (675 BTU/h)</td> </tr> </table>	Normal mode:	120 Vac model: 18 Watts (61.42 BTU/h)		230 Vac model: 30 Watts (102.36 BTU/h)	Backup mode:	120 Vac model: 187.56 Watts (640 BTU/h)		230 Vac model: 197.82 Watts (675 BTU/h)
Normal mode:	120 Vac model: 18 Watts (61.42 BTU/h)								
	230 Vac model: 30 Watts (102.36 BTU/h)								
Backup mode:	120 Vac model: 187.56 Watts (640 BTU/h)								
	230 Vac model: 197.82 Watts (675 BTU/h)								

¹ 120 Vac model derates after 50°C (122°F). 230 Vac model derates after 55°C (131°F) at 220/230/240V. Derates 1.4% per degree Celsius past listed temperature range until a max. of 4°C (165.2°F). Refer to manual for non listed voltage settings.

² Derates 2°C per 300 m (1,000 ft) above 1,400 m (4,500 ft)


³ Measured at 25°C (77°F) ambient temperature

PERFORMANCE

Typical output voltage THD (resistive load)	120 Vac model: <3%
	230 Vac model: <3.5%
Typical efficiency¹ (resistive load)	120 Vac model: 98%
	230 Vac model: 97%
Typical transfer time	<5 ms
Load crest factor	3:1 (load dependent)
Lightning/surge protection	ANSI/IEEE C62.41.2:2002, Criteria A & B

¹ At nominal AC input, full load and at 25°C (77°F) ambient temperature

AGENCY COMPLIANCE

Electrical safety	UL 1778, CAN/CSA-C22.2 No. 107.3, EN 62040-1 ²
Marks	
EMC	FCC CFR 47 PART 15/B - Class A, CAN ICES-003(A)/NMB-003(A) EN 62040-2 - UPS Category C2 ²
RoHS	2011/65/EU with Amendment 2015/863 (ROHS 3)

² Applies to 230 Vac model only

FXM HP 650-24 24 Vdc Rugged UPS Module



- 650 W/VA UPS designed to operate in extreme environments and provide maximum flexibility
- Advanced next-generation control and monitoring platform with high resolution color touchscreen LCD with advanced local UI
- Built-in data loggers to monitor performance logs, user configurable alarms and advanced equation editing for custom data and actions
- Integrated USB host for local firmware upgrades, configuration updates, backup, restore, and cloning
- Wide range automatic voltage regulation (AVR) lengthens battery life by providing protection without transferring to backup mode during voltage surge or sag
- Independently programmable control and reporting dry contacts allow monitoring and controlling of key functions

The FXM HP UPS continues the longstanding excellence in battery backup systems by ensuring equipment in security, communications, traffic, industrial environments, and many other critical applications remains safe and protected from power disturbances and outages.

Thanks to its powerful programmable temperature compensated battery charger, the FXM HP UPS module is capable of providing the runtime and extended battery life you need. The color touchscreen LCD provides access to multiple configurable tabs for quick system status, overview, and configuration without the need of a laptop.

ELECTRICAL

120 VAC MODEL

Battery	String voltage: 24 Vdc Battery breaker rating: 80 A Max. charging current: 10 A
Input	Nominal voltage: 120 Vac Voltage range: 85 to 171 Vac Frequency: 50 Hz or 60 Hz $\pm 5\%$ (autodetect frequency is the default configuration, can also be manually configured). Max. current: 8 A (nominal voltage and maximum battery charging current) AC breaker rating: 10 A
Output	Waveform: Pure sine wave Nominal voltage: 120 Vac Voltage regulation: $\pm 10\%$ on line mode, $\pm 2\%$ on inverter mode Power at 55°C (131°F): 650 VA/Watts at 120 Vac, 60 Hz Frequency: Output frequency = Input frequency Frequency tolerance: Backup mode: ± 0.3 Hz

230 VAC MODEL

Battery	String voltage: 24 Vdc Battery breaker rating: 80 A Max. charging current: 10 A
Input	Nominal voltage: 210/220/230/240 Vac Voltage range: 153 to 322 Vac Frequency: Nominal: 50 Hz or 60 Hz $\pm 5\%$ (autodetect frequency is the default configuration, can also be manually configured). Max. current: 4.4 A (voltage and maximum battery charging current) Input breaker rating: 5.5 A
Output	Waveform: Pure sine wave Nominal voltage: 210/220/230/240 Vac (same as input) Voltage regulation: $\pm 10\%$ on line mode, $\pm 2\%$ on inverter mode Power at 55°C (131°F): 650 VA/Watts at 230/240 Vac Frequency: Output frequency = Input frequency Frequency tolerance: Backup mode: ± 0.3 Hz

MECHANICAL

Dimensions (H x W x D) 89 x 432 x 229 mm (3.5 x 17 x 9 in.)

Weight 11.3 kg (25 lb)

ENVIRONMENTAL

Operating temperature¹ -40 to 74°C (-40 to 165°F)

Relative humidity Up to 95% (non condensing)

Elevation² Up to 3,700 m (12,000 ft)

Audible noise³ 45 dBA at 1 m (39 in.)

MTBF 250,000+ hours as per Telcordia SR-332, 100% duty cycle, full load, at 40°C (104°F)

Normal mode: 13.26 Watts (45.26 BTU/h)

Heat dissipation Backup mode: 120 Vac model: 205.15 Watts (700 BTU/h)
230 Vac model: 205 Watts (699.49 BTU/h)

¹ 120 Vac/60Hz model derates after 55°C (131°F). 230 Vac model derates after 55°C (131°F) at 20/230/240V. Derates 1.4% per degree Celsius past listed temperature range until a maximum of 74°C (165.2°F), refer to manual for non listed voltage settings.

² Derates 2°C (77°F) per 300 m (1000 ft) above 1400 m (4500 ft)

³ Measured at 25°C (77 °F) ambient temperature

PERFORMANCE

Typical output voltage THD (resistive load) <3%

Typical efficiency¹ (resistive load) >98%

Typical transfer time <5 ms

Load crest factor 3:1 (load dependent)

Lightning/surge protection ANSI/IEEE C62.41.2:2002, Criteria A & B

¹ At nominal AC input, full load, and at 25°C (77°F) ambient temperature

AGENCY COMPLIANCE

Electrical safety UL 1778, CAN/CSA-C22.2 No. 107.3, EN 62040-1²

Marks



EMC

FCC CFR 47 PART 15/B - Class A, CAN ICES-003(A)/NMB-003(A)
EN 62040-2 - UPS Category C2²

RoHS

2011/65/EU with Amendment 2015/863 (ROHS 3)

² Applies to 230 Vac model only

FXM HP 650-48 48 Vdc Rugged UPS Module



- 650 W/VA UPS designed to operate in extreme environments and provide maximum flexibility
- Advanced next-generation control and monitoring platform with high resolution color touchscreen LCD with advanced local UI
- Built-in data loggers to monitor performance logs, user configurable alarms and advanced equation editing for custom data and actions
- Integrated USB host for local firmware upgrades, configuration updates, backup, restore and cloning
- Wide range automatic voltage regulation (AVR) lengthens battery life by providing protection without transferring to backup mode during voltage surge or sag
- Independently programmable control and reporting dry contacts allow monitoring and controlling of key functions

The FXM HP UPS continues the longstanding excellence in battery backup systems by ensuring equipment in security, communications, traffic, industrial environments, and many other critical applications remains safe and protected from power disturbances and outages.

Thanks to its powerful programmable temperature compensated battery charger, the FXM HP UPS is capable of providing the runtime and extended battery life you need. The color touchscreen LCD provides access to multiple configurable tabs for quick system status, overview and configuration without the need of a laptop.

ELECTRICAL

120 VAC MODEL

Battery	String voltage: 48 Vdc Battery breaker rating: 50 A Max. charging current: 10 A
Input	Nominal voltage: 120 Vac Voltage range: 85 to 171 Vac Frequency: 50 Hz or 60 Hz $\pm 5\%$ (autodetect frequency is the default configuration, can also be manually configured.) Max. current: 10.5 A (nominal voltage and maximum battery charging current) AC breaker rating: 15 A
Output	Waveform: Pure sine wave Nominal voltage: 120 Vac Voltage regulation: $\pm 10\%$ on line mode, $\pm 2\%$ on inverter mode Power at 55°C (131°F): 650 W/VA Frequency: Output frequency = Input frequency Frequency tolerance: Backup mode: ± 0.3 Hz

MECHANICAL

Dimensions (H x W x D)	89 x 432 x 229 mm (3.5 x 17 x 9 in.)
Weight	11.3 kg (25 lb)

ENVIRONMENTAL

Operating temperature¹	-40 to 74°C (-40 to 165°F)
Relative humidity	Up to 95% (non condensing)
Elevation²	Up to 3,700 m (12,000 ft)
Audible noise³	45 dBA at 1 m (39 in.)
MTBF	250,000+ hours as per Telcordia SR-332, 100% duty cycle, full load, at 40°C (104°F)
Heat dissipation	Normal mode: 13.5 Watts (46.06 BTU/h)
	Backup mode: 110 Watts (375 BTU/h)

¹ 120 Vac model derates after 55°C (131°F). Derates 1.4% per degree Celsius past listed temperature range until a maximum of 74°C (165.2°F)
² Derates 2°C per 300 m (1,000 ft) above 1,400 m (4,500 ft)
³ Measured at 25°C (77°F) ambient temperature

PERFORMANCE

Typical output voltage THD (resistive load)	<3%
Typical efficiency¹ (resistive load)	>98%
Typical transfer time	<5 ms
Load crest factor	3:1 (load dependent)
Lightning/surge protection	ANSI/IEEE C62.41.2:2002, Criteria A & B

¹ At nominal AC input, full load and at 25°C (77°F) ambient temperature

AGENCY COMPLIANCE

Electrical safety UL 1778, CAN/CSA-C22.2 No. 107.3

Marks



EMC FCC CFR 47 PART 15/B - Class A, CAN ICES-003(A)/NMB-003(A)

RoHS 2011/65/EU with Amendment 2015/863 (ROHS 3)

FXM 350 24 Vdc/48 Vdc Rugged UPS Module



- 350 W/VA UPS module designed to operate in extreme environments; providing maximum flexibility while ensuring critical loads remain protected and running during power outages and other power disturbances
- Unsurpassed flexibility with dual outputs 120/24 Vac or 230/24 Vac
- Wide range automatic voltage regulation (AVR) prolongs battery life by providing protection without transferring to backup mode during voltage surge or sag
- Local and remote monitoring and control via USB port and Ethernet SNMP interface
- Temperature compensated battery charging automatically adjusts charge voltage extending the life of the battery
- Independently programmable control and report dry contacts allow monitoring and controlling of key functions

Alpha® FXM series is a line of rugged UPS power modules used worldwide in the most demanding environments where clean backup power is needed.

Designed to perform in the most extreme demanding environments, Alpha® FXM UPS modules ensure equipment in security, communications, traffic, industrial environments, and many other critical applications remain safe and protected from power disturbances. Thanks to its powerful programmable battery charger, the FXM UPS is capable of providing the runtime you need. All FXM UPS models are available in either 120 Vac/60 Hz or 230 Vac/50 Hz variants.

ELECTRICAL

120 VAC MODEL

Battery string voltage	48 Vdc or 24 Vdc
Input	Nominal voltage: 120 Vac
	Voltage range (without transferring to battery mode): 88 to 152 Vac
	Current: FXM 350-24: 5.3 A FXM 350-48: 5.7 A
	Frequency: 60/50 Hz ±5% (auto-detection)
Output	Waveform: Pure sine wave
	Nominal voltage: Dual 120 Vac, 24 Vac
	Voltage regulation: ±10% online mode ±2% on inverter mode
	Power at 55°C (131°F): 350 W/VA total 24 Vac: 260 W/VA (max.) 120 Vac: 350W/VA (max.)
Frequency: Output frequency = Input frequency	

230 VAC MODEL

Battery string voltage	24 Vdc
Input	Nominal voltage: 230 Vac
	Voltage range (without transferring to battery mode): 151 to 282 Vac
	Current: 2.7 A
	Frequency: 60/50 Hz ±5% (auto-detection)
Output	Waveform: Pure sine wave
	Nominal voltage: 230 Vac, 24 Vac
	Voltage regulation: ±10% online mode ±2% on inverter mode
	Power at 55°C (131°F): 350 W/VA total 24 Vac: 260 W/VA (max.) 230 Vac: 350 W/VA (max.)
Frequency: Output frequency = Input frequency	

MECHANICAL

Mounting	19 in. or 23 in. rack with the addition of ears for rack mounting
Dimensions (H × W × D)	88.14 × 342 × 198 mm (3.5 × 13.46 × 7.80 in.)
Weight	8.62 kg (19 lb)

ENVIRONMENTAL



Operating temperature¹	-40 to 74°C (-40 to 165°F)
Relative humidity	Up to 95% (non condensing)
Elevation²	Up to 3,700 m (12,000 ft)
Audible noise³	45 dBA at 1 m (38 in.)
MTBF	150,000+ hours as per Telcordia SR-332, 100% duty cycle, full load
Heat dissipation	Normal mode: 9 Watts (30.7 BTU/h) Backup mode: 110 Watts (675 BTU/h)

PERFORMANCE

Typical output voltage THD	<3% (resistive load)
Typical efficiency⁴	>96% (resistive load)
Typical transfer time	<5 ms
Load crest factor	3:1 (load dependent)

¹At nominal AC input, full load and at 25°C (77°F) ambient temperature

AGENCY COMPLIANCE

Electrical safety	UL 1778, CAN/CSA-C22.2 No. 107.3, EN 62040-1 ⁴
Marks	 
EMC	EN 62040-2 – UPS Category C2 ⁴

¹Derates after 55°C (131°F) Derates 1.4% per degree Celsius past listed temperature range until a maximum of 74°C (165.2°F).

²Derates 2°C per 30 m (1,000 ft) above 1,400 m (4,500 ft)

³Measured at 25°C (77°F) ambient temperature

⁴Applies to 230 Vac model only

TRANSFER SWITCHES Outdoor Solutions



Alpha® universal automatic transfer switch (UATS)

- Fail safe and manual operation ensures critical load is protected
- Optional dry contact for monitoring transfer switch status: know exactly what your transfer switch is doing
- Auxiliary output can be used to power items such as battery heater mats eliminating the need for additional complex wiring



Alpha® universal generator transfer switch (UGTS)

- Automatic and manual operation for complete control over generator transfers
- Optional dry contact for generator transfer switch monitoring

The UATS ensures continuous operation of your systems either with conditioned line power, battery backup power, or power direct from the line should the UPS require maintenance.

The UGTS automatically transfers the input to the UPS from the utility line to a portable AC generator. The UGTS allows the generator to recharge the batteries and power your systems during extended power outages.

ELECTRICAL

120 VAC MODEL

Input voltage 120 V nominal, 102 V minimum for auto transfer

Output voltage Per UPS, line or generator

230 VAC MODEL

Input voltage 230 V nominal, 196 V minimum for auto transfer

Output voltage Per UPS, line or generator

POWER MODULE

120 VAC MODEL

Nominal voltage 120 V

Nominal frequency 60 Hz ±5%

Input current 30 A

Output current 30 A

Output power at 40°C (104°F) 3600 W/VA

230 VAC MODEL

Nominal voltage 230 V

Nominal frequency 50 Hz ±5%

Input current 16 A

Output current 16 A

Output power at 40°C (104°F) 3600 W/VA

MECHANICAL

Dimensions (H × W × D) 81 × 135 × 152 mm (3.25 × 5.3 × 6 in.)

Weight 1.6 kg (3.5 lb)

Mounting options available Shelf, wall, 19-inch, 23-inch, or single side rack mount

ENVIRONMENTAL

Operating temperature -40 to 74°C (-40 to 165°F)¹

Relative humidity Up to 95% (non-condensing)

Options

- Dry contact indication status mode
- Wall/shelf mounting bracket
- Single side mounting bracket

PERFORMANCE

- Generator/line manual selector
- Easy installation convenience outlet (UATS only)
- Spare fuse and mount

AGENCY COMPLIANCE

Electrical safety UL1778, CSA 22.2 No 107.3, EN62040-1

Marks



EMC Not applicable

RoHS 2011/65/EU with Amendment 2015/863 (ROHS 3)

Note: UATS and UGTS are intended to be used with FXM and Micro UPS family (when enclosed in a box)
² Applies to 230 Vac model only



Universal automatic transfer switch (UATS-far right) and universal generator transfer switch (UGTS-center) shown with surge protection (TVSS-left) in a 19-inch rack mount bracket (23-inch rack mount bracket also available). Contact your Alpha® sales representative for configured part numbers available.

SE48-1616 48-inch Outdoor BBS Enclosure



- Traffic grade aluminum enclosure protects battery backup power systems from outdoor elements
- Various mounting options (including pole-mount) provide a flexible solution for traffic and industrial applications
- Thermostat controlled fan and louvered vents ensure reliable operation in high temperatures
- 180 degree stainless steel piano hinge on door with two locking open positions makes internal component installation and maintenance easy and convenient
- Three-point latching mechanism with Grade 2 keylock (or optional BEST® lock) for maximum security

The Alpha® SE48-1616 outdoor enclosure is designed to protect rugged battery backup power system components from harsh outdoor elements in critical traffic, ITS, telecom, and industrial applications.

The rugged enclosure is made of 3.175 mm (0.125 in.) aluminum and designed to easily accommodate a 350 to 2000 W Alpha® FXM HP UPS power module, Alpha® transfer switches, and up to four AlphaCell® 195XTV, 240XTV, 3.5HP, or 4.0HP batteries with room for additional components that may be required for your application. The SE48-1616 enclosure is an outdoor rated (Type 3R) enclosure. Features include: stainless steel door handle, integrated lock and latch, integrated document holder, and an angled generator plug with water tight generator door (generator plug option).

MECHANICAL

Dimensions (H x W x D)	1220 x 419 x 419 mm (48 x 16.5 x 16.5 in.)
Enclosure weight	34 kg (75 lb)
Construction	Aluminium, 5052-H32 grade high strength corrosion resistant
Finish	Natural aluminum
Equipment space	8RU space (without generator inlet) with two battery shelves
Equipment rails	EIA standard 19-inch (vertical)
Cable entrance	Bottom of enclosure: 1 x 76 mm (3 in.) diameter knockout

HARDWARE

Hinge type	Stainless steel piano hinge
Door prop	Aluminum rod, 2 locking open positions
Handle	Stainless steel handle with padlock fitting for extended life and improved look
Door latch	Three-point latch with integrated industrial standard Grade 2 keylock (or optional BEST® lock) for maximum security

COOLING

Cooling	Thermostat controlled 48 Vdc fan, 47.2 l/s (100 cfm) or better, ON at 49°C (120°F) Off at 32°C (89°F)
Ventilation	Door installed louvers

INSTALLATION

Access	Removable bottom shelf for easy wiring access
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MAINTENANCE

Door installed louver	Equipped with washable filter
Other	Bug screen protected top vent

ENCLOSURE OPTIONS

Mounting	<ul style="list-style-type: none"> • Side mount (standard) - designed to mount to the side of most traffic enclosure cabinets • Ground mount kit (optional) • Pole mount kit (optional)
-----------------	--

STANDARD SYSTEM CONFIGURATION (AS SHOWN)

- Two battery shelves with four AlphaCell® 240XTV batteries
- FXM HP 1100 UPS module
- Universal automatic transfer switch (UATS)
- Universal generator transfer switch (UGTS)

SYSTEM OPTIONS

- Generator support: locking generator access door and L5-30 flanged inlet
- Tamper switch
- Tilt switch
- AlphaGuard™ battery balancer
- Door activated interior light
- Battery heater mats
- "On Battery" indicator light
- Remote Battery Monitoring System (RBMS) Plus

AGENCY COMPLIANCE

Electrical safety	UL50E/C22.2 No.94
Cabinet rating	Type 3R

BEST® is a trademark of dormakaba Holding. BEST® is a brand of the dormakaba Group.

SE48-2216 48-inch Outdoor BBS Enclosure



- Traffic grade aluminum enclosure protects battery backup power systems from outdoor elements
- Various mounting options (including pole-mount) provide a flexible solution for traffic and industrial applications
- Thermostat controlled fan and louvered vents ensure reliable operation in high temperatures
- 180 degree stainless steel piano hinge on door with two locking open positions makes internal component installation and maintenance easy and convenient
- Three-point latching mechanism with Grade 2 keylock (or optional BEST® lock) for maximum security

The Alpha® SE48-2216 outdoor enclosure is designed to protect rugged battery backup power system components from harsh outdoor elements in critical traffic, ITS, telecom, and industrial applications.

The rugged enclosure is made of 3.175 mm (0.125 in.) aluminum and designed to easily accommodate a 350 to 2000 W Alpha® FXM UPS module, Alpha® transfer switches, and up to four AlphaCell® 195XTV, 240XTV, 3.5HP, or 4.0HP batteries with room for additional components that may be required for your application. The SE48-2216 enclosure is an outdoor rated (Type 3R) enclosure. Features include: stainless steel door handle, integrated lock and latch, integrated document holder, optional battery slide out trays, and an angled generator plug with water tight generator door (generator plug option).

MECHANICAL

Dimensions (H x W x D)	1220 x 559 x 419 mm (48 x 22 x 16.5 in.)
Enclosure weight	34 kg (75 lb)
Construction	Aluminium, 5052-H32 grade high strength corrosion resistant
Finish	Natural aluminum
Equipment space	11RU space (without generator inlet) with two battery shelves
Equipment rails	EIA standard 19-inch (vertical)
Cable entrance	Bottom of enclosure: 1x 76 mm (3 in.) diameter knock-out

HARDWARE

Hinge type	Stainless steel piano hinge
Door prop	Aluminum rod, two locking open positions
Handle	Stainless steel handle with padlock fitting for extended life and improved look
Door latch	Three-point latch with integrated industrial standard Grade 2 keylock (or optional BEST® lock) for maximum security

COOLING

Cooling	Thermostat controlled 48 Vdc fan, 47.2 l/s (100 cfm) or better, On at 49°C (120°F) Off at 32°C (89°F)
Ventilation	Door installed louvers

INSTALLATION

Access	Removable bottom shelf for easy wiring access
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MAINTENANCE

Door installed louver	Equipped with washable filter
Other	Bug screen protected top vent

ENCLOSURE OPTIONS

Mounting	<ul style="list-style-type: none"> • Side mount (standard) - designed to mount to the side of most traffic enclosure cabinets • Ground mount kit (optional) • Pole mount kit (optional)
-----------------	--

STANDARD SYSTEM CONFIGURATION (AS SHOWN)

- Two battery shelves with four AlphaCell® 240XTV batteries
- FXM 1100 HP UPS module
- Universal automatic transfer switch (UATS)
- Universal generator transfer switch (UGTS)

SYSTEM OPTIONS

- Generator support: locking generator access door and L5-30 flanged inlet
- Tamper switch
- Tilt switch
- AlphaGuard™ battery balancer
- Door activated interior light
- Battery heater mats
- "On Battery" indicator light
- RBMS Plus

AGENCY COMPLIANCE

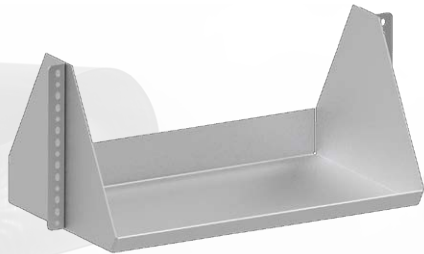
Electrical safety	UL50E/C22.2 No.94
Cabinet rating	Type 3R

BEST® is a trademark of dormakaba Holding. BEST® is a brand of the dormakaba Group.

ENCLOSURE ADD-ONS



- Traffic grade aluminum enclosure protects batteries from outdoor elements
- Cost-effective method of adding 48 Vdc standby capacity to any existing ground mount enclosure
- Engineered to minimize temperature differential between batteries
- Available in natural aluminum finish



- No need for extra battery cabinet
- Holds up to four 42 Ah front terminal batteries
- Provides up to three hours of runtime at 450 Watts

SE48-1909 Battery Side Mount

MECHANICAL	
Dimensions (H x W x D)	1220 x 495 x 222 mm (48 x 19.5 x 8.75 in.)
Weight	17.3 kg (38 lb)
Construction	3.175 mm (0.125 in.) high strength aluminum
Finish	Natural aluminum
Equipment space	Accommodate up to 4 X AlphaCell Case 31 batteries
HARDWARE	
Door latch	Corbin® Grade 2 lock for maximum security
Ventilation	Louvered vents on front door
INSTALLATION	
Access	Lift-off front door provides easy wiring access
AGENCY COMPLIANCE	
Cabinet rating	Type 3R

Rack Mounted Battery Tray

The rack mounted battery tray allows for easy installation of batteries into 332-type cabinets. Simply install the battery tray in desired location and install the batteries. UPS and transfer switch can be mounted in front or rear of the enclosure. Battery tray is designed for NorthStar® NSB 40FT HT Red, 42 Ah. Smaller capacity batteries could also be used as well. The battery tray is designed to be attached to the EIA rails of a 332-type cabinet. Also fits other cabinets with 19-inch mid-mount racks.

MECHANICAL	
Mounting type	Mid-mount 19-inch relay rack for 332-type cabinets
Tray dimensions (H x W x D)	216 x 492 x 269 mm (8.5 x 19.38 x 10.6 in.)
Tray inner dimensions (W x D)	433 x 250 mm (17.06 x 9.84 in.)
Weight capacity	91 kg (200 lb)
Max. battery capacity/type	Up to four NorthStar® NSB 40FT HT Red, 42 Ah

TRAFFIC MINI 350 BBS Battery Backup System



- Consolidated battery backup system (BBS) designed to power ATC, NEMA M, P, and 336 (or similar style) traffic controller cabinets
- Ideal solution for space constraint applications providing >4 hours of battery runtime¹
- Self-contained UPS, factory wired, tested and ready to install, reducing installation time and cost²
- Compact, integrated 350 W battery backup system, utilizing the same design and similar features of the highly successful and reliable FXM series UPS

¹ Runtime calculated with 450 W resistive load with 4x AlphaCell[®] 100XTV batteries at 25°C (77°F)

² Excluding batteries

Alpha[®] Traffic Mini 350 battery backup systems (BBS) use a rugged enclosure made of 3.175 mm (0.125 in.) aluminum and designed to easily accommodate an Alpha[®] FXM UPS module, universal automatic transfer switch, and up to four AlphaCell[®] 100XTV batteries or two 195XTV or 240XTV batteries.

The Traffic Mini BBS is an outdoor-rated (Type 3R) enclosure. Features include: drop down lift off door, Grade 2 Corbin[®] lock, integrated document holder, tamper switch, wide range automatic voltage regulation (AVR), remote monitoring and control, and temperature compensated battery charging for extended battery life.

ELECTRICAL

System input voltage	120 Vac
Input current rating ¹	5.3 A
Input frequency	50/60 Hz ±5% (autosense)
AVR range	88 to 152 Vac
System DC voltage	24 Vdc
Max. charge current	6A DC
System output voltage	120 Vac
Output power at 50°C (122°F)	350 W
Output frequency	Output frequency = Input frequency
Output voltage regulation	±10% Line mode ±2% Inverter mode
Output waveform	Pure sine wave

MECHANICAL

Dimensions (H × W × D)	864 × 406 × 305 mm (34 × 16 × 12 in.)
Weight (without batteries)	25 kg (55 lb)
Construction	Aluminium, 5052-H32 grade high strength corrosion resistant
Finish	Natural aluminum
Cable entrance	Bottom or rear
Mounting	Side mount, optional - wall, pole, or pedestal kit available
Wiring access	Removable bottom shelf for easy wiring access
AC input connections wire gauge	Terminal blocks 2.5 to 16 mm ² (14 to 6 AWG)
AC output connections wire gauge	Terminal blocks 2.5 to 16 mm ² (14 to 6 AWG)
Dry contact wire gauge	Terminal blocks 0.14 to 4 mm ² (26 to 12 AWG)

COMMUNICATION INTERFACE

Ports	USB-B: Local communication RJ45: Remote communication RJ11: Battery temperature compensation
Dry contact	2× programmable NO/NC (250 Vac, 1A), 2× user inputs


ENVIRONMENTAL

Temperature	Operating: -40 to 74°C (-4 to 165°F) ¹ Storage: -40 to 75°C (-40 to 167°F)
Relative humidity	Up to 95% (non-condensing)
Elevation	Up to 2,000 m (6,562 ft)

PERFORMANCE

Typical output voltage THD (resistive load)	<3% (resistive load)
Typical efficiency ³	Line mode > 96% Inverter mode > 82%
Load crest factor	3:1 (load dependent)

AGENCY COMPLIANCE

Electrical safety	UL1778, CSA 22.2 No 107.3, UL 60950-1, CSA-C22.2 60950-1
Marks	
EMC	FCC CFR 47 PART 15/B - Class A; CAN ICES-003(A)/NMB-003(A)
Cabinet rating	Type 3R

STANDARD SYSTEM CONFIGURATION

- 3.175 mm (0.125 in.) thick natural aluminum enclosure
- FXM 350 UPS module
- Universal automatic transfer switch
- Battery cable kit - ¼ in. ring lug
- Document holder
- Door filter
- Tamper switch
- Add AlphaCell[®] batteries - up to two 195/240XTV

OPTIONAL ACCESSORIES

- RBMS Plus
- Battery heater mats
- Mounting brackets - pole or wall
- Pedestal mounting kit

¹ At nominal input voltage and maximum battery charging current.

² Power module only. Output power derates above 50°C (122°F).

³ Efficiency is measured at an ambient temperature of 25°C (77°F), full resistive condition, and nominal line and battery voltage.

TRAFFIC MINI 1000 BBS Battery Backup System



- Consolidated battery backup system (BBS) designed to power ATC, NEMA M, P, and 336 (or similar style) traffic controller cabinets
- Ideal solution for space constraint applications providing >4 hours of battery runtime¹
- Self-contained UPS, factory wired, tested, and ready to install, reducing installation time and cost²
- Compact, integrated 1000 W battery backup system, utilizing the same design and similar features of the highly successful and reliable FXM HP series UPS

¹ Runtime calculated with 450 W resistive load with 4x AlphaCell® 100XTV batteries at 25°C (77°F)

² Excluding batteries

Alpha® Traffic Mini 1000 battery backup systems (BBS) use a rugged enclosure made of 3.175 mm (0.125 in.) aluminum and are designed to accommodate an Alpha® FXM HP UPS module, universal automatic transfer switch, and up to four AlphaCell® 100XTV batteries or two 195XTV or 240XTV batteries.

The Traffic Mini BBS is an outdoor-rated (Type 3R) enclosure. Features include: drop down lift off door, Grade 2 Corbin® lock, integrated document holder, tamper switch, wide range automatic voltage regulation (AVR), remote monitoring and control, and temperature compensated battery charging for extended battery life.

ELECTRICAL

System input voltage	120 Vac
Input current rating ¹	14A
Input frequency	50/60 Hz ±5% (autosense)
AVR range	85 to 169 Vac
System DC voltage	48 Vdc
Max. charge current	10 A DC
System output voltage	120 Vac
Output power at 50°C (122°F) ²	1000 W
Output frequency	Output frequency = Input frequency
Output voltage regulation	• ±10% Line mode • ±2% Inverter mode
Output waveform	Pure sine wave

MECHANICAL

Dimensions (H x W x D)	864 x 406 x 305 mm (34 x 16 x 12 in.)
Weight (without batteries)	29.5 kg (65 lb)
Construction	Aluminium, 5052-H32 grade high strength corrosion resistant
Finish	Natural aluminum
Cable entrance	Bottom or rear
Mounting	Side mount, optional - wall, pole or pedestal kit available
Wiring access	Removable bottom shelf for easy wiring access
AC input connections wire gauge	Terminal blocks 2.5 to 16 mm ² (14 to 6 AWG)
AC output connections wire gauge	Terminal blocks 2.5 to 16 mm ² (14 to 6 AWG)
Dry contact wire gauge	Terminal blocks 0.14 to 4 mm ² (26 to 12 AWG)

COMMUNICATION INTERFACE

Ports	RS232: Local communication RJ45: Remote communication RJ11: Battery temperature compensation
Dry contact	5x programmable NO/NC (250 Vac, 1 A), 1x 48 Vdc/500 mA, 3x user inputs, 1x ATS


ENVIRONMENTAL

Temperature	Operating: -40 to 74°C (-4 to 165°F) ² Storage: -40 to 75°C (-40 to 167°F)
Relative humidity	Up to 95% (non-condensing)
Elevation	Up to 2,000 m (6,562 ft)

PERFORMANCE

Typical output voltage THD (resistive load)	<3% (resistive load)
Typical efficiency ³	• Line mode > 92% • Inverter mode > 82%
Load crest factor	3:1 (load dependent)

AGENCY COMPLIANCE

Electrical safety	UL1778, CSA 22.2 No 107.3, UL 60950-1, CSA-C22.2 60950-1
Marks	 C US
EMC	FCC CFR 47 PART 15/B - Class A, CAN ICES-003(A)/NMB-003(A)
Cabinet rating	Type 3R

STANDARD SYSTEM CONFIGURATION

- 3.175 mm (0.125 in.) thick natural aluminum enclosure
- FXM HP 1100 UPS module
- Universal automatic transfer switch
- Battery cable kit - ¼ in. ring lug
- Document holder
- Door filter
- Tamper switch
- Add AlphaCell® batteries - up to four 100XTV

OPTIONAL ACCESSORIES

- RBMS Plus
- Battery heater mats
- Mounting brackets - pole or wall
- Pedestal mounting kit

¹ At nominal input voltage and maximum battery charging current.

² Power module only. Output power derates above 50°C (122°F).

³ Efficiency is measured at an ambient temperature of 25°C (77°F), full resistive condition, and nominal line and battery voltage.

ALPHACELL® XTV

Extreme Temperature Batteries



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

GENERAL

MODEL	100XTV	150XTV	195XTV	240XTV
Operating temperature range (with temperature compensation)	-40 to 60°C (-40 to 140°F) charger temperature compensation at ±3.3 mVpc per °C			
Storage temperature	-10 to 40°C (14 to 104°F)			
Self discharge	Battery can be stored up to 12 months at 25°C (77°F). Higher temperatures during storage will require more frequent recharge.			
Voltage per unit	12 V			
Float charge voltage	13.5 to 13.8 Vdc average per 12 V unit at 25°C (77°F)			
Refresh/boost charging voltage	14.4 to 15 Vdc average 12 V unit at 25°C (77°F)			
Max. AC ripple (charger)	0.5% RMS or 1.5% of float recommended for best results. Max. voltage allowed = 4% P/P			
Terminal type	Threaded alloy insert terminal to accept M6 × 12 mm bolt		Threaded alloy insert terminal to accept M6 × 20 mm bolt	
Terminal hardware torque	13.6 NM (120 in-lb)			
Case sizes	22NF	24	27	31

MECHANICAL

Dimensions (H × W × D)	207 × 228 × 138 mm (8.17 × 9.01 × 5.46 in.)	214 × 275 × 168 mm (8.44 × 10.85 × 6.65 in.)	214 × 322 × 169 mm (8.43 × 12.71 × 6.67 in.)	217 × 343 × 170 mm (8.57 × 13.5 × 6.71 in.)
Weight approximate	17.7 kg (39 lb)	25.4 kg (56 lb)	30.5 kg (67 lb)	32 kg (75 lb)

BATTERY

Runtime rating 25 A at 25°C (77°F) to 1.75 Vpc	100 minutes	150 minutes	195 minutes	240 minutes
Amp hour capacity 20 hour rate at 25°C (77°F) to 1.75 Vpc	56 Ah	80 Ah	100 Ah	112 Ah
Max. discharge current	300 A	800 A	800 A	850 A
Short circuit current	1450 A	1900cA	2250 A	2650 A
Impedance 60 Hz (approximate)	0.005 Ω	0.0045 Ω	0.0039 Ω	0.0034 Ω
Conductance range fully charged new battery at 25°C (77°F)	700 to 800	900 to 1100	1050 to 1250	1250 to 1550

Note: Terminal hardware included with every battery.

CONSTANT CURRENT NOMINAL RATINGS IN AMPS AT 25°C (77°F) TO 1.75V PER CELL

Discharge time	1	2	3	4	5	6	8	10	12	20
100XTV	39.4 h	22.1 h	15.8 h	12.4 h	10.3 h	8.7 h	6.7 h	5.4 h	4.6 h	2.8 h
150XTV	53 h	30.6 h	21.6 h	16.8 h	13.9 h	11.9 h	9.3 h	7.7 h	6.5 h	4 h
195XTV	65.5 h	37.6 h	26.9 h	21 h	17.3 h	14.7 h	11.3 h	9.4 h	7.9 h	5 h
240XTV	81.7 h	45.5 h	32.1 h	25 h	19.8 h	16.6 h	13 h	10.5 h	9 h	5.6 h

BATTERY MONITORING

Remote Battery Monitoring System Plus



- Compact, intelligent, and cost effective system for determining battery condition remotely
- Monitors each 12 V battery via a user programmable schedule, from hourly to monthly
- Intelligent battery balancing extends the life of the battery string and reduces maintenance costs
- Automatic data logging function records individual battery voltage, temperature, and admittance
- Enables the scheduling and budgeting of battery replacements
- Built-in web server allows for convenient read-only monitoring from any internet-connected computer

The Remote Battery Monitoring System (RBMS) Plus provides detailed, real-time information on batteries, reducing unnecessary costly truck rolls, and ensuring actual outage backup times are not unknowingly compromised by degraded batteries.

Scalable up to two strings of four batteries each, the system provides detailed information on every battery, from admittance to individual battery temperatures and string voltages. This, and a wealth of other information (including alarms) can be monitored directly via SNMP. The module has a built-in SNMP proxy, web server, and SMTP mail client.

RBMS Plus monitoring system typically obtains its operating power from the battery string being monitored, this eliminates the need of a separate power source. Optional parameters that can be monitored are AC line voltage, AC equipment load current, and moisture. It is designed to dramatically lower cost and provide battery health remotely and with convenience.

ELECTRICAL

Controller **Voltage:** 21 to 59 Vdc
Power consumption: 7 W

NOTE: Power is supplied from the battery string.

Sensors **Voltage:** 12 V: 8 to 16 Vdc
Power consumption: 12 V: <10 mA nominal, 0.5/6 A during admittance test

MECHANICAL

Controller dimensions (H x W x D) 32 x 104.15 x 120.15 mm (1.26 x 4.1 x 4.73 in.)

Controller weight 0.242 kg (0.53 lb)

Sensors (12 V)

- Two-wire connection with max. bolt size for terminals of 5/16 in.
- Mounted to the top of the battery with self-adhesive industrial hook-and-loop strip
- CAT5 cable used to daisy chain from sensor to sensor
- Last sensor in the daisy chain connects to string 1 for the first battery string
- Last sensor in the daisy chain connects to string 2 for the second battery string

Power harness cable connection Connects to the 48 Vdc battery string positive+ (red) and negative- (black) terminals

ENVIRONMENTAL

Operating temperature -40 to 80°C (-40 to 176°F)

COMMUNICATIONS

Controller unit SNMP via TCP/IP and built-in web server and SMTP mail client

Controller software Optional Lookout software provides a convenient way to monitor multiple site controllers on the network.

OPTIONAL ACCESSORIES

AC output current sensor P/N: 7400583

Moisture sensor P/N: 7400162

120 V AC wall transformer, for monitoring utility power voltage P/N: 0180059

Two wire sensor, high current¹ P/N: 0180055

Battery cable to power RBMS controller¹ P/N: 8701040

¹Included with P/N: 0370260-002/003 kit



- Extends battery life
- Replace single batteries, not the entire string
- Spreads charge voltage equally across batteries
- Compensates for battery differences as they age
- Safe unattended operation certified to CSA C22.2 No. 107.1 and UL 1778 standards

AlphaGuard™ battery charge management system monitors and protects your batteries by spreading the charge voltage equally across all the batteries in the string, ensuring that every battery—whether old or new—is properly charged.

With an ideal voltage always across each battery, life and runtime are optimized. Individual batteries in a string can be replaced as they fail, allowing batteries to be left in service longer. This stops the wasteful and costly practice of replacing batteries based on a scheduled maintenance program or disposing of batteries that may have years of useful life left because one battery has failed.

The AlphaGuard™ system employs a patented Charge Management Technology (CMT) to shuttle excess charge current to batteries requiring a greater charge, and is contained in a small plastic enclosure that installs directly on top of one of the batteries in the string. A short service cable connects the AlphaGuard module to each of the batteries in the string. Both 36VDC (three battery) and 48VDC (four battery) versions are available. One AlphaGuard module is required per string.

MODELS

AG-CMT-4SC (48V): AlphaGuard™ battery charge management system module for 48V strings and 48VDC battery voltage sense cable (6ft/1.83m)

MECHANICAL

Configuration: One AlphaGuard module is required per battery string

Housing Material: High impact plastic

Dimensions (H × W × D): 36 × 122 × 108 mm (1.44 × 4.82 × 4.25 in.)

Weight: 0.36 kg (0.8 lb)

Battery Interface Cable: 1.83 m (6 ft)

Battery Interface Cable Ring Lug Diameter: **Inside:** 10.2 mm (0.40 in.)
Outside: 13.2 mm (0.52 in.)

ELECTRICAL

Batteries: **AG-CMT-4SC (48V):** Individual 12Vdc nominal batteries configured into 48Vdc string

Circuit Protection: Single blow fuse, reverse polarity protected

Environmental: -40 to 55°C (-40 to 131°F), 5 to 95% relative humidity non-condensing

Quiescent Current Draw: 1mA max. (current consumed by AlphaGuard system after low voltage total shutdown)

Charge Management: Most effective during float period of charge

Max. Current: 2A at 25°C (77°F)

Quality of Final Balance: ±100mV max. between any two batteries

Charging Efficiency: 80 to 90%

Charge Balance: ±100mV typical

Low Voltage Cutoff: **AG-CMT-4SC (48V):** 46 Vdc ±5%

Communication to Power Supply: AlphaGuard system connected to AlphaNet™ DSM or DM3X (PN: X2-DM3X or X3-DM3X) status monitoring card. Requires optional voltage sense cabling noted below.

Voltage Sense Regulation: ±100mV

AMPS HP2 Modular Inverter System



- Innovative inverter system for critical facilities and telecom applications
- Single, dual, and three phase configurations with up to 75 kVA/60 kW capacity
- High performance (HP) technology engineered to deliver high efficiency, high system reliability, and low TCO
- 95% efficiency, 15 year design life, and module MTBF greater than 200,000 hours results for class-leading TCO
- Intelligent system controller with integrated SNMP for local and remote management of AC power modules, optional rectifier modules, batteries, and other peripherals
- Small footprint system in a single 19-inch box bay rack, freeing up valuable rack and floor space
- Optional Cordex® HP 2.4 kW rectifier modules convert the AMPS HP2 inverter system into a modular, standalone, high-reliability UPS

Introducing the AMPS HP2, high performance AC power system offering telecom grade reliability, 95 percent efficiency and high power density.

The AMPS HP2 modular inverter system features hot swappable 2.5 kVA/2.0 kW inverter modules and optional Cordex® HP 2.4 kW rectifier modules that are the building blocks of a highly reliable inverter system utilizing –48 Vdc battery bus. Each inverter module can utilize either AC or DC sources or both, eliminating the need for a static transfer switch. Transfer between sources is 100 percent seamless with zero transfer time.

ELECTRICAL					
Part number	AMPS HP2 1-10	AMPS HP2 2-20	AMPS HP2 3-30	AMPS HP2 2-40	AMPS HP2 3-75
Inverter system max. capacity	10 kVA/8 kW	20 kVA/16 kW	30 kVA/24 kW	40 kVA/32 kW	75 kVA/60 kW ¹ or 68 kVA/54 kW (N + 1)
System AC input voltage	120 Vac single phase (2 wire + G)	120/208 Vac 2-pole (or) 120/240 Vac dual phase (3 wire + G)	120/208 Vac three phase (4 wire + G)	120/208 Vac 2-pole or 120/240 Vac dual phase (3 wire + G)	120/208 Vac three phase (4 wire + G)
Inverter input AC breaker	100 A, 1-pole	100 A, 2-pole	100 A, 3-pole	200 A, 2-pole	250 A, 3-pole
Efficiency	95% AC-to-AC; 91% DC-to-AC (from 50 to 100% full load resistive)				
Inverter module output	2.5 kVA/2.0 kW	2.5 kVA/2.0 kW	2.5 kVA/2.0 kW	2.5 kVA/2.0 kW	2.5 kVA/2.0 kW
Inverter positions	Up to 4 modules	Up to 8 modules	Up to 12 modules	Up to 16 modules	Up to 30 modules
Rectifier system max. capacity				14.4 kW	14.4 kW
Rectifier input AC breaker				1x 100 A breaker (UPS version)	1x 60 A breaker (UPS version)
System DC input voltage	-48 Vdc	-48 Vdc	-48 Vdc	-48 Vdc	-48 Vdc
Rectifier efficiency				+96%	+96%
Rectifier module output				2.4 kW	2.4 kW
Rectifier positions				Up to 6 modules	Up to 6 modules
MECHANICAL					
System dimensions (H x W x D)	400 x 482.6 x 599.4 mm (15.75 x 19 x 23.6 in.)	488.9 x 482.6 x 599.4 mm (19.25 x 19 x 23.6 in.)	577.8 x 482.6 x 599.4 mm (22.75 x 19 x 23.6 in.)	2118.4 x 609.6 x 711.2 mm (83.4 x 24 x 28 in.)	
Mounting configuration	19- or 23-inch rack mountable front or mid mount			Preinstalled in box bay	
DC input connections	4 x 3/8 in. on 1 in. centers per polarity			4 x 3/8 in. on 1 in. centers per polarity ²	
System weight	50.8 kg (112 lb)	58.1 kg (128 lb)	65.3 kg (144 lb)	272.2 kg (600 lb)	317.5 kg (700 lb)
Inverter module weight	4.35 kg (9.6 lb)	4.35 kg (9.6 lb)	4.35 kg (9.6 lb)	4.35 kg (9.6 lb)	4.35 kg (9.6 lb)
Rectifier module weight				1.77 kg (3.9 lb)	1.77 kg (3.9 lb)
Controller	Cordex® CXC HP controller				
ENVIRONMENTAL					
Temperature	Operating (full load): -20 to 40°C (-4 to 104°F) Storage: -40 to 70°C (-40 to 158°F)				
Relative humidity	Up to 95% (non-condensing)				
Elevation	Up to 1,500 m (4,921 ft)				
Heat dissipation per 2.5 kVA/2 kW AIM module	105.5 Watts (360 BTU/h) in AC to AC mode; 197.8 Watts (675 BTU/h) in DC to AC mode				
AGENCY COMPLIANCE					
Electrical safety	UL1778 (5th Ed); CSA C22.2 No. 107.3-14 UPS General Safety				
EMC	FCC CFR 47 PART 15/B - Class A, CAN ICES-003(A)/NMB-003(A)				

¹ Consult an Alpha sales representative for a part number

² Eight total with back to back termination

³ P/N: 001/002 top feed AC/DC

⁴ P/N: 003/004 top feed AC, bottom feed DC

Services

Our distinctive service excellence at Alpha is not just having expertise or the latest high-tech equipment... but simply being as “easy to do business with” as possible, and understanding your powering challenges better than anyone else. Combining this with our innate understanding of Alpha® product uniquely positions us as the most qualified supplier of services for power infrastructure in the marketplace.

Alpha's quality management system governs not only our products but our broad services portfolio, procedures, and processes. Pooling this with our operational excellence and continuous improvement programs, we aim to achieve complete customer satisfaction by providing service of the highest standard and value.

If you have a pressing powering challenge, contact us with your specific requirements:



+1 800-667-8743 (toll free North America)



sales@alpha.ca



www.alpha.ca/service

Battery Recycling Program

It's everyone's responsibility to recycle, but we make it easier.

Our battery recycling program makes compliance easier so you don't have to analyze complicated state and federal regulations. Instead, you can focus on running your business while Alpha provides a complete range of recycling support services.

Lead acid batteries are by far the most fully recycled of all consumer products. Recycling centers can recover more than 98 percent of the lead and plastic in a lead acid battery. Once those reclaimed materials reach a battery manufacturer, they can account for 60 to 80 percent of the lead and plastic in a new lead-acid battery. It's a closed-loop life cycle that can continue indefinitely. The millions of lead acid batteries now starting vehicles or powering industrial applications have been and can continue to be recycled many times. It makes lead acid battery recycling very green, from both a cost and resource-saving perspective.

As the world's leading industrial battery manufacturer, our parent company EnerSys®, recognizes their obligation to lead the way in battery recycling. At Alpha we are proud to continue their endeavors by providing the personnel, facilities, and documentation needed to operate a worldwide recycling program. We can provide complete recycling certificates for peace of mind that your batteries have been properly recycled. Along with

our own batteries, the Alpha battery recycling program accepts lead acid batteries of all sizes and from all manufacturers.

Battery distributors, dealers and end-users should recognize their obligations too. Once a battery is purchased, the owner is liable for its proper disposition. If your lead acid battery is dumped in a landfill or shipped to a recycling center that does not handle it properly, you may be held responsible for any resulting cleanup costs or environmental damage. Plus, stringent laws governing battery recycling, disposal and shipping are a complicated mix of state and federal statutes. Failing to comply with any of them can result in heavy fines and enforcement actions.

We are pleased to provide customers a complete spent battery service program, combining industry leading battery technology with complete comprehensive battery recycling service. Please call if you have any questions regarding our recycling program.



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www.alpha.com/support-center/battery-recycling-program



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