

■ AC Power for  
Business-Critical Continuity™

# Chloride Trineergy® from 200 to 1200 kW

*High Power Modular Scalable UPS With Three Dynamic Functioning Modes*



**CHLORIDE**

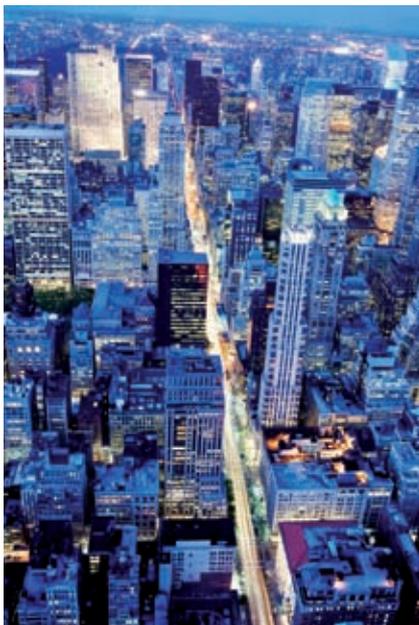
  
**EMERSON**  
Network Power



**Emerson Network Power**, a division of Emerson, is a global company that combines technology with design to supply innovative solutions for the benefit of its customers.

Emerson Network Power is the leader in the “**business-critical continuity**” field, thanks to the company’s products and services.

Emerson Network Power’s broad technology base and global expertise support a full spectrum of enterprise-wide solutions for today’s vital business needs.



Regardless of your size, you can’t afford for your critical business systems to go down and you can’t waste time recovering your IT infrastructure after a disruption.

**Leave that to us**, the experts in *business-critical continuity*: from grid to chip, from the biggest to the smallest data centers, we are ready to serve your needs with the solutions we have developed.

More standardization, so you don’t need further budget allocations to install it. More simplification so you don’t need to be a specialist to get the best for your business. More support, so while you are enjoying doing business, we are protecting you.

**That’s why we can say we OptimizeIT!**

**optimizeIT**<sup>™</sup>  
Infrastructure Simplified.  
Support Unparalleled.





## Chloride Trinergy® From 200 To 1200 kW

**99% Efficiency: dynamic mode transitioning for first class performance and maximum load protection.**

**Class 1 UPS Efficiency Up To 99%**

- Power interface on bypass
- Real-time input power tracking
- Intelligent algorithm for mode transitioning

**An Industry First**

Chloride Trinergy®'s revolutionary architecture comes from incorporating the three industry standard functioning configurations for the first time in one high power UPS:

- **Maximum Power Control (VFI)**
- **Maximum Energy Saving (VFD)**
- **High Efficiency and Power Conditioning (VI)**

Chloride Trinergy®'s unique combination of technology allows it to monitor the environment and operating conditions of the network before intelligently selecting the functioning mode best suited to the line conditions.

Chloride Trinergy®'s ability to choose the most efficient operating mode based on the different network conditions ensures that the supply to the load remains in optimum condition at all times.

This allows the system to achieve extraordinary energy savings,

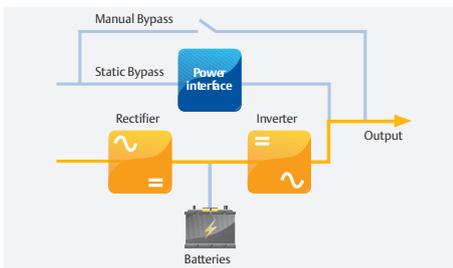
first class performance and maximum power protection.<sup>1</sup> The high level of flexibility, energy efficiency and adaptability of Chloride Trinergy® are in line with the European Union's Code of Conduct on Best Practices, thus further confirming its outstanding performance capabilities.

**Features And Performances**

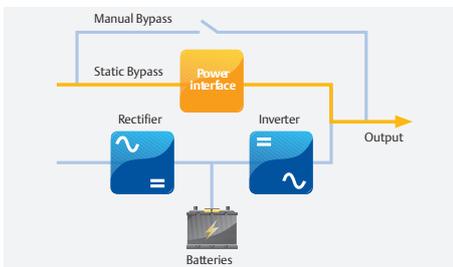
- Transformer free design
- Full IGBT double conversion technology
- Excellent input performances
  - PF > 0.99
  - THDi < 3%
- Output Power Factor 1
- Output Power Factor diagram symmetrical respect to zero
- Permanent 100% kVA - no derating with any load (lagging or leading)
- Optimum space/power ratio
- Automatic output power upgrade up to +10%
- High conversion efficiency (certified up to 99%).

<sup>1</sup>) Class 1 (IEC 62040-3) CBEMA

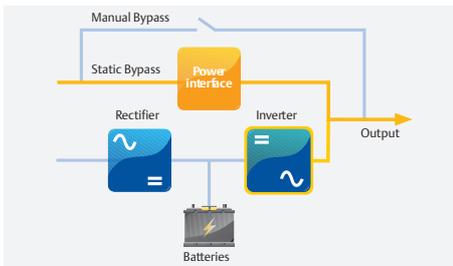
# Dynamic Functioning Modes



**Maximum Power Control (VFI)** provides the highest level of power conditioning and protects the load from all electrical network disturbances.



**Maximum Energy Saving (VFD)** detects when conditioning is not required and allows the energy flow to pass through the bypass line.



**High Efficiency & Power Conditioning (VI)** compensates the load THDi, PF and main sags and swells.



Dynamic Modes

# Minimized Total Cost Of Ownership

## Maximized Savings

Chloride Trinerity®'s design features and outstanding efficiency up to 99%, greatly minimize the total cost of ownership from installation through to operation:

- Optimum space/power ratio
- Reduced footprint
- Reduction in size and power of air conditioning system
- Fast and safe maintenance

## Delivering

- Minimized installation costs
- Minimized running costs
- Minimized air conditioning requirements
- 99% efficiency

## Extraordinary Savings On Mains Input Equipment

The modular architecture of the Chloride Trinerity® UPS allows for great advantages in terms of installation:

- Reduced size of electrical infrastructure
- Reduced size of circuit protection devices
- Reduced cabling

Chloride Trinerity® features unitary input Power Factor and low content of harmonics providing full compatibility with gensets and greatly contributing to reduced installation and running costs.

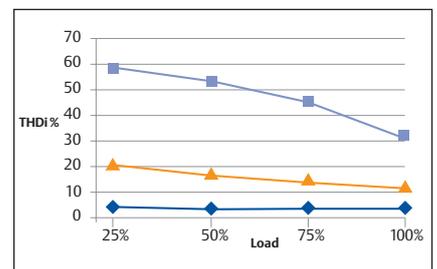
## Running Cost Savings

### Circular redundancy

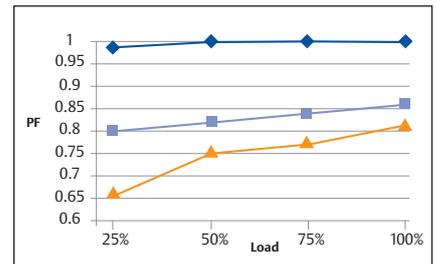
Chloride Trinerity®'s circular redundancy feature adjusts available UPS capacity to meet immediate load requirements by automatically switching excess module capacity to standby, thus greatly improving efficiency at partial load and reducing operating costs.

### Air conditioning

The extremely high efficiency achieved with Chloride Trinerity® reduces the energy dissipated by the UPS (kW), thus minimizing the demand and consumption of the air conditioning system.

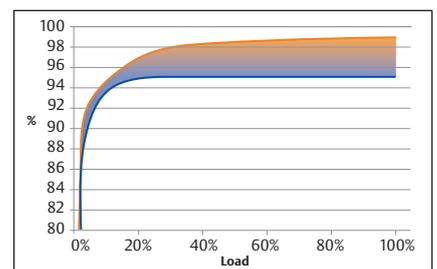


Input Harmonic Distortion vs Load Percentage

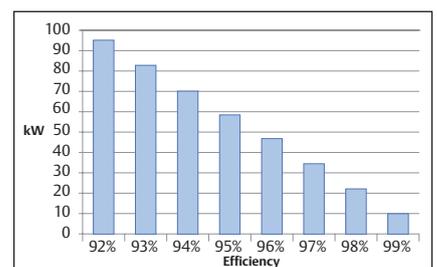


Input Power Factor vs Load Percentage

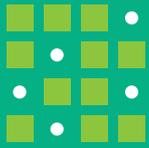
◆ Chloride Trinerity® ◆ Six Pulse ◆ Six Pulse + Filter



95 - 99% efficiency at down to 20% load



Air conditioning size & power reduced by 400%



the green grid<sup>SM</sup>  
member

## High Efficiency

**Chloride Trinergy<sup>®</sup>'s unique architecture and technology have been purposely developed to enhance efficiency.**

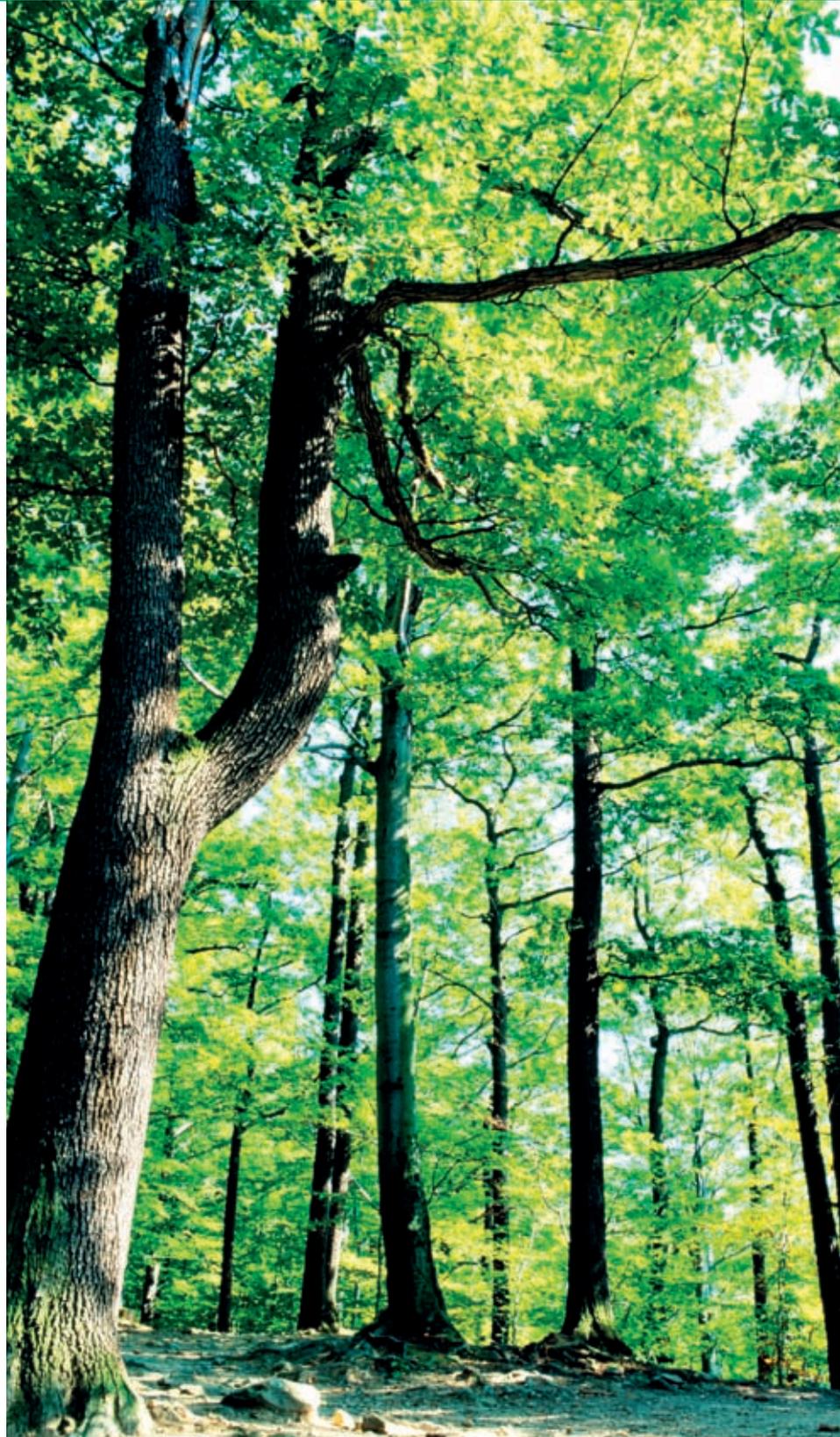
Able to discriminate between the different network input conditions and select the best functioning mode in relation to the disturbance, Chloride Trinergy<sup>®</sup> can achieve maximum energy savings by using only the necessary amount of energy required to provide the best output power quality and conditioning to the load.

### **Advantages Include:**

- Premium energy savings via transformer free technology and Chloride Trinergy<sup>®</sup>'s algorithm
- Quietest UPS in its power range
- Maximized battery life with Advanced Battery Care (ABC)
- Circular redundancy



**High Efficiency**





## Sizing Your System

Scalable up to 9.6 MW; the highest active power rating available thanks to three dimensional modularity: Vertical, Horizontal and Orthogonal.



**Vertical Modularity:** the stacked drawers in each module can be individually extracted for service purposes while the UPS system continues to protect your load.

**Horizontal Modularity:** Chloride Trinergy® can scale up to 1.2 MW in power by adding complete 200 kW UPS modules side-by-side and around the input/output power section.

**Orthogonal Modularity:** is the ability of Chloride Trinergy® to work with up to 8 complete UPS (fully populated with UPS modules) in parallel.



# Three Dimensional Modularity

Chloride Trinegy®’s three dimensions of modularity allow businesses to expand their power protection needs at the same pace as their evolving load requirements by simply adding additional power modules. These three dimensions of modularity are built around Chloride Trinegy®’s I/O Box which is the major interface for connectivity and power connections as well as centralized and distributed battery configurations.

**Modules can be added at anytime during the lifecycle of the UPS allowing it to reach up to 9.6 MW of active power, the most ever available in one UPS.**



**3 Dimensional Modularity**

# Chloride LIFE<sup>®</sup>.net 24/7 Remote Diagnostic System

It is essential that your critical power protection system is maintained in an optimum state of readiness at all times.

Chloride LIFE<sup>®</sup>.net remote diagnostic and monitoring system provides early warning of UPS and single module alarm conditions and out of tolerances. This allows effective proactive maintenance and fast incident response, giving customers complete security and peace of mind.

## Maximize Availability

### Pre-Emptive Maintenance

Chloride LIFE<sup>®</sup>.net provides early warning of more than 150 separate parameters allowing real-time diagnosis and swift identification and resolution of operating anomalies.



## Minimize Downtime

### Immediate Identification of Problems

Should an emergency condition arise, an engineer in the 24/7 manned service center carries out an immediate fault analysis and instigates appropriate corrective action.



## Reduce Operating Costs

### Superior Asset Management

Through comprehensive data collection and analysis, Chloride LIFE<sup>®</sup>.net's detailed reporting system provides valuable information on power and equipment trends, over any selected period of time.



### Connectivity And Tracking

Real-time connectivity, tracking and Chloride LIFE<sup>®</sup>.net remote diagnosis ensure that your system is closely monitored 24 hours a day.

### LCD Touch Screen Features

- High security access with separate password levels for users and service engineers
- User-friendly graphical interface
- Single-line mimic diagram showing system status
- Contemporary dashboard-style indicators for major system values and conditions
- Automatic charting display for logged power and environmental data

### Information Tracking

- Overall system and module readiness
- Module level alerts for all major subsystems including rectifier, inverter, batteries, static switch and bypass
- System voltages and power
- Load vs. capacity indicator
- System temperature gauge
- Battery charge indicator
- Service history logs



### Hardware Connectivity

Chloride ManageUPS NET ensures the monitoring and control of the networked UPS, through two different options of the TCP/IP protocol:

- The integration of Chloride UPS with Building Monitoring and Automation Systems via MODBUS RTU, MODBUS/TCP or JBUS protocols
- The monitoring of environmental installation conditions.

### Software Connectivity

Chloride MopUPS Professional allows for safe shutdown of the operating system in the event of load interruption. This includes event logging and e-mail notifications. Chloride ManageUPS CIO software provides a central management system for critical power infrastructures distributed within a building, campus or wide area network environment.



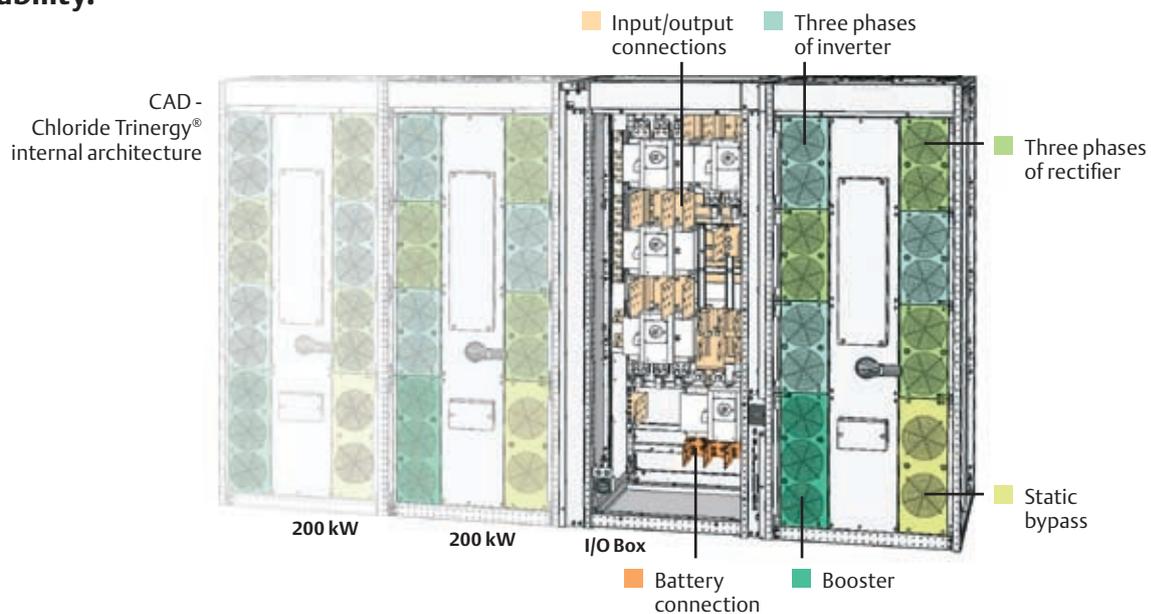
System status, measurements and single-line diagram



Chloride LIFE<sup>®</sup>.net  
Diagnostics

# In The Field

**100% uptime: optimum scalability and fast installation and service guarantee maximum load availability.**



### Faster Installation And Service

Chloride Trinegy®'s modular design facilitates installation by allowing the UPS to be assembled on-site, module-by-module, making it ideal even for sites with difficult accessibility.

### Upgradable In The Field

Chloride Trinegy® can be configured to suit immediate load requirements as additional modules can easily be added/removed to respond to changing load demands. This feature minimizes initial capital investment and ensures that the UPS system operates at a significant percentage load in order to ensure optimum system efficiency.

### Accessibility

Modules are easily accessible from the front of each cabinet, allowing simplified service and maintenance to be carried out.



## Serviceability

### Concurrent Maintainability

Allows single modules to be serviced while the remaining modules continue to supply power to the load.

### Internal Redundancy

The system is configured so that any individual unit can be easily isolated for safe maintenance whilst the remaining modules continue to provide conditioned power to the load.

### High Reliability (MTBF)

Is achieved through the possibility of adding internal redundancy to the system. This can be based on a common battery bank for the whole system, or using distributed batteries i.e. a battery bank for each 200 kW UPS module.

### Simplified Maintainability (reduced MTTR)

The multi-module concept that enables a user to define the level of redundancy required ensures a reduced Mean Time To Repair (MTTR) of individual UPS modules.

### Improved Load Availability

Chloride Trineergy®'s proven reliability and simplified maintainability guarantee uninterrupted availability of power for critical loads.



Optimized  
Serviceability

# Chloride Trinergy® Specifications

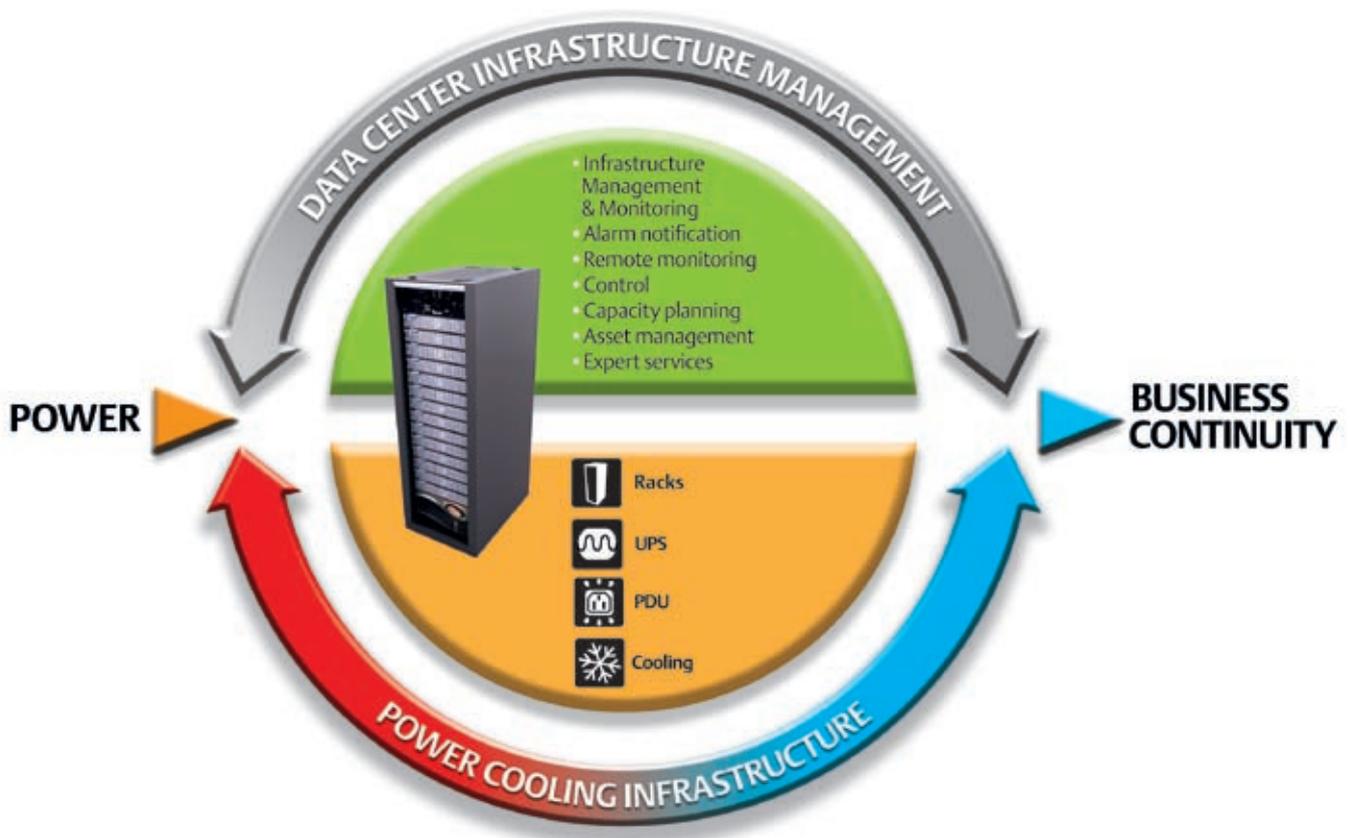
Technical Characteristics					
Rating	400	600	800	1000	1200
Nominal output active power at 40° C (kW)	400	600	800	1000	1200
Apparent nominal output power at 40° C (kVA)	400	600	800	1000	1200
Apparent nominal output power at 25° C (kVA)	440	660	880	1100	1320
Redundant configuration active power (N + 1) (kW)	200	400	600	800	1000
<b>Input</b>					
Nominal primary mains input voltage/voltage range (V)*	400 (250 to 460), three phase + neutral				
Nominal bypass input voltage/voltage tolerance (V)	400 ± 10% (380 V, 415 V selectable) three phase + neutral				
Nominal input frequency/frequency tolerance (Hz)	45 - 65 Hz				
Input current distortion (THDi) (%)	<3				
Primary input Power Factor	>0.99				
<b>Output</b>					
Nominal output voltage (V)	400 (380 V, 415 V selectable) three phase + neutral				
Output voltage stability by load variation 0 - 100% (%)					
- static	± 1				
- dynamic	Complies with IEC/EN 62040-3, Class 1				
Output frequency (nominal) (Hz)	50 (60 Hz selectable)				
Output frequency variation (%)					
- with mains synchronization	± 1 (2, 3, 4 selectable)				
- with internal reference	± 0.1				
Inverter overload capacity*	125% for 10 min., 150% for 1 min.				
Compatibility with loads	Any power factor (leading or lagging) up to 1 without output derating; crest factor up to 3:1				
Automatic adjustment of nominal output power with temperature	110% at 25°C, 100% at 40°C				
<b>General</b>					
Classification according to IEC/EN 62040-3	VFI - SS - 111				
Operating temperature (°C)	0 - 40				
Relative humidity (without condensation at 20°C)	<95%				
Protection level	IP 20				
Frame colour	RAL 5004				
Noise at 1 m (dBA)*	71	73	74	75	76
AC/AC efficiency (%) with Chloride Trinergy® technology	up to 99%				
Parallel configuration	up to 8 UPS = Max 9.6 MW				
<b>Dimensions And Weight</b>					
Height (mm)	1780				
Width (mm)	1800	2775	3450	4450	5125
Depth (mm)	860				
UPS weight (kg)	1450	2370	3040	3890	4560

\* Conditions apply

More than 35,000 organizations  
in 70 countries depend on  
our Business - Critical Continuity™ Promise:  
your IT infrastructure stays up  
to support your Business!



## Emerson Network Power Business-Critical Continuity™ Expert



Today's successful businesses depend on adaptable technologies to help them respond quickly to market demands. Your data center must be built on a support infrastructure designed to match the power and cooling needs of rapidly changing IT initiatives such as virtualization and consolidation. Each IT change, move or addition will affect the entire support infrastructure so you need products and support that ensure your IT systems will operate reliably in these environments.

Get more on line: [www.EmersonNetworkPower.com](http://www.EmersonNetworkPower.com)

## Ensuring The High Availability Of Mission-Critical Data And Applications.

Emerson Network Power, a business of Emerson (NYSE:EMR), is the global leader in enabling *Business-Critical Continuity™* from grid to chip for telecommunication networks, data centers, health care and industrial facilities. Emerson Network Power provides innovative solutions and expertise in areas including AC and DC power and precision cooling systems, embedded computing and power, integrated racks and enclosures, power switching and controls, infrastructure management, and connectivity. All solutions are supported globally by local Emerson Network Power service technicians. Chloride Uninterruptible Power Supply (UPS) systems and critical power protection solutions and services protect against power outages ensuring business continuity for companies in all market segments, visit [www.ChloridePower.com](http://www.ChloridePower.com) for more information on Chloride products and services. Learn more about Emerson Network Power products and services at [www.EmersonNetworkPower.com](http://www.EmersonNetworkPower.com)

For a full list of contacts please visit our website at [www.ChloridePower.com](http://www.ChloridePower.com)

This publication is issued to provide outline information only and is not deemed to form part of any offer and/or contract. The company has a policy of continuous product development and improvement, and we therefore reserve the right to vary any information without prior notice.

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### Emerson Network Power

*The global leader in enabling Business-Critical Continuity™.*

- AC Power
- Connectivity
- DC Power
- Embedded Computing
- Embedded Power
- Infrastructure Management & Monitoring
- Outside Plant
- Power Switching & Controls
- Precision Cooling
- Racks & Integrated Cabinets
- Services
- Surge Protection

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