

■ AC Power
For Business-Critical Continuity™

Chloride Trinergy®

High Power Modular Scalable UPS With Three Functioning Modes
200 to 1200 kW





A Commitment to Best-in-Class Technologies

When it comes to protecting critical infrastructures across the globe, breakthrough technology is at the heart of competitive advantage for any business. Emerson Network Power's 12 Centers of Expertise uniquely position us to provide systems and integrated solutions wherever our customers are located, meeting the world's ever-growing need for Business-Critical Continuity™ across all industries. We continually invest in research and development – and, most importantly – people with the right expertise, in order to help prepare our customers for whatever changes that may come their way. Not only are we the experts in manufacturing and designing great technology, but we are the largest provider of services for critical infrastructures anywhere in the world. Emerson Network Power's services are broad enough to fit the entire range of equipment in your critical space, and we specialize in the latest tools and procedures you can depend on.

Grid-to-chip technologies and expertise that keep data centers, telecom networks, digital healthcare providers / facilities and business-critical applications up and running while maintaining energy efficiency

- 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

Emerson Network Power Global Services Coverage

- Over 150 service locations worldwide
- 2,000 certified professionals with knowledge and expertise in local safety, environmental and labor specifications
- Employees: About 43,000

Emerson Network Power Global Design Resources

- Total E&D Engineers: 3,500
- Number of PhDs: 40
- Number of active patents: 71,500



Chloride Trineergy® 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 Trineergy®'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 Trineergy®'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 Trineergy®'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,

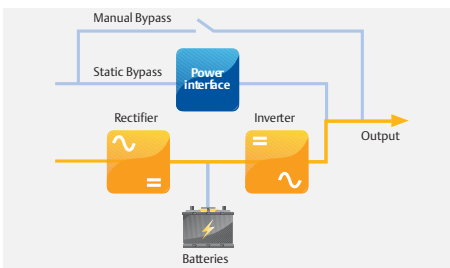
first class performance and maximum power protection.¹ The high level of flexibility, energy efficiency and adaptability of Chloride Trineergy® are in line with the European Union's Code of Conduct on Best Practices, thus further confirming its outstanding performance capabilities.

Features And Performances

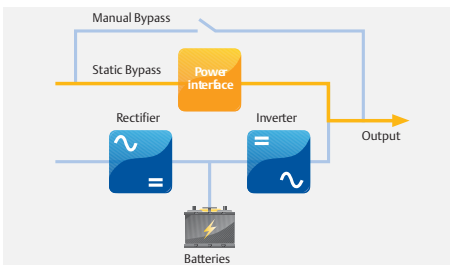
- Transformer free design
- Full IGBT double conversion technology
- Excellent input performances
 - PF > 0.99
 - THDi < 3%
- Output Power Factor 1
- Output Power Factor diagram symmetrical respect to zero
- Permanent 100% kVA - no derating with any load (lagging or leading)
- Optimum space/power ratio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

¹) Class 1 (IEC 62040-3) CBEMA

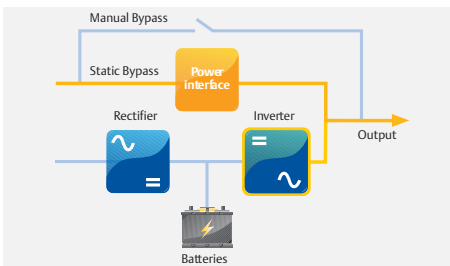
Dynamic Functioning Modes



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.

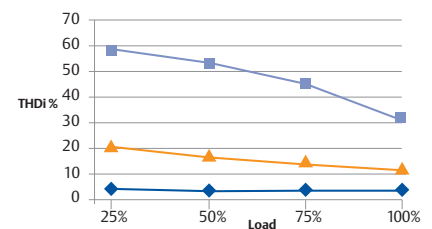
Running Cost Savings

Circular redundancy

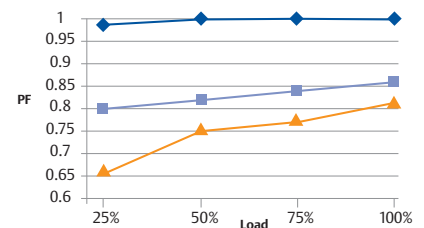
Chloride Trinerity®'s circular redundancy feature adjusts available UPS capacity to meet immediate load requirements by automatically switching excess module capacity to standby, thus greatly improving efficiency at partial load and reducing operating costs.

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.

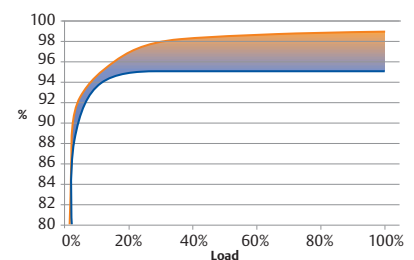


Input Harmonic Distortion vs Load Percentage

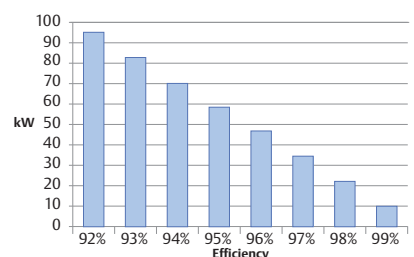


Input Power Factor vs Load Percentage

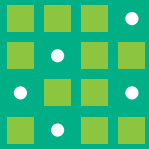
Legend: Chloride Trinerity® (Blue line with diamonds), Six Pulse (Purple line with squares), Six Pulse + Filter (Orange line with triangles)



95 - 99% efficiency at down to 20% load



Air conditioning size & power reduced by 400%



the green gridSM
member

High Efficiency

Chloride Trinergy®'s unique architecture and technology have been purposely developed to enhance efficiency.

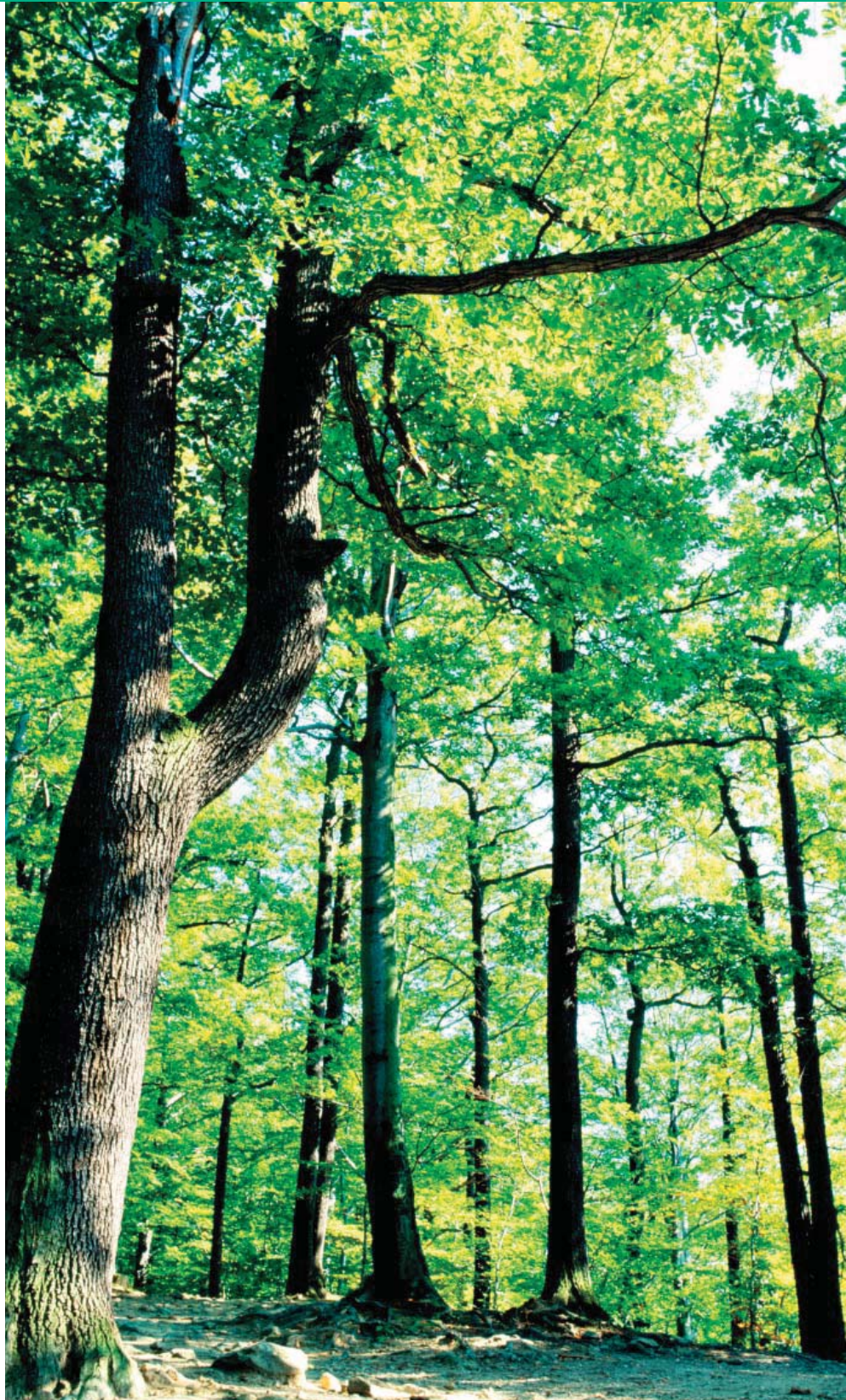
Able to discriminate between the different network input conditions and select the best functioning mode in relation to the disturbance, Chloride Trinergy® can achieve maximum energy savings by using only the necessary amount of energy required to provide the best output power quality and conditioning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

Advantages Include:

- Premium energy savings via transformer free technology and Chloride Trinergy®'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 Trineergy®'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 Trineergy®'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[®].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[®].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[®].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[®].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[®].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.



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)

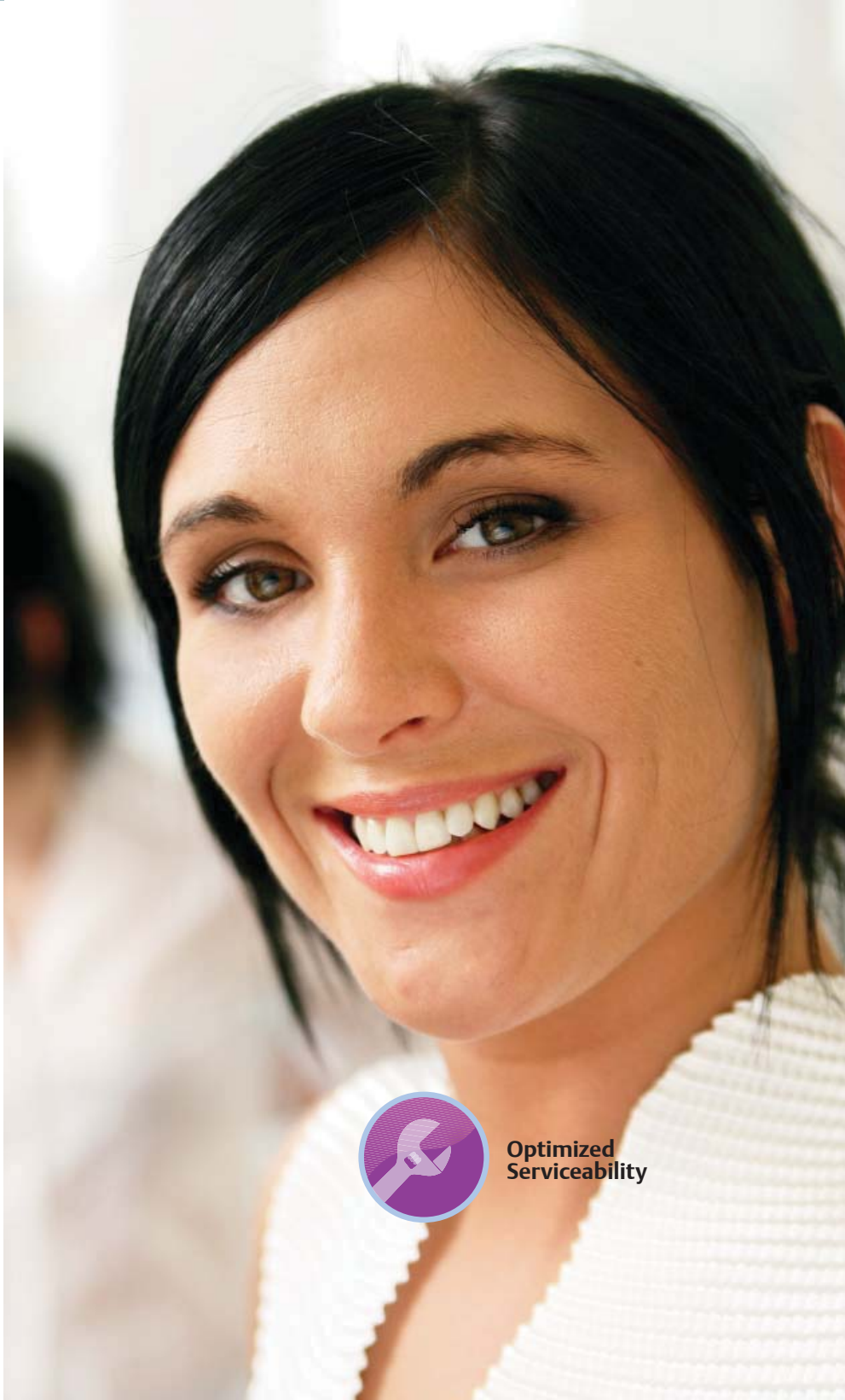
Is achieved through the possibility of adding internal redundancy to the system. This can be based on a common battery bank for the whole system, or using distributed batteries i.e. a battery bank for each 200 kW UPS module.

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
Input					
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				
Output					
Nominal output voltage (V)	400 (380 V, 415 V selectable) three phase + neutral				
Output voltage stability by load variation 0 - 100% (%)	± 1 Complies with IEC/EN 62040-3, Class 1				
- static					
- dynamic					
Output frequency (nominal) (Hz)	50 (60 Hz selectable)				
Output frequency variation (%)	± 1 (2, 3, 4 selectable) ± 0.1				
- with mains synchronization					
- with internal reference					
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				
General					
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				
Dimensions And Weight					
Height (mm)	1780				
Width (mm)	1800	2775	3450	4450	5125
Depth (mm)	860				
UPS weight (kg)	1450	2370	3040	3890	4560

* Conditions apply

About Emerson Network Power

Emerson Network Power, a business of Emerson (NYSE:EMR), is the world's leading provider of critical infrastructure technologies and life cycle services for information and communications technology systems. With an expansive portfolio of intelligent, rapidly deployable hardware and software solutions for power, thermal and infrastructure management, Emerson Network Power enables efficient, highly-available networks. Learn more at www.EmersonNetworkPower.Asia.

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