CT Series

Customizable Uninterruptible Power System

1,000 VA to 2,000 VA

When All Others Fail
Turn to Clary's 60 years of technical expertise, and our unmatched experience in providing high performance and reliable UPS systems for applications ranging from extreme temperature environments to offshore drilling rigs, military shipboard, 911 emergency systems and life-support systems. Clary starts where the competition stops.

Customizable
Clary's Customizable features of the CT Series allow the user to tailor the UPS solution for its intended mission-critical application. Clary will build each system to order, according to the customer's selection of input and output voltages, input and output frequency, bypass, isolation, Power Factor Correction and many other features.

Reliability
Clary units supply reliable Continuous Digital Power during brownouts, dirty unstable electrical power and loss of input power. Unlike most other UPSs, the CT Series will run continuously from batteries or auxiliary generator systems as long as power is available.

True On-Line Topology
Only Clary specializes exclusively in True On-Line Double Conversion topology. This technology provides ultimate protection from all power anomalies, keeping mission-critical applications out of harm's way. Our systems provide a digitally controlled precision regenerated output sinewave, unlike common standby or line interactive designs.

Uncompromising Performance
Our products are not for everyone. They are specifically designed for mission-critical applications where there is no room for error... when you just can't afford downtime! Our products are designed, manufactured and serviced by Clary, providing our customers the highest level of power protection solutions.

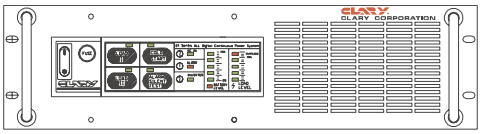
Communications
Connectivity features include remote control, configuration and monitoring of the UPS. Clary products are compatible with all major network operating systems.

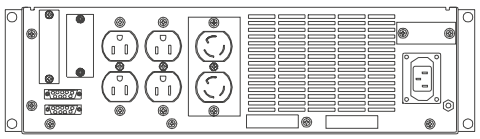
Off-the-shelf and Custom Solutions
In 1977, Clary Corporation pioneered the technology of digital, on-line, continuous power UPS systems for mission-critical applications. Today, Clary manufactures a variety of superior power products and can customize specs to meet your application requirements. What's more, our in-house field service department consistently sets the industry standard. Clary systems are found in hospitals, police and fire emergency systems, oil fields, rugged industrial applications, traffic signals, computer networks, military aerospace systems and numerous other applications.

Built to Order 3U/19 Inch Rack

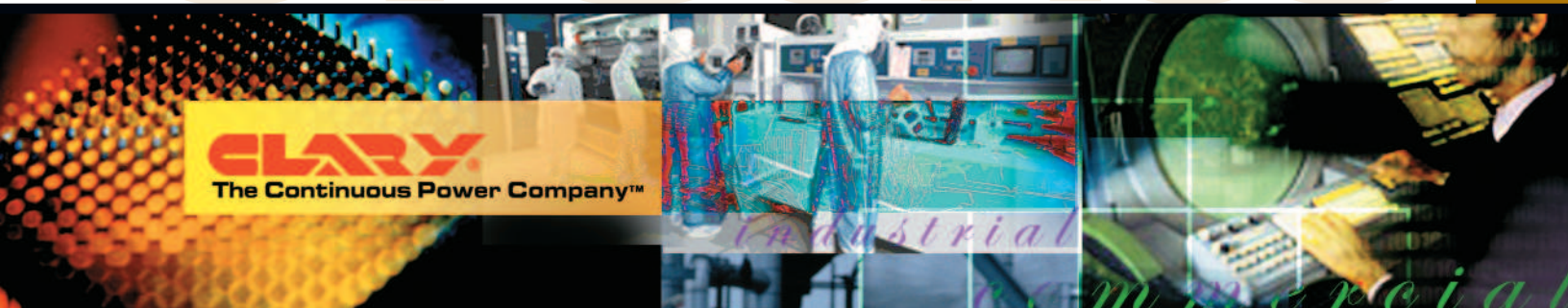
MODEL	RATING	WATTS
CT1000R	1,000 VA	700
CT1250R	1,250 VA	875
CT1500R	1,500 VA	1,050
CT2000R	2,000 VA	1,400

Front and Rear Panels





Where POWER is a way of life



Customizable Uninterruptible Power System

CT Series Standard Features & Available Options

Select the desired option in each category. Refer to the next page for a detailed discussion of each feature. A pre-checked box (☑) indicates that the selected item is included regardless of other features selected. Please refer to the numbered note before making selection.

Output Power Options (See Note 1)
- ❑ 1,000 VA / 700 Watt
- ❑ 1,250 VA / 875 Watt
- ❑ 1,500 VA / 1,050 Watt
- ❑ 2,000 VA / 1,400 Watt

Input Power Options (See Note 2)
- ❑ 120 VAC only (Standard, no Isolation)
- ❑ 120 VAC only, with Isolation
- ❑ 100/200 VAC, Switchable, Isolation
- ❑ 120/208 VAC, Switchable, Isolation
- ❑ 120/220 VAC, Switchable, Isolation
- ❑ 120/230 VAC, Switchable, Isolation
- ❑ 120/240 VAC, Switchable, Isolation

Input Frequency Options (See Note 3)
- ☑ 50 / 60 Hz Autosync (Standard)

Other Input Options (See Note 4)
- ☑ Power Factor Correction
- ❑ Input Voltage Auto Select
- ❑ Input Circuit Breaker

Input Connectors Options (See Note 5)
- ❑ NEMA 5-15P (Standard)
- ❑ NEMA 5-20P (Standard on 2K models)
- ❑ NEMA L5-15, 120 V / 15 A, Locking
- ❑ NEMA L5-20, 120 V / 20 A, Locking
- ❑ NEMA L6-15, 220 V / 15 A, Locking
- ❑ NEMA L6-20, 220 V / 20 A, Locking
- ❑ NEMA L6-30, 220 V / 30 A, Locking
- ❑ CEE 7/7 (European Schuko)
- ❑ IEC 320, 250 V / 15 A
- ❑ BS 1363 (UK & Ireland)
- ❑ AS 3112 (Australia)
- ❑ Terminal Block / Hardwire
- ❑ Other (specify)

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Output Power Options (See Note 6) (Combinations Possible)
- ❑ 120 VAC (Standard)
- ❑ 208 VAC
- ❑ 220 VAC
- ❑ 230 VAC
- ❑ 240 VAC

Output Frequency Options (See Note 7)
- ☑ Autosync to Input
- ❑ 60 Hz (Standard)
- ❑ 50 Hz

Output Connector Options (See Note 8) (Mix and Match up to 3 different types)
- ❑ NEMA 5-15R, 120 V / 15 A
- ❑ NEMA 5-20R, 120 V / 20 A
- ❑ NEMA L5-15R, 120 V / 15 A, Locking
- ❑ NEMA L5-20R, 120 V / 20 A, Locking
- ❑ NEMA L6-15R, 220 V / 15 A, Locking
- ❑ NEMA L6-20R, 220 V / 20 A, Locking
- ❑ NEMA L14-20R, 220 V / 20 A, Locking
- ❑ NEMA L14-30R, 220 V / 30 A, Locking
- ❑ IEC 320, 250 V / 15 A
- ❑ Terminal Block (Hardwire)
- ❑ Other (specify)

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Communications (See Note 9)
- ☑ RS-232 (Standard)
- ☑ Open Collector (Standard)
- ❑ SNMP / HTTP Card (RFC1629 MIB)
- ❑ Special Alarms
- ❑ Dry Contacts

Software (See Note 10)
- ❑ SMARTMON (RS-232)

Operating Systems (See Note 11)
- ❑ IBM LAN Manager
- ❑ Lantastic
- ❑ Microsoft LAN Manager
- ❑ Macintosh
- ❑ Netware
- ❑ OS2
- ❑ Unix (Type and Format requested)

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Windows: ❑ 3.X ❑ 95/98 ❑ NT/2000 ❑ ME ❑ XP

Bypass Options (See Note 12)
- ❑ Normal Bypass
- ❑ Internal Hard Bypass
- ❑ Bypass Disabled
- ❑ Special

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Accessory Devices (See Note 13)
- ❑ Emergency Power Off (EPO) Connection
- ❑ Shelf Angle Kit
- ❑ Slide Rail Kit
- ❑ Standalone Cover, Black Finish

Battery Options (See Note 14)
- ❑ Standard Charger
- ☑ Battery Removal Credit

External Battery Box Options (See Note 15 & Battery Selection Guide)
- ❑ Single String
- ❑ Dual String

Environmental Options (See Note 16)
- ❑ Standard, 0°C to +40°C
- ❑ High Temperature, -10°C to +50°C
- ❑ Extreme Temperature, -40°C to +74°C
- ❑ Input Air Filter
- ❑ Ambient Temperature Sensor

☑ Pre-checked box indicates inclusion regardless of other options.

Description and Notes for Selected Options

Note Option

1 Output Power
Select the output power rating that best matches your load. Allow at least a 10% margin for indoor and controlled environment applications. Allow at least a 20% margin for high temperature applications. Add an additional 10% if the input air filter is used. (See input voltage Auto Select for full operation.)

2 Input Voltage
A single input of 120 VAC is standard. Choosing between two alternate input voltages (option) will add a rear panel selector switch.

3 Input Frequency
50 Hz / 60 Hz is standard. The system will actually operate anywhere from 45 Hz to 65 Hz. 60 Hz is the standard frequency in North America. No matter what input frequency is selected, whenever the input frequency wanders too far away from normal, the system will switch to battery mode to provide a steady output. When the input frequency stabilizes, the system will go back to normal operation and recharge the batteries.

4 Input Options
Input voltage Auto-Select option automatically selects between 120 VAC and 220 VAC inputs. No rear panel switch is necessary to operate on either voltage (requires 120/220 VAC isolation).

5 Input Connectors
The NEMA 5-15P connector is standard on systems up to 1,500 VA. This is the most common and familiar AC connector in North America. The standard connector for systems of 2,000 VA and higher is the NEMA 5-20P. Many other connectors are available. Please refer to the connector selection chart.

6 Output Voltage
120 VAC is standard. This is the most common AC voltage in North America. Whenever an output voltage other than 120 VAC is selected, care is needed in choosing the output connectors.

7 Output Frequency
The standard setting is autosync. This means that the output frequency will track the input frequency. The system output frequency can be switched by the user to 50 Hz or 60 Hz at any time using the supplied configuration software. The system is capable of converting a 50 Hz input to 60 Hz output (as well as converting 60 Hz to 50 Hz). The output frequency of many generators can vary. This causes many other UPSs to switch to battery mode even when adequate power is available, or worse yet, pass through unstable frequency variations to the load.

8 Output Connectors
The NEMA 5-15R is standard. This is the most common and familiar type of connector in North America. Many other connectors are available. Up to 2 different types of output connectors can be combined into one unit. Please refer to the connector selection chart. Contact factory for additional configurations.

9 Communications
All systems are equipped with a DB-9/RS-232 serial port as well as a DB-9 "open collector" interface. The serial port allows the system to communicate with a connected computer. It also allows operation with Clary's configuration utility (supplied), the Windows® based monitoring and operating system shutdown utility package (supplied) and Systems Enhancement Corporation's SmartMon, an industry standard, full-featured software package for UPSs (optional). The "open collector" interface allows the system to operate with older software packages as well as custom hardware configurations. An optional SNMP/HTTP adapter allows the system to be controlled over a network. The system can then be monitored with a standard Web browser or an SNMP based software product such as HP Open View or CA Unicenter TNG™ (SNMP option disables RS-232).

Note Option

10 Software
Whenever a UPS is used to keep a computer running, a number of software packages are available to safely close all open files and safely shutdown the operating system of an unattended computer. This is necessary in the event that a utility problem lasts longer than the available battery charge of the UPS system. These software packages also provide a number of monitoring and control functions. A Windows based package is supplied with every system as well as Clary's own configuration package. Additional packages are available from Systems Enhancement Corporation (www.sechq.com) such as PowerMon II "open collector" and SmartMon (RS-232). For networked systems using SNMP/HTTP adapters, packages such as computer associated Unicenter TNG and Hewlett Packard's OpenView can be used. A Software Developers package is also available for those who need to create special applications. The OEM Developers Package gives the software developer access to a long list of programmable attributes as well as control and monitoring features (not for the casual programmer). Clary systems are compatible with more software programs than any other UPS available.

11 Operating System
Choose the operating system of the computer used to communicate with the UPS system.

12 Bypass
The bypass circuit routes utility power directly to the outlets in the unlikely event of certain UPS failures. Normal Bypass performs this function but allows the outlets to go off when the front panel switch is turned off (allowing the UPS to act as a central shutoff for the entire system). The Internal Hard Bypass option is for very critical applications that are intended to never shut down. In this case, if the UPS fails or if its front panel switch is turned off, utility power is routed directly to the outlets. This option is recommended for special applications only (such as telecommunications, medical, etc.).

13 Accessories
Emergency Power Off (EPO) option allows a user to install a remote switch that will shut down the system. The Shelf Angle Kit allows installation in a 19" standard rack. The Standalone Cover is for non-rack installations. It improves the systems appearance and allows it to stand on its side.

14 Battery Options
The Standard Charger allows for a 80% recharge within 5 hours or less and a full recharge within 24 hours or less. Battery Removal Credit can be applied whenever the system is being used as a power regulator/ conditioner or whenever batteries are needed.

15 External Batteries
Supplied in additional rackmount enclosures, each holding up to 2 extra battery strings. Up to 4 strings of batteries (2 enclosures) can be added to each UPS. These battery strings attach to a rear panel connector provided on every system. Please refer to the battery run-time chart for selection.

16 Environmental
The operating temperature of standard systems is 0°C to +40°C (+32°F to +104°F). The High Temperature option extends this to -10°C to +50°C (+14°F to +122°F). The Extreme Temperature option, -40°C to +74°C (-40°F to +165°F), also requires special battery configurations. Input Air Filter is used for outdoor and high-dust environments (see note 1 above). Ambient Temperature Sensor allows the system to measure and electronically report the temperature of the air coming into the system. Reading of the temperature is done via the RS-232 Serial Interface or SNMP adapter.

CT Series Specifications

ELECTRICAL

Input

Voltage	120 or 220 VAC +10%, -20% (without battery discharge)
Frequency	45 to 65 Hz
Current	See Table Below

Output

Voltage	120 VAC ±3%	
Frequency	Software Selectable to Sync with Input Utility or Run at Crystal Controlled 50 or 60 Hz ±1 Hz	
Current	See Table Below	
Crest Factor Ratio (Non-linear Load and < 5% THD) Typical	@50% Load @75% Load @100% Load	Up to 4.8:1 Up to 3.2:1 Up to 2.4:1
Total Harmonic Distortion (THD)	3% Typical (Non-linear) 5% Max.	
Dynamic Response	±4% for 100% Step Load Change; 0.5 ms Recovery Time	
Overload	110% for 10 min; 200% for 0.5 sec	
Efficiency @100% Load	88%	
UPS Protection	Input and Output Short Circuit; Input and Output Overload; Excessive Battery Discharge	

ENVIRONMENTAL

Operating Temp.	0˚C to +40˚C (+32˚F to +104˚F)
Humidity	0% to 95% Non-condensing
Altitude	Sea Level to 10,000 ft (some derating of temp. w/altitude)
Noise Level	39 to 42 dBA at 5 ft

MECHANICAL

Input [2,000 VA Systems]	NEMA 5-15P Plug w/6 ft Cord [NEMA 5-20P Plug w/6 ft Cord]
Outputs (standard)	6 - NEMA 5-15R

CUSTOM OPTIONS

Contact Factory for Other Custom Options

Specifications subject to change without prior notice.

DESIGN

Standard Features	Power Factor Corrected Input; Fully Regenerative; True On-Line; Low Distortion Sinewave Output; Inverter Powers Load Continuously; Designed for Non-linear Loads; Extended Brownout Protection; Continuous Operation on -25% to +12% Utility w/o Draining Batteries; Automatic Bypass; RS232 Data Interface; AC Output - 2 Channel Load Control; Rear Mounted Ground Stud
Specifications	UL 1778; CUL Pending; FCC Class A; IEEE 587 / ANSI C62.41; IEC 555 @ 120 VAC
MTBF	In Excess of 100,000 hrs
Typical Recharge Time to 85% Capacity @ 100% Load	5 hrs

CONTROLS AND INDICATORS

Sequenced LEDs Single LED	Battery Level, Load Level AC In, Inverter On, Load On, Summary Alarm, Alarm Silence
Front Panel Controls	Power On; Cold Start; Alarm Silence; Test; Load I On-Off; Load II On-Off
Audible Alarms	Utility Interrupt; Inverter Failure; Overload; Low Battery; Self Test
RS232 Data Interface (DB-9)	Full Interactive Remote Computer Monitoring and Control of Most Features, Including Load Control (requires optional monitoring software). Shutdown Software and Utility Package Included. Compatible with Systems Enhancement™ UPS Control Software.
Contact Closures (DB-9)	Open Collector; Optional Dry Contact
Optional SNMP Interface	Allows Full Control and Monitoring over Network Connection. Compatible with HP Openview™, IBM Netview™, CA Unicenter TNG™, Systems Enhancement Corp. and Other Major Software.

Model	VA	Input Current (A)	Output Current (A)	Backup Time 100% / 50% Load	Unit Weight[1] Std. / Ext. (lbs)	Standard Rackmount H x W x D (in)	Extended Rackmount[2] H x W x D (in)
CT1000R	1,000	7.2	8.3	6 / 20	30 / 67	5.25 x 19.0 x 17.0 (3U)	5.25 x 19.0 x 23.0 (3U)
CT1250R	1,250	8.8	10.4	12 / 25	42 / 79	5.25 x 19.0 x 17.0 (3U)	5.25 x 19.0 x 23.0 (3U)
CT1500R	1,500	10.7	12.5	8 / 20	42 / 79	5.25 x 19.0 x 17.0 (3U)	5.25 x 19.0 x 23.0 (3U)
CT2000R	2,000	14.3	16.7	6 / 22	55 / 92	5.25 x 19.0 x 17.0 (3U)	5.25 x 19.0 x 23.0 (3U)

1. Weight may increase according to additional options selected 2. Used with transformers

CLARY®
The Continuous Power Company™

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