



**CLARY**®

Military and Security Applications





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# A BRIEF HISTORY

In 1939, Clary Corporation started out as a high-tech manufacturer of precision aircraft parts for the military. Over the next 30 years, Clary evolved into manufacturing unique technology, including gyroscopic devices for military missile guidance, portable computer products and high-speed line printers used in ICBM checkout systems. Clary's experience with computer and electronics technology challenged the company to evolve as technology advanced in the digital age.

In the early 1970's, Clary designed the industry's first all solid-state Uninterruptible Power Supply (UPS). In 1997, Clary refined their solid-state UPS technology, integrating it with digital technology to become the industry standard for rugged devices. Ever since, Clary has been innovating and refining this technology to meet the expanding needs of our military and defense customers.

Clary's all-digital UPS systems are known worldwide for their extreme temperature capability and rugged, reliable design. Clary's unique and advanced on-line double-conversion technology keeps systems running while protecting sensitive instrumentation and electronics from every power anomaly imaginable. Our UPS systems are in use throughout the military – on both land and sea – providing power conditioning and backup to mission-critical applications.







# MILITARY AND SECURITY PRODUCTS

Protecting our nation in this age of uncertainty demands an electronic network that is reliable and fail-safe. Clary manufactures products engineered to provide ultimate uninterruptible power protection to critical shipboard and ground-based systems. Thousands of Clary UPS systems are supporting the fleet today, adapting COTs products to the unique requirements of shipboard power with pure sine wave conditioning and Power Factor Correction. Our ruggedized systems are deployed in numerous demanding field applications and are tested and proven to withstand the toughest of conditions.

Clary UPS systems are manufactured to ISO 9001 quality standards and meet a variety of MIL-STDs including 1399, 461F (CE101, CE102, RE101, RE102, CS101, CS116), 901D and 167.







## Shipboard Products

# CMN PRODUCT FAMILY

UPS solutions built for shipboard applications and designed to work in the most extreme environments

The Clary CMN family of Uninterruptible Power Systems are built specifically for shipboard applications. Clary's military grade CMN systems are designed and assembled to perform at the highest level in extreme temperatures and rugged environments. All CMN systems are true on-line products that are digitally microprocessor controlled to provide clean, regulated power under all tactical conditions.

There are three CMN Series within the family, each with powerful solutions for shipboard applications. Choose between the newer CMN-LX and CMN-T Series, or our Legacy Series of time-tested CMN models. All CMN UPS systems are Power Factor Corrected (PFC) in real-time to ensure the highest possible efficiency. Full RS232 and SNMP interactive communications capability assures support of all types of command and control applications. Within the family are systems ranging from 1250 VA to 4000 VA, with input of 115, 208 or 440 VAC at 45 – 65 Hz and output of 115 VAC at 60 Hz.

All CMN Series UPS products manufactured for US Navy consumption meet Mil Standards including: 167 and 901D for shock and vibration and 461F for radiated & conducted EMI, as applicable.





# CMN-LX Series

CMN-LX shown with optional 4-Line LCD Display

The CMN-LX family of UPS solutions is our newest generation with advances in SWaP (size, weight and power). With its reduced depth, the CMN-LX fits racks on both surface ships and submarines. The CMN-LX line offers an internal transformer in the smaller 1250VA configuration. All larger output models

are available with an optional external rack-mounted isolation transformer. Included in the CMN-LX Series is the CMN-GXI, which supports global input and 230 V output. Models with internal isolation come with the suffix of either LXI or GXI.

Electrical Input	
Voltage	<ul style="list-style-type: none"> <li>LX models 115 VAC (external transformer)</li> <li>LXI models 115 or 230 VAC (internal transformer)</li> <li>GXI models 115 or 230 VAC (internal transformer)</li> </ul>
Frequency	50 Hz or 60 Hz
Isolation	External/internal transformer with bypass auto ranging (TapSelect)
Electrical Output	
Voltage	<ul style="list-style-type: none"> <li>LX models 115 VAC</li> <li>LXI models 115 VAC</li> <li>GXI models 230 VAC</li> </ul>
Frequency	50 Hz or 60 Hz
Crest Factor Ratio	<ul style="list-style-type: none"> <li>50% load up to 4.8:1</li> <li>75% load up to 3.2:1</li> <li>100% load up to 2.4:1</li> </ul>
THD	4.00% maximum
Dynamic Response	±4% for 100% step load change 0.5 ms recovery time
Overload	<ul style="list-style-type: none"> <li>110% for 10 sec</li> <li>200% for 50 ms</li> </ul>
UPS Protection	Circuit breaker
Environmental	
Temperature	-20°C to +55°C (-4°F to +131°F)
Humidity	0% to 95% non-condensing
Altitude	Sea level to 10,000 ft
Noise Level	46 dBA at 5 ft
Mechanical	
Input	NEMA L5-30P plug with 6 ft cord
Outputs	NEMA Type 5-20R receptacles
Cooling	Low velocity forced air with user-selectable direction of airflow

Design	
Standard Features	<ul style="list-style-type: none"> <li>Power factor corrected input</li> <li>Fully regenerative</li> <li>True on-line continuous power</li> <li>Low distortion sine wave output</li> <li>Designed for non-linear loads</li> <li>Extended brownout protection</li> <li>EIA/RS232 data interface</li> </ul>
Compliance	Military standards 1399, 461, 167, 901D
Control and Indicators	
Visual Indicators	<ul style="list-style-type: none"> <li>Battery level</li> <li>Load level</li> <li>AC Sense</li> <li>AC OK</li> <li>Bypass on</li> <li>Battery on</li> </ul>
Switches / Control Panel	<ul style="list-style-type: none"> <li>System power</li> <li>Cold start</li> <li>Battery test</li> </ul>
Audible Alarms	<ul style="list-style-type: none"> <li>Over current</li> <li>Over/under voltage</li> <li>Inverter</li> <li>Fans</li> <li>Temperatures</li> <li>Bypass</li> <li>Battery on</li> </ul>
Intelligent Computer Interfaces	USB 2.0 and RS232 serial data interface
Contact Closures	<ul style="list-style-type: none"> <li>DB-9</li> <li>Open collector</li> </ul>
Options	
Isolation	Configurable 1U rack-mounted single phase toroidal transformer. Unit supports 115, 230 and 440 V in from ship.
External Battery Pack	Cyclon (DT), VRLA (NPX), Lithium LiFePO4 (K2)
Miscellaneous	<ul style="list-style-type: none"> <li>Fast charger</li> <li>Conformal coating</li> <li>RE 101 shielding</li> <li>Slide rails</li> <li>Dry contact signal port</li> </ul>
SNMP Interface	Allows full control and monitoring interface over network connection.
Display	4x20 backlit LCD

Configurations							
Model	VA	Watts	Input Current	Output Current	Rating	Weight	Rackmount H x W x D
CMN 2500LX	2500	2000	22 A <sup>1</sup>	20.8 A	2500 VA/2000 W	26 lb	3.5" x 19.0" x 18.0" (2U)
CMN 2500LXI	2500	2000	22 A	20.8 A	2500 VA/2000 W	57 lb	3.5" x 19.0" x 20.0" (2U)
CMN 2500GXI	2500	2000	22 A <sup>2, 3</sup>	20.8 A	2500 VA/2000 W	26 lb	3.5" x 19.0" x 18.0" (2U)
CMN 3000LX	3000	2500	28 A	25 A	3000 VA/2500 W	26 lb	3.5" x 19.0" x 18.0" (2U)
CMN 4000LX	4000	3400	38 A	33 A	4000 VA/3400 W	27 lb	3.5" x 19.0" x 18.0" (2U)
CMN 4800LX	4800	3400	38 A	40 A	4800 VA/3400 W	26 lb	3.5" x 19.0" x 20.0" (2U)

<sup>1</sup> In bypass mode input current is equal to output current

<sup>2</sup> Optional 20 A limit

<sup>3</sup> 11 A at 240 V



# CMN-T Series

Engineered for shipboard applications, and built to perform in extreme environments

The CMN-T Series is our Tray Series of UPS solutions. The Tray Series includes an internal isolation transformer and has internal batteries configured in a hot-swappable pull-out tray.

Electrical Input	
Voltage	120 VAC +12%, -25% (without battery discharge)
Frequency	45 Hz to 65 Hz
Isolation	Transformer isolation
Electrical Output	
Voltage	120 VAC ±3%
Frequency	Software selectable to sync with input utility or run at crystal controlled 50/60 Hz ±1 Hz
Crest Factor Ratio	<ul style="list-style-type: none"> <li>50% load up to 4.8:1</li> <li>75% load up to 3.2:1</li> <li>100% load up to 2.4:1</li> </ul>
THD	<ul style="list-style-type: none"> <li>3.00% maximum (linear)</li> <li>5.00% maximum (non-linear)</li> </ul>
Dynamic Response	<ul style="list-style-type: none"> <li>±4% for 100% step load change</li> <li>0.5 ms recovery time</li> </ul>
Overload	<ul style="list-style-type: none"> <li>110% for 10 sec</li> <li>200% for 50 ms</li> </ul>
Isolation	Transformer Internal
UPS Protection	<ul style="list-style-type: none"> <li>Input and output short circuit</li> <li>Input and output overload</li> <li>Excessive battery discharge</li> </ul>
Environmental	
Temperature	0°C to +50°C (+32°F to +122°F)
Humidity	0% to 95% non-condensing
Altitude	Sea level to 10,000 ft
Noise Level	46 dBA at 5 ft
Mechanical	
Input	NEMA L5-30P plug with 6 ft cord
Outputs	NEMA Type 5-20R receptacles
Cooling	Forced Air

Configurations								
Model	VA	Watts	Input Current	Output Current	Rating	Backup Time* 100% / 50% Load	Weight	Rackmount H x W x D
CMN 2400T	2400	1680	18.3 A	20.0 A	2400 VA / 1680 W	4.0 minutes / 12.0 Battery option dependent	TBD	TBD
CMN 3000T	3000	1680	28.0 A	25.0 A	3000 VA / 1680 W	Battery option dependent	TBD	TBD

\* Estimated Backup times based on 5 Ah batteries. Run-times may be extended with optional batteries.

Design	
Standard Features	<ul style="list-style-type: none"> <li>Power factor corrected input</li> <li>True on-line continuous power</li> <li>Fully regenerative</li> <li>Low distortion sine wave output</li> <li>Designed for non-linear loads</li> <li>Extended brownout protection</li> <li>RS232 data interface</li> <li>Inverter powers load continuously</li> <li>Continuous operation on -25% to +12% utility without draining batteries</li> <li>Automatic bypass</li> <li>AC output (8 channel load control)</li> <li>Rear mounted ground stud</li> </ul>
Certifications	<ul style="list-style-type: none"> <li>IEEE 587/ANSI C62.4</li> <li>IEC 555 @ 120 VAC</li> </ul>
Typical Recharge Time (to 85% capacity @ 100% load)	8 hrs (more time required with extended battery option)
Control and Indicators	
Visual Indicators	<ul style="list-style-type: none"> <li>Battery level</li> <li>Load level</li> <li>AC in</li> <li>Inverter on</li> <li>Summary alarm</li> <li>Alarm silence</li> <li>Load on</li> </ul>
Switches / Control Panel	<ul style="list-style-type: none"> <li>System power</li> <li>Cold start</li> <li>Load I and II</li> <li>Test</li> <li>Alarm silence</li> </ul>
Audible Alarms	<ul style="list-style-type: none"> <li>Utility interrupt</li> <li>Inverter failure</li> <li>Overload</li> <li>Low battery</li> <li>Self test</li> </ul>
Intelligent Computer Interfaces	<ul style="list-style-type: none"> <li>RS232 data interface (DB-9)</li> <li>Full interactive remote computer monitoring and control of most features including load control (requires optional monitoring software)</li> <li>Compatible with Systems Enhancement™ UPS control software</li> </ul>
Contact Closures	<ul style="list-style-type: none"> <li>DB-9</li> <li>Open collector</li> </ul>
Options	
SNMP Interface	Allows full control and monitoring interface over network connection. Compatible with HP Openview™, IBM Netview™, CA Unicenter TNG™, and other major software offerings.





# LEGACY SERIES CMN and CMN-I

Engineered to deliver the highest level of performance in the most demanding environments

Our Legacy Series models, the CMN and CMN-I, are widely used across the fleet in various existing Navy programs and continue to be supported. These two proven UPS shipboard solutions are built specifically for surface and submarine applications. Clary's military grade Legacy Series are designed and assembled to perform at the highest level in extreme temperatures and rugged environments. All systems are true on-line products, which are

digitally microprocessor controlled to provide clean, regulated power. The CMN and CMN-I systems are Power Factor Corrected (PFC) in real-time to ensure the highest possible efficiency. Full RS232 and SNMP interactive communications capability assures support of all types of command and control applications. CMN-I models are a Lockheed Cross-referenced product bundled with an integrated PDU, fast charger, as well as other options.

Electrical Input	
Voltage	120 VAC +12%, -25% (without battery discharge)
Frequency	45 Hz to 65 Hz
Isolation	Transformer isolation
Electrical Output	
Voltage	120 VAC ±3%
Frequency	Software selectable to sync with input utility or run at crystal controlled 50/60 Hz ±1 Hz
Crest Factor Ratio	<ul style="list-style-type: none"> <li>50% load up to 4.8:1</li> <li>75% load up to 3.2:1</li> <li>100% load up to 2.4:1</li> </ul>
THD	<ul style="list-style-type: none"> <li>3.00% maximum (linear)</li> <li>5.00% maximum (non-linear)</li> </ul>
Dynamic Response	<ul style="list-style-type: none"> <li>±4% for 100% step load change</li> <li>0.5 ms recovery time</li> </ul>
Overload	<ul style="list-style-type: none"> <li>110% for 10 sec</li> <li>200% for 50 ms</li> </ul>
Isolation	Transformer Internal
UPS Protection	<ul style="list-style-type: none"> <li>Input and output short circuit</li> <li>Input and output overload</li> <li>Excessive battery discharge</li> </ul>
Environmental	
Temperature	0°C to +50°C (+32°F to +122°F)
Humidity	0% to 95% non-condensing
Altitude	Sea level to 10,000 ft
Noise Level	46 dBA at 5 ft
Mechanical	
Input	NEMA L5-30P plug with 6 ft cord
Outputs	NEMA Type 5-20R receptacles
Cooling	Forced Air

Design	
Standard Features	Power factor corrected input · True on-line continuous power · Fully regenerative · Low distortion sine wave output · Designed for non-linear loads · Extended brownout protection · RS232 data interface · Inverter powers load continuously · Continuous operation on -25% to +12% utility without draining batteries · Automatic bypass · AC output (8 channel load control) · Rear mounted ground stud
Certifications	<ul style="list-style-type: none"> <li>IEEE 587/ANSI C62.4</li> <li>IEC 555 @ 120 VAC</li> </ul>
Typical Recharge Time (to 85% capacity @ 100% load)	8 hrs (more time required with extended battery option)
Control and Indicators	
Visual Indicators	<ul style="list-style-type: none"> <li>Battery level</li> <li>Load level</li> <li>AC in</li> <li>Inverter on</li> <li>Summary alarm</li> <li>Alarm silence</li> <li>Load on</li> </ul>
Switches / Control Panel	<ul style="list-style-type: none"> <li>System power</li> <li>Cold start</li> <li>Load I and II</li> <li>Test</li> <li>Alarm silence</li> </ul>
Audible Alarms	<ul style="list-style-type: none"> <li>Utility interrupt</li> <li>Inverter failure</li> <li>Overload</li> <li>Low battery</li> <li>Self test</li> </ul>
Intelligent Computer Interfaces	<ul style="list-style-type: none"> <li>RS232 data interface (DB-9)</li> <li>Full interactive remote computer monitoring and control of most features including load control (requires optional monitoring software)</li> <li>Compatible with Systems Enhancement™ UPS control software</li> </ul>
Contact Closures	<ul style="list-style-type: none"> <li>DB-9</li> <li>Open collector</li> </ul>
Options	
SNMP Interface	Allows full control and monitoring interface over network connection. Compatible with HP Openview™, IBM Netview™, CA Unicenter TNG™, and other major software offerings.

Configurations								
Model	VA	Watts	Input Current	Output Current	Rating	Backup Time* 100% / 50% Load	Weight	Rackmount H x W x D
CMN 3000 ET/ST	3000	2100	28.0 A	25.0 A	3000 VA / 2100 W	Battery option dependent	90 lb	5.25" x 19.0" x 23.0" (3U)
CMN 4000 ET/ST	4000	2800	42.0 A	34.0 A	4000 VA / 2800 W	Battery option dependent	90 lb	5.25" x 19.0" x 23.0" (3U)
CMN 2400 ET/ST	2400	1680	18.3 A	20.0 A	2400 VA / 1680 W	4.0 minutes / 12.0 minutes	83.5 lb	5.25" x 19.0" x 23.0" (3U)
CMN 2000 ET/ST	2000	1400	14.3 A	16.7 A	2000 VA / 1400 W	5.0 minutes / 18.0 minutes	80 lb	5.25" x 19.0" x 23.0" (3U)
CMN 1500 ET/ST	1500	1050	10.7 A	12.5 A	1500 VA / 1050 W	5.0 minutes / 17.0 minutes	80 lb	5.25" x 19.0" x 23.0" (3U)
CMN 1250 ET/ST	1250	875	8.8 A	10.4 A	1250 VA / 875 W	7.0 minutes / 21.0 minutes	80 lb	5.25" x 19.0" x 23.0" (3U)

\* Estimated Backup times based on 5 Ah batteries. Run-times may be extended with optional batteries.

## Ground-Based Products

# DT SERIES, CT SERIES, GT SERIES AND SX-560

UPS solutions built for ground-based military and security applications and engineered for extreme environments

All Clary military grade UPS systems are true on-line products that are digitally microprocessor controlled to provide clean, regulated power under all tactical conditions. Clary UPS systems surpass strict military standards and are proven to perform in the harshest environments, including temperatures from -40°C to +70°C, and can be counted on for outdoor applications in locations from the hottest desert to the coldest tundra.





# DT Series

Rugged ground-based system featuring premium quality and robust performance.

We've built this system to withstand a wide range of environmental conditions. Available in three temperature rated versions: Standard (0°C to +40C), High Temperature (0°C to +50°C) and Extreme

Temperature (-40°C to +74°C). Models ranging from 1000 VA to 2400 VA are offered in either rack-mount or tower versions.

Electrical Input	
Voltage	120 VAC +12%, -25% (without battery discharge)
Frequency	45 Hz to 65 Hz
Current	7.2 A
Electrical Output	
Voltage	120 VAC ±3%
Frequency	Software selectable to sync with input utility or run at crystal controlled 50/60 Hz ±1 Hz
Current	8.3 A
Crest Factor Ratio	50% load up to 4.8:1, 75% load up to 3.2:1, 100% load up to 2.4:1
Dynamic Response	±4% for 100% step load change 0.5 ms recovery time
Overload	110% for 10 sec; 200% for 50 ms
UPS Protection	Input and output short circuit; input and output overload; excessive battery discharge
Environmental	
Temperature	-40°C to +74°C (-40°F to +165°F)
Humidity	0% to 95% non-condensing
Altitude	Sea level to 10,000 ft
Noise Level	46 dBA at 5 ft
Mechanical	
Input	NEMA 5-15P plug with 6 ft cord
Outputs	5-15R receptacles
Rackmount H x W x D (in)	5.25 x 19.0 x 18.0 (2U)
Weight (lb)	30

Design	
Standard Features	Power factor corrected input, fully regenerative, True on-line continuous power, low distortion sine wave output, designed for non-linear loads, extended brownout protection, RS232 data interface, Inverter powers load continuously, continuous operation on -25% to +12% utility without draining batteries, automatic bypass, AC output (2 channel load control), rear mounted ground stud
Certifications	FCC Class A, IEEE 587/ANSI C62.4, IEC 555@ 120 VA, CUL, UL 1778
Typical Recharge Time to 85% Capacity @ 100% Load	8 hrs (more time required with extended battery option)
Control and Indicators	
Ramping LEDs Single LEDs	Battery level, load level AC in, Inverter on, summary alarm, alarm silence, load on
Switches / Control Panel	System power, cold start, load I, load II, test, alarm silence
Audible Alarms	Utility interrupt, Inverter failure, overload, low battery, self test
Intelligent Computer Interfaces	Full interactive remote computer monitoring and control of most features including load control (requires optional monitoring software)
Contact Closures	Open collector (see user manual for additional interface information)
Optional SNMP Interface	Allows full control and monitoring interface over network connection. Compatible with HP Openview™, IBM Netview™, CA Unicenter TNG™, and other major software offerings.

Configurations								
Model	VA	Watts	Input Current	Output Current	Rating	Backup Time* 100% / 50% Load	Weight	Rackmount H x W x D
DT 2400R	2400	1680	18.3A	20.0A	2400 VA / 1680 W	4.5 minutes / 14.0 minutes	45 lb	3.5" x 19.0" x 17.0" (2U)
DT 2000R	2000	1400	14.3 A	16.7 A	2000 VA / 1400 W	5.0 minutes / 18.0 minutes	55 lb	3.5" x 19.0" x 17.0" (2U)
DT 1500R	1500	1050	10.7 A	12.5 A	1500 VA / 1050 W	5.0 minutes / 17.0 minutes	42 lb	3.5" x 19.0" x 17.0" (2U)
DT 1250R	1250	875	8.8 A	10.4 A	1250 VA / 875 W	7.0 minutes / 21.0 minutes	42 lb	3.5" x 19.0" x 17.0" (2U)
DT 1000R ET	1000	700	7.2 A	8.3 A	1000 VA / 700 W	5.0 minutes / 17.0 minutes	30 lb	3.5" x 19.0" x 18.0" (2U)

\* Estimated Backup times based on 5 Ah batteries. Run-times may be extended with optional batteries.



# CT Series

Ground-based UPS for rough environments requiring Galvanic Isolation

The rugged CT Series is the ideal choice for critical applications that require extra protection between

power source and load. Models ranging from 1250 VA to 2400 VA are offered in a 3U rack-mount package.

Electrical Input	
Voltage	120 VAC +10%, -20% (other input voltages available)
Frequency	45 Hz to 65 Hz
Electrical Output	
Voltage	120 VAC ±3%
Frequency	Software selectable to sync with input utility or run at crystal controlled 50/60 Hz ±1 Hz
Crest Factor Ratio	50% load up to 4.8:1, 75% load up to 3.2:1, 100% load up to 2.4:1
THD	3.00% maximum (linear), 5.00% maximum (non-linear)
Dynamic Response	±4% for 100% step load change 0.5 ms recovery time
Overload	110% for 10 sec; 200% for 50 ms
UPS Protection	Input and output short circuit; input and output overload; excessive battery discharge
Environmental	
Temperature	0°C to +40°C (+32°F to +104°F)
Humidity	0% to 95% non-condensing
Altitude	Sea level to 10,000 ft
Noise Level	39 dBA to 42 dBA at 5 ft
Mechanical	
Input	NEMA 5-15P plug with 6 ft cord (1250 - 1500 VA connectors), NEMA 5-20P plug on 6 ft cord (2000 - 2400 VA connectors)
Outputs	NEMA duplex receptacles 5-15R, 1.25K-1.5K, 5-20R, 2K-2.4K
Rackmount H x W x D (in)	5.25 x 19.0 x 23.0 (3U)
Weight (lb)	CT 2400R & CT 2000R: 92 CT 1500R & CT 1250R: 79

Design	
Standard Features	Power factor corrected input, Fully regenerative, True on-line continuous power, Low distortion sine wave output, Designed for non-linear loads, Extended brownout protection, RS232 data interface, Inverter powers load continuously, Continuous operation on -25% to +12% utility without draining batteries, Automatic bypass, AC output (2 channel load control), Rear mounted ground stud
Certifications	FCC Class A, IEEE 587/ANSI C62.4, IEC 555@ 120 VA, CUL, UL 1778
Typical Recharge Time to 85% Capacity @ 100% Load	5 hrs
Control and Indicators	
Ramping LEDs Single LEDs	Battery level, Load level AC in, Inverter on, Summary alarm, Alarm silence, Load on
Switches / Control Panel	System power, Cold start, Load I, Load II, Test, Alarm silence
Audible Alarms	Utility interrupt, Inverter failure, Overload, Low battery, Self test
Intelligent Computer Interfaces	RS-232 data interface (DB-9), Full interactive remote computer monitoring and control of most features including load control (requires optional monitoring software), Compatible with RUPS™ and RUPS II™ and other major UPS software products
Contact Closures	DB-9, Open collector, Optional dry contact module
Optional SNMP Interface	Allows full control and monitoring interface over network connection. Compatible with HP Openview™, IBM Netview™, CA Unicenter TNG™, and other major software offerings.

Configurations						
Model	VA	W	Input Current	Output Current	Rating	Backup Time* 100%/50% Load
CT 2400R	2400	1680	18.3 A	20.0 A	2400 VA/1680 W	5.0 mins/18.0 mins
CT 2000R	2000	1400	14.3 A	16.7 A	2000 VA/1400 W	5.0 mins/17.0 mins
CT 1500R	1500	1050	10.7 A	12.5 A	1500 VA/1050 W	5.0 mins/18.0 mins
CT 1250R	1250	875	8.8 A	10.4 A	1250 VA/875 W	5.0 mins/18.0 mins

\* Estimated Backup times based on 5 Ah batteries. Run-times may be extended with optional batteries.





# GT Series

Ground-based system that is Power Factor Corrected for world-wide inputs.

Designed with an auto-sensing transformer, the GT Series support 120 VAC systems configured in North America

and deployed globally. Models ranging from 1000 VA to 2400 VA are offered in a tower configuration.

Electrical Input	
Voltage	Selectable Ranges: 120/208, 120/220,120/230 or 120/240 VAC
Frequency	48 Hz to 62 Hz
Electrical Output	
Voltage	120 VAC +3%
Frequency	50 Hz or 60 Hz, software selectable to sync with input utility or run at crystal controlled 50/60 Hz ±1 Hz
Crest Factor Ratio	50% load up to 4.8:1, 75% load up to 3.2:1, 100% load up to 2.4:1
THD	3.00% maximum (linear), 5.00% maximum (non-linear)
Dynamic Response	±4% for 100% step load change 0.5 ms recovery time
Overload	110% for 10 sec; 200% for 50 ms
UPS Protection	Input and output short circuit; input and output overload; excessive battery discharge
Environmental	
Temperature	0°C to +40°C (+32°F to +104°F)
Humidity	0% to 95% non-condensing
Altitude	Sea level to 10,000 ft
Noise Level	39 dBA to 42 dBA at 5 ft
Mechanical	
Input	IEC on unit with 6 ft - NEMA 5-15P (1250 - 1500 VA connectors), IEC on unit with 6 ft - NEMA 5-20P (2000 - 2400 VA connectors)
Outputs	5-15R receptacles
Dimensions H x W x D (in)	14.1 x 6.9 x 21
Weight (lb)	GT 2400 & GT 2000: 100 GT 1500 & GT 1250: 80

Design	
Standard Features	Power factor corrected input, fully regenerative, True on-line continuous power, low distortion sine wave output, designed for non-linear loads, extended brownout protection, RS232 data interface, inverter powers load continuously, continuous operation on -25% to +12% utility without draining batteries, automatic bypass, AC output (2 channel load control), rear mounted ground stud
Certifications	FCC Class A, IEEE 587/ANSI C62.4, CUL, UL 1778, CE
Typical Recharge Time to 85% Capacity @ 100% Load	8 hrs (more time required with extended battery option)
Control and Indicators	
Ramping LEDs, Single LED's	Battery level, Load level AC in, Inverter on, Summary alarm, Alarm silence, Load on
Switches / Control Panel	System power, cold start, load I, load II, test, alarm silence
Audible Alarms	Utility interrupt, inverter failure, overload, low battery, self test
Intelligent Computer Interfaces	RS-232 data interface (DB-9), Full interactive remote computer monitoring and control of most features including load control (requires optional monitoring software), compatible with RUPS™ and RUPS II™ and other major UPS software products
Contact Closures	DB-9, open collector (see user manual for additional interface information)
Optional SNMP Interface	Allows full control and monitoring interface over network connection. Compatible with HP Openview™, IBM Netview™, CA Unicenter TNG™, and other major software offerings.

Configurations						
Model	VA	W	Input Current	Output Current	Rating	Backup Time* 100%/50% Load
GT 2400	2400	1680	18.3 A	20.0 A	2400 VA/1680 W	4.5 mins/14 mins
GT 2000	2000	1400	14.3 A	16.7 A	2000 VA/1400 W	5.0 mins/18.0 mins
GT 1500	1500	1050	10.7 A	12.5 A	1500 VA/1050 W	5.0 mins/17.0 mins
GT 1250	1250	875	8.8 A	10.4 A	1250 VA/875 W	7.0 mins/21.0 mins

\* Estimated Backup times based on 5 Ah batteries. Run-times may be extended with optional batteries.



# SX-560

Power protection that withstands the elements

This rugged weatherproof UPS is sealed to keep out rain, dust and debris in the most challenging field operations. Compact and lightweight, the SX-560 is ideal where power conditioning

is needed in mobile applications. The SX560 delivers constant, conditioned, regenerated AC power, protecting equipment from being degraded, disrupted or damaged due to harmful power events.

Electrical Input	
Voltage	120 VAC (85 VAC to 155 VAC before going to battery, when configured with batteries)
Frequency	40 Hz to 70 Hz
Electrical Output	
Voltage	120 VAC ±3%
Frequency	50 or 60 Hz ± .25% (Software Selectable)
Current	4.8 A
Rating	560 VA / 400 W
Crest Factor Ratio	<ul style="list-style-type: none"> <li>50% load up to 4.8:1</li> <li>75% load up to 3.2:1</li> <li>100% load up to 2.4:1</li> </ul>
THD	3.00%
Dynamic Response	±4% for 100% step load change 0.5 ms recovery time
Overload	<ul style="list-style-type: none"> <li>110% for 10 sec</li> <li>200% for 50 ms</li> </ul>
UPS Protection	<ul style="list-style-type: none"> <li>Input and output short circuit</li> <li>Input and output overload</li> <li>Excessive battery discharge</li> </ul>
Environmental	
Temperature	-40°C to +74°C (-40°F to +165°F)
Humidity	0% to 95% non-condensing
Altitude	Sea level to 10,000 ft
Mechanical	
Input	Anderson SK1-019M03 male connector-sealed
Outputs	Anderson SK7-019M03 female receptacle-sealed
Dimensions (H x W x D)	12.5W" x 9.5D" x 1.5H"
Weight	5 lb
Cooling	<ul style="list-style-type: none"> <li>No forced air</li> <li>Cooled through chassis</li> </ul>

Design	
Standard Features	<ul style="list-style-type: none"> <li>Power factor corrected input</li> <li>Fully regenerative</li> <li>True on-line continuous power</li> <li>Low distortion sine wave output</li> <li>Designed for non-linear loads</li> <li>Extended brownout protection</li> </ul>
Typical Recharge Time (to 85% Capacity @ 100% Load)	<ul style="list-style-type: none"> <li>3 to 5 hrs with SP 485B battery pack</li> <li>48 to 72 hrs with Outpost or Garrison batteries</li> </ul>
MTBF	<ul style="list-style-type: none"> <li>Inverter:&gt;100,000hrs</li> <li>System calculated from component specifications</li> </ul>
Compliance	Meets IP67 and MIL-STD-810A requirements
Control and Indicators	
Visual Indicators	<ul style="list-style-type: none"> <li>Battery status</li> <li>AC output</li> <li>AC input</li> <li>Alarm</li> </ul>
Switches / Control Panel	<ul style="list-style-type: none"> <li>System power</li> <li>Cold start</li> <li>Load I</li> </ul>
Audible Alarms	<ul style="list-style-type: none"> <li>Utility interrupt</li> <li>Inverter failure</li> <li>Overload</li> <li>Low battery</li> <li>Over-temperature</li> </ul>
Intelligent Computer Interfaces	1 each DB9-F (RS232 and signal interface pins) and 1 each USB
Options	
External Battery Pack	SP 485B battery pack. Compact design. Ideal for runtime requirements less than an hour.
Battery Chassis	External battery chassis supports UPS capability. Provides 6 minutes of back-up time at 100% load. Consult factory for other battery options and extended run times.
Rack or Wall Mount	Designed to provide 19" of rack mounting capability.
By-pass Switch	Supports manual and automatic switching of SX560



# CUSTOM CONFIGURATIONS

Clary's broad portfolio of technology, including our digital online double-conversion technology is customizable for a wide range of mission-critical applications. With over 30 years on the leading edge of power electronics, Clary has the unique ability to respond to special projects and new programs as they arise. If a standard system does not meet your requirements, we will work with you to develop a solution that does.

## PERIPHERAL CONTROLS

- Integrated Power Distribution Units (PDU's)
- Remote Control Panels
- Environmental Sensors and Alarms
- Digital I/O for sensing and controls
- Battery monitors

## UPS CUSTOMIZATION

- Mechanical
  - Mounting methods: Slides and Fixed
  - Chassis Configuration
  - Chassis Material: Steel or Aluminum
  - Connector Types and Cable Management
- Electrical
  - Transformers (Input / Output)
  - Fusing and Breakers
- Communications, Firmware and Software
  - SNMP, USB, Serial Port, Signal Port Configuration
  - Dry-Contact Digital I/O
  - Data and Event Logging
  - Customized start-up and shutdown procedures

## BESPOKE POWER SYSTEMS

- Inverters (120/240VAC) from 600VA to 6KVA
- DC Supplies (30 to 300VDC) from 30W to 3KW
- DC UPS
- Dual Power Feed UPS
- Dual Power Output UPS

# Battery Options

Batteries are an integral part of a Clary UPS system\*, allowing continuous operation of critical equipment following power loss as well as orderly shut-down.

Clary offers the latest in battery technologies with options that can be tailored to meet your unique requirements. Depending on the models, batteries are either internal to the UPS, accessible through a pull-out tray, or rack mounted.

Clary supports three battery chemistries: Valve Regulated Lead Acid (VRLA), Cyclon, and Lithium Iron-Phosphate. Each offers relative advantages in terms of environmental requirements, shelf-life, cycling, size, weight, energy-density, run-time, shelf-life and cost. Consult with one of our battery specialist to determine the configuration that is best suited to your needs.



## VRLA Batteries

- The reliable, low-cost solution
- Internal to CT, DT, and GT models
- External rack-mounted trays for extended run-time
- Use with any Clary model

## Cyclon Batteries

- Best for extreme high and low temperature
- For long shelf-life and high cycling demands
- Use with SX-560 and CMN-LX models

## Lithium Iron-Phosphate

- Ideal for long run-times
- Reduced size and weight
- Improved thermal and chemical stability
- Use with CMN-LX and CMN-T

\*For operations that require only power conditioning, batteries can be omitted. For operations that require brief back-up, internal capacitor banks may be used.



# Applications

Clary UPS systems are serving a variety of military and government users, including:

- United States Navy
- United States Marine Corps
- United States Coast Guard
- Royal Canadian Navy
- Royal Australian Navy
- Japan Maritime Self-Defense Force
- Turkish Naval Forces
- Jet Propulsion Laboratory (JPL)
- The World Bank

## LEADING INTEGRATORS OF CLARY UPS SYSTEMS INCLUDE:

- The Boeing Company
- BAE Systems
- DRS Laurel Technologies
- General Dynamics
- Lockheed Martin
- Northrup Grumman
- SAIC
- SPAWAR

Clary Corporation's Quality Management System is certified in conformance with ISO9001:2015 standards.

Specifications are subject to change without notice. Revised specifications may be available on our website [www.clary.com](http://www.clary.com).

 Designed and built in the USA



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