

10 kW - 33 kW THREE PHASE

EON™ MODEL EL3

Centralized Emergency Lighting Inverters

Featuring one of the smallest three phase cabinet footprints in the industry!

Meets NFPA 101, 111, NEC, IBC and local codes.



UL 924 Listed

C-UL Listed to CSA C22.2 No. 141-10

Applications:

- Theaters / Concert Halls
- Auditoriums
- Worship Facilities
- Conference / Banquet Centers
- Shopping Malls
- Casinos
- Sports Facilities
- University Buildings
- Healthcare Facilities
- Correctional Facilities
- Subway / Train Stations
- Industrial Manufacturing
- Warehouses



CONTROLLED POWER COMPANY

"World's recognized authority in power treatment"

EMERGENCY LIGHTING REQUIREMENTS

Controlled Power Company engineers and manufactures the industry's highest quality **centralized emergency lighting inverters**, capitalizing on over 40 years of expertise. We have an enviable reputation for quality, which is reflected in the design, workmanship, and performance of our products.

The "EON Model EL3" = Life Safety

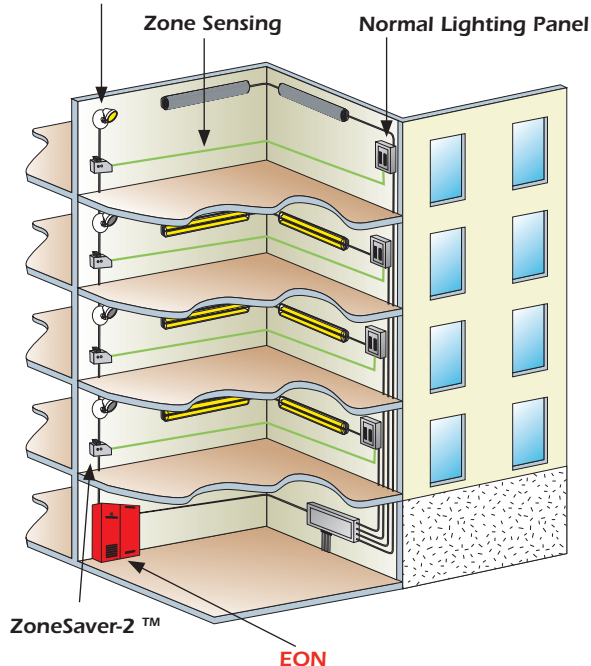
Apart from the existing emergency lighting codes, many U.S. cities and states have adopted legislation that requires buildings with 5 or more units of occupancy to have a **centralized emergency lighting system**, where single-point operation controls a facility's many smaller circuits, and all testing and record-keeping of the emergency power equipment is performed from one location.

Meeting stringent requirements in construction and performance, Controlled Power Company's self-diagnostic, self-testing **EON Model EL3 centralized emergency lighting inverter** is UL 924 listed as "Emergency Lighting Equipment" and "Auxiliary Lighting and Power Equipment", as well as NFPA compliant as "Life Safety Equipment".

The **EON** offers more security and versatility to meet illumination requirements, and is the perfect complement for all life safety and lighting applications.

Our inverter technology effectively maintains critical equipment with extended brownout protection, tight voltage regulation, and power conditioning. Tight voltage regulation assures that facility egress lumens are maintained 100% at emergency lighting fixtures, in all modes of operation, and also extends ballast, LED driver, and lamp life.

"Normally Off" Emergency Lights



NOTES: For illustration purposes only; drawing not to scale.

"EON Model EL3" Advantages

Design Flexibility

Using existing fixtures for emergency lighting and egress assures compliance with minimum illumination code requirements. Extensive combinations of input and output voltages, timed off bus with remote "command on" control, automatic battery testing, and control device override options make the **EON** one of the most versatile and dependable lighting inverter systems in the market.

Single Point Operation / Maintenance

One central inverter controls many smaller circuits. Cost-effective, single-point operation provides a common battery pack, and enables all maintenance to be performed and records to be logged from a single location. Additional benefits include:

- Egress lighting integrity test.
- Hot-swappable battery replacement.
- Standard internal bypass.
- Maintenance-free, standard 15-year pro-rated batteries.

Premium Power And Voltage Regulation

Maintains proper operating voltage for HID and high-pressure sodium lighting, as well as electronic ballasts and LED lighting, resulting in:

- Voltage sag and surge protection.
- Longer wire runs without upsizing the wire. Regulated voltage source minimizes voltage drop.
- Less-frequent replacement of ballasts, LED drivers, and lamps.
- Facility egress lumens are maintained 100% (will not diminish) over the full 90 minutes of emergency power.

Generator Compatible

The **EON** is listed "UL 924 Auxiliary Lighting and Power Equipment", and is suitable to provide uninterrupted back-up power, until a generator starts. Even with an extremely distorted input waveform, the output of the **EON** delivers a clean sinewave, with no more than 3% THD, without switching to batteries. This feature also extends ballast, LED driver, and lamp life.

Reduced Utility Expense

Energy conservation continues to be a prevalent issue. The **EON** provides several energy-saving solutions without compromising life safety requirements. Use of our optional **ZoneSaver-2™**, "emergency lighting control unit":

- Allows for local control of emergency lighting fixtures to reduce / eliminate unnecessary night-light circuits and "always on" lighting loads.
- Allows for automatic bypassing of the local control device during NFPA-mandated test periods.
- Provides multiple, independent zone sensing abilities to reduce / eliminate unnecessary multiple-floor and multiple building-wing illumination. (Refer to the illustration to the left.)

All of these advantages result in the best reliability and net performance of your lighting system!

EON DESIGN BENEFITS

As an owner or specifying engineer... why choose the **EON Model EL3** over competing brands? It's a fair question. **We believe that the answer is found in (4) key objectives which needed to be met when we designed this product ... and we would like to share those with you:**

✓ Full Compliance With NFPA 101

The **EON** meets the NFPA 101 definition of a **computer-based, self-testing / self-diagnostic emergency lighting system with data-logging**. Both periodic and annual tests are performed automatically, and the results are logged with a date and time stamp. Both alarm and test logs provide a history of events, and the ability to generate an NFPA-compliant report. The **EON's** online design allows for continuous local and remote monitoring of all internal systems. Any abnormal condition is identified, logged, and immediately communicated.

✓ Reliability, Plus Compatibility

Reliability is the most important feature of any emergency power source! Without it, all the other features and benefits are meaningless. This is why state-of-the-art, DSP-controlled, IGBT circuitry is used for the **EON's** rectifier and inverter power sections. Also essential to the design, are the fiber optic cables for control and communications. Fiber optics allow for better isolation; and faster, more accurate, noise-free signals between processors. The **EON** provides reliable, regulated voltage during normal and emergency power modes.

The **EON** is designed to be compatible with all lighting fixture types, including LED. The **EON** also allows for full design flexibility, used to power both normally on and normally off emergency lighting loads, in any combination. The **EON's** off bus option includes user-programmable transfer on delay, transfer off delay, and a proprietary soft start feature. (See Page 7 for details.)

✓ Smallest Footprint

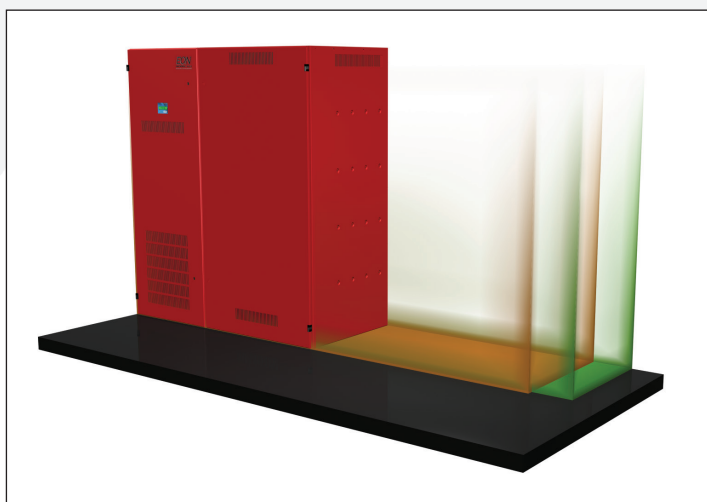
Facility floor space is hard to come by, and is always at a premium. With this in mind, the **EON's** front access cabinet design and single battery cabinet configuration save space! The **EON's** inverter control cabinet and battery cabinet may be installed side-by-side, and up against a wall. **Can you imagine saving 5-6 feet of wall space, making it available for other essential equipment?**

The illustration on this page certainly puts things into perspective!

✓ Easy Installation & Low Cost Of Ownership

The **EON's** 90 minute configuration requires only one (1) battery cabinet, and only batteries with front access terminals are used. This makes installation easy and less time consuming — installation is straightforward and DC connections are easily made.

Cost of ownership is greatly reduced because of single point operation and maintenance, as well as the automatic testing, logging of results, and reporting that are performed. Also know that the **EON** provides the required 90 minutes of run time using a lower number of batteries as compared to most competitors' products. This often results in a lower replacement cost — both time and material.



Note: Illustration depicts product without standard floor channels.

Compact Footprint

The **EON** is thoughtfully designed to be physically smaller than comparable emergency lighting inverter products, without compromising performance or serviceability. In fact, competing products don't even come close! The **EON's** "front access" cabinet design does not require any side or rear access for system installation, operation, or service.

	Output Rating	Width (in.)	Depth (in.)	Height (in.)
EON	33 kW	70	33	77
Competitor A	32 kW	130	32.5	71
Competitor B	33 kW	140	31	72

Note: Dimensions include 90 minutes of battery at full load.

ADVANCED DIGITAL MONITORING

Advanced Digital Monitoring — The Intellistat TS™

The **EON** includes a user-friendly **Intellistat TS™** monitor, which provides quick, full-access to all of the inverter's features, allows all programming to be done directly from the touchscreen display, and provides complete system diagnostics and testing. A color, TFT, high resolution touchscreen display indicates all the electrical parameters, as well as the functional status of the inverter. The touchscreen display allows the entry of the date / time values, system setpoints, and password information into the monitor, without the need for an external computer and cable.

The **Intellistat TS**s features include:

- LCD display of all electrical parameters.
- NFPA-compliant automatic battery testing / logging.
- User-programmable automatic system testing.
- System alarm annunciation.
- Audible alarm with alarm silence.
- Alarm status display.
- Programmable alarm set-points.
- Date and time display.
- Auto-logging of test results and abnormal events.
- Multi-layer password protection.
- Logs up to 75 events.
- Non-volatile clock and memory.
- Remote monitoring capabilities.
- Optional reporting of test results via e-mail / voice / webpage.
- Optional status notification via e-mail / cell phone.

Monitored Parameters

The **Intellistat TS** monitors **3-phase input and output** parameters, and inverter status indicators:

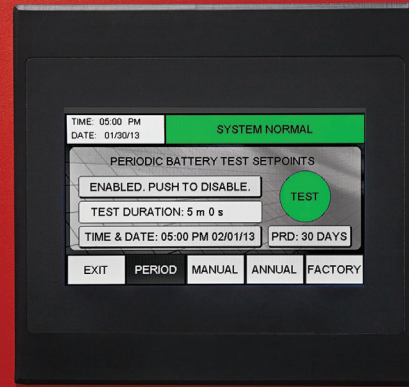
- Voltage
- Frequency
- Current
- VA
- Watts
- Power factor
- kVA and kW totals
- Output percent load L-N (% kVA)
- Output percent load total (% kVA)
- Battery voltage
- Battery charge / discharge current
- Battery time (minutes) remaining

Alarms & Status

The **Intellistat TS** announces multiple alarms, including:

- Input phase rotation error
- High / low input voltage
- High / low input frequency
- High / low output voltage
- High / low output frequency
- High output VA (overload)
- * Low output VA
- High / low battery voltage
- High battery charger current
- System normal
- IGBT fault
- Overtemp shutdown
- System on battery
- Low battery warning
- Low battery shutdown
- Battery test in progress / time remaining
- Auto battery test failed
- Off bus status
- DC charger fail / DC open
- Output circuit breaker open
- REPO shutdown
- Manual restart required
- Static bypass status / alarms
- System in manual bypass

* User-programmable limit referenced during automatic battery testing, to verify integrity of egress lighting.



The color touchscreen display on the **Intellistat TS** provides all electrical parameters, inverter status, programmable inverter and battery testing, and data-logging. Optional **NetMinder™** communications allow for remote monitoring and reporting via **BACnet/IP** or **BACnet MS/TP**, **Ethernet TCP/IP**, **MODBUS TCP**, or **MODBUS RS485**. For more details, see the **Remote Communications** description on Page 7.

Egress Lighting Integrity Test

This feature provides the industry's most advanced life safety system test available. To satisfy NFPA-mandated periodic and annual requirements, the **Intellistat TS** automatically initiates the testing of all life safety circuits, regardless of egress lighting design ("always on" or "normally off"). The **Intellistat TS** then compares power consumption during the test period with user-defined load capacity, analyzes the data, and advises if service is required.

During these NFPA-mandated tests, an optional "test activated" contact may be used to activate one or more remotely installed **ZoneSaver-2** emergency lighting control units. When activated, the **ZoneSaver-2** will feed emergency power to egress lighting that is normally off, or dimmed / turned off via a local control device. This option allows for automatic testing of the locally controlled life safety circuit and the **ZoneSaver-2** control unit.

Automatic System Tests

The **Intellistat TS** automatically performs a user-defined (date and time) 5-minute system test every 30 or 90 days. It also performs user-defined (date and time) 30-, 60-, or 90-minute, or 2- or 4-hour annual system tests. For all of these tests, the **Intellistat TS** logs the test results with date and time, as well as a "pass" or "fail" indication.

Manual System Tests

The **Intellistat TS** also allows the user to manually invoke a user-defined system test for 30-, 60-, or 90-minutes, as well as 2- or 4-hours. A 1-minute or 5-minute manual test is also available for "spot inspections".

SPECIFICATIONS

Power

Ratings (kVA/kW)	10, 13, 14, 15, 16, 17, 20, 22, 24, 26, 28, 30, 32, 33 at 1.0 (unity) power factor
Topology	True online double-conversion, uninterruptible power

Electrical Input

Nominal Voltage	208/120V, 480/277V or 600/347V Wye, 60Hz. Consult factory for 50Hz models
Voltage Range	+10%, -15% at full load
Operating Frequency	+/-5% from nominal
Power Factor	> .98 typical
Current Distortion	< 10% THD

Electrical Output

Nominal Voltage	208/120V, 480/277V or 600/347V Wye, 60Hz. Consult factory for 50Hz models
Voltage Regulation	+/-3% from nominal typical
Frequency	+/-0.5% while in battery operation mode
Overload	Up to: 110% for 2 minutes, 125% for 30 seconds, 150% for 10 seconds, 500% for ½ cycle (without use of static bypass)
Voltage Distortion	3% maximum THD with a linear load
Efficiency	90% typical

Battery

Type	Valve-regulated, sealed lead calcium, maintenance-free. Front access terminals
Testing	Manual: Password-protected Automatic: User-programmable
Standard Runtimes	UL 924 Emergency Lighting Equipment - 90 min. C-UL Emergency Lighting Equipment - 30 min.
Optional Runtimes	UL 924 Auxiliary Lighting and Power Equipment - 15, 30, 60, 120, and 240 minutes. Consult factory for other UL / C-UL listed runtimes.
Nominal Voltage	Factory-programmable from 216-384 VDC, or from 132-168 VDC, kW, model, and runtime dependent
Charger	3-stage, temperature compensated
Recharge Time	UL 924 and NFPA 101, 111 compliant
Battery Replacement	Hot-swappable batteries — replaced without interrupting power to the load

Certifications

Safety	UL 924 Listed - Emergency Lighting Equipment C-UL Listed to CSA C22.2 No. 141-10 - Emergency Lighting Equipment UL 924 Listed - Auxiliary Lighting and Power Equipment NFPA 101, 111, NEC, and local codes
EMI Compliance	FCC Class A limits, 47 C.F.R. Part 15, Subparts A, B
Quality	ISO 9001:2008

General

Diagnostics	Continuous system self-check, including battery health
Static Bypass	Automatic bypass on overload or system failure
Internal Bypass	Integral, make-before-break switch with a secure push-to-turn function that provides an uninterrupted bypass of the inverter system
Maintenance Bypass	Optional external, wall-mounted, wrap-around, 4 pole BBM or MBB switch with a secure push-to-turn function, available for models where input-output nominal voltages are the same
Remote Emergency Power Off (REPO)	Optional input relay interface allows external contact closure to shut off the inverter system
Normally Off Bus	Optional standby output for use with "normally off" emergency lighting fixtures (See Page 7 for details)
Output Distribution	Optional output circuit breakers (See Page 7 for details)
Dimensions/Weight	See model number matrix on Back Cover for weights, and Page 6 for cabinet dimensions

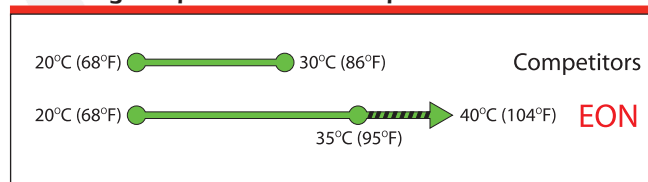
Communications

LCD Display	High resolution, color touchscreen display for monitoring system status and parameters, and to access programmable inverter and battery testing
Communication Port	RS232 serial communications for factory setup and authorized field service access
Network / Web	Remote monitoring and reporting via optional BACnet/IP or BACnet MS/TP, Ethernet TCP/IP, MODBUS TCP, or MODBUS RS485. Includes notification of alarms via SNMP, e-mail, and network broadcast messaging, or user's building management system
Relay Interface	Optional potential-free isolated status and alarm contacts via hardwired terminal strip. Contacts rated for 2A at 30 VDC, or 1A at 120 VAC

Environmental

Operating Temperature	20°C to 35°C for UL 924 Listed models (See illustration and note below.) 20° C (10° C optional) to 40° C for C-UL Listed models Optimum battery performance and life at 25°C
Storage Temperature	Inverter at -20°C to 50°C Battery storage at 25°C for 6 months before charging is required. For each 9°C rise, reduce storage time by half
Relative Humidity	0 to 95% non-condensing
Audible Noise	< 60 dBA at 1 meter
Altitude	6600 feet (2000 meters) without derating

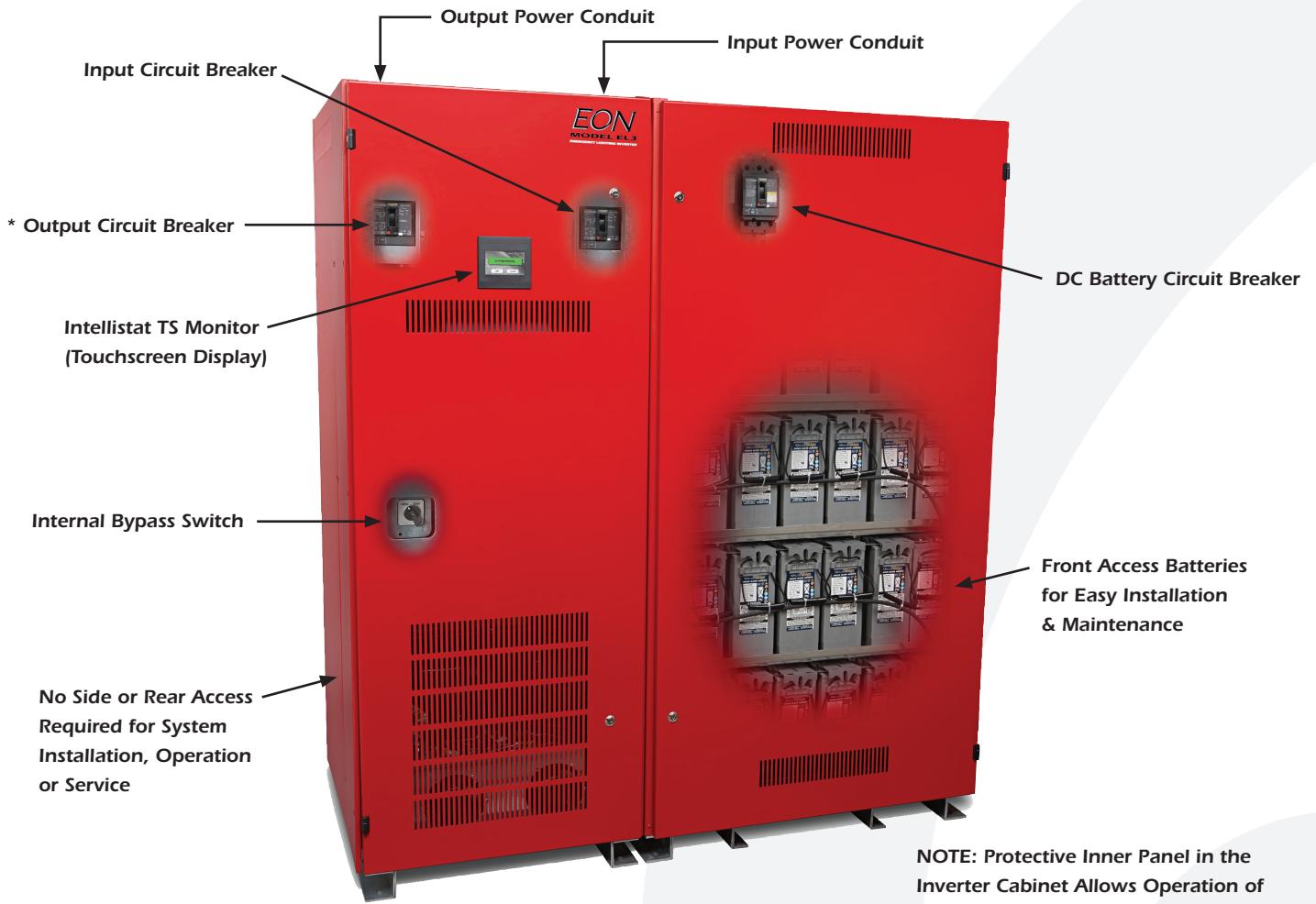
UL Rating Temperature Test Comparison



NOTE: To satisfy UL 924 requirements for a 35°C rating, UL testing was performed in a 40°C ambient environment, with units tested under full load and at low line input voltage.

PRODUCT LAYOUT & DIMENSIONS

Advantages of the Front Access "EON Model EL3"



NOTE: Protective Inner Panel in the Inverter Cabinet Allows Operation of Breakers & Bypass, But Prevents Physical Contact with Live Connections

NOTES: The callouts above reflect standard features.

* Monitored output circuit breaker standard on C-UL listed models, optional on UL 924 listed models.



Cabinet Configuration A



Cabinet Configuration B



Cabinet Configuration C

See Back Cover for specific inverter models and their cabinet configuration.

INVERTER OPTIONS

Battery Run Times

All UL 924 models listed as Emergency Lighting Equipment are provided with a standard 90 minutes of battery backup; and C-UL models are provided with a standard 30 minutes. Consult factory for other C-UL listed run times. Optional run times include 15, 30, 60, 120, and 240 minutes at full rated load. When optional run times are provided, the emergency lighting inverter is UL 924 listed as "Auxiliary Lighting and Power Equipment". Consult factory for battery option weights and cabinet configurations.

Maintenance Bypass

On systems in which the nominal input and output voltages are the same, an optional external, wall-mounted, push-to-turn, 4 pole Break-Before-Make (BBM) or Make-Before-Break (MBB) wrap around maintenance bypass switch is available. When in bypass mode, the switch bypasses the system to allow for isolation of the inverter's input and output, and to enable the inverter to be fully serviced (including the complete maintenance and replacement of circuit cards or components). The bypass switch includes an auxiliary contact to indicate the position of the switch (normal or bypass) for remote monitoring purposes.

The MBB bypass switch has a second auxiliary contact which is wired to the inverter system. This contact enables the switch's push-to-turn function to invoke the static bypass before the switch is turned to the bypass position. With the static bypass engaged, no interruption of power to the load will occur during transfers and retransfers.

Output Distribution

Provided in a side-mounted, 14" wide, front access distribution cabinet, a total of 12 pole positions per phase (36 total) are available to accommodate 1, 2, and 3 pole circuit breakers fed from an inverter system output of 208/120 VAC or 480/277 VAC. These circuit breakers are located behind a secured, lockable, hinged door; and can be factory-wired to the "Normally On" bus and/or "Normally Off" bus in any combination specified.

Monitored output circuit breakers are available, reducing the number of pole positions to 8 per phase (24 total). If a circuit breaker is open, the **Intellistat TS** monitor sounds an alarm. Optional alarm relay contacts are also available.

Normally Off Bus

Provides standby power to "normally off" emergency lights when utility power is lost or inadequate, or if energized via a remote alarm contact. This option includes:

User-Programmable Settings

Transfer On Delay (0 – 8 seconds)
Transfer Off Delay (0 – 15 minutes)
Soft Start Control (0 – 172 cycles)

Remote Input "Command On"

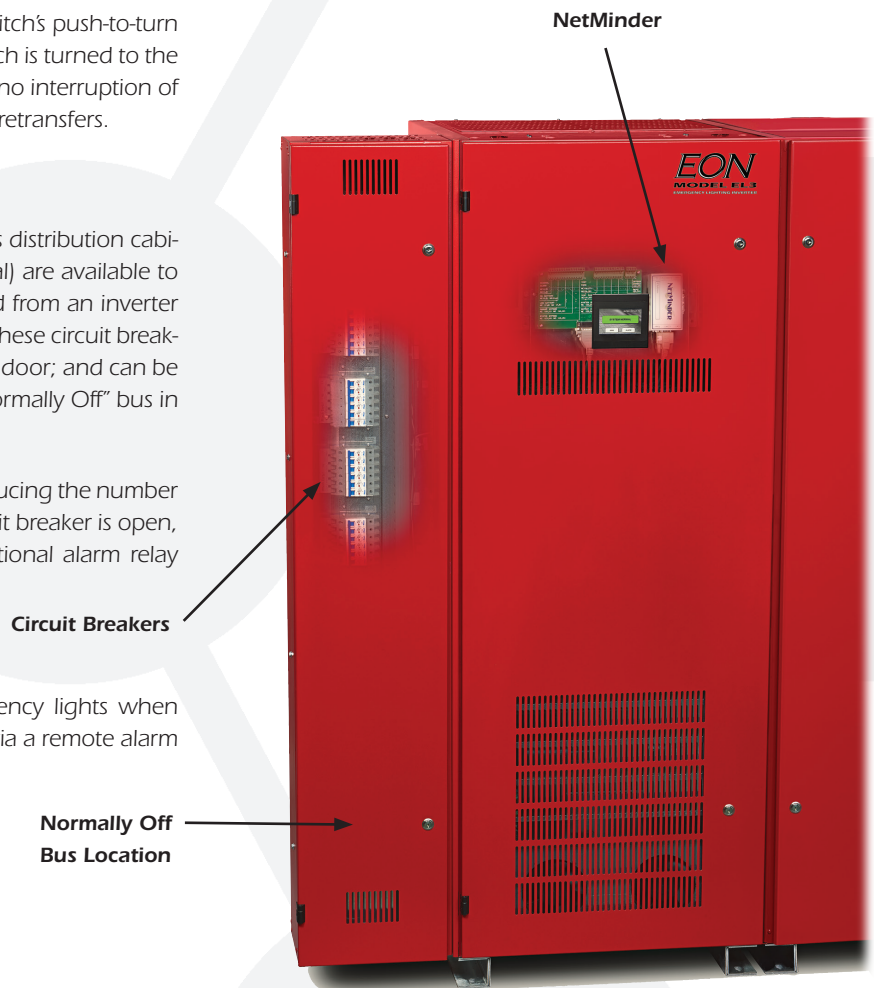
Allows a remote alarm contact signal to energize the "Normally Off" bus, thus illuminating the "normally off" emergency lights.

Status / Alarm Relay Contacts

Isolated, potential free (Form C) relay contacts, rated for 2A at 30 VDC or 1A 120 VAC, are available via a terminal strip for customers' hardwired connections to building monitoring and security systems. Status / alarm contacts include inverter on, on battery power, low battery, general alarm, in bypass, periodic or annual test activated, output circuit breaker open, battery test pass, and battery test fail.

Remote Communications

The **EON's Intellistat TS** monitor is available with optional **NetMinder** communications. **NetMinder** integrates the **EON** into a BACnet/IP or BACnet MS/TP, Ethernet TCP/IP, MODBUS TCP, or MODBUS RS485 network with a specific IP address for Ethernet connected systems. **NetMinder** provides remote monitoring of the inverter status, battery test pass/fail results, alarm conditions, and electrical measurements via a web browser, without the need for any external software. Remote notification of alarms and status are available via SNMP, e-mail, and network broadcast messaging, or the user's building management system.



PRODUCT SELECTION GUIDE

MODEL NUMBER GUIDE

PRODUCT	INPUT	OUTPUT	FREQ	OUTPUT kVA / kW	MONITOR	BATTERY	OUTPUT DISTRIBUTION	RELAY INTERFACE OPTIONS
EON	L = 208/120V N = 480/277V V = 600/347V	L = 208/120V N = 480/277V V = 600/347V	X = 60Hz	10 22 13 24 14 26 15 28 16 30 17 32 20 33	0 = Intellistat Intellistat with 1 = TCP/IP or MODBUS TCP 2 = MODBUS RS 485 3 = BACnet/IP 4 = BACnet MS/TP	S = 90 min C = 30 min N = Other Battery Option	0 = Integral Main CB Only 1 = Distribution Cabinet 2 = Distribution Cabinet w/Normally Off Bus	0 = None Provided 1 = Output Alarm Relay Contacts, and Off Bus "Command On" & REPO Inputs 2 = Off Bus "Command On" & REPO Inputs Only

Model Number Example: EON - NNX - 33KW - 2S11

NOTES: 30 minute battery option available on C-UL Listed models. Consult factory for output branch circuit breaker options provided within the distribution cabinet.

EON MODEL NUMBERS						
UL 924 MODELS WITH 90 MINUTE BATTERY	kVA / kW	WEIGHTS (LBS) ¹			BTU'S / HOUR ² FULL LOAD	CABINET CONFIGURATION ³
		208/120V IN 208/120V OUT	480/277V IN 208/120V OUT	480/277V IN 480/277V OUT		
EON—**X—10KW—*S**	10	2828	3708	3120	3410	208/120 VAC Input = A 480/277 VAC Input = B
EON—**X—13KW—*S**	13	3200	4068	3642	4433	
EON—**X—14KW—*S**	14	3350	4306	3880	4774	
EON—**X—15KW—*S**	15	4634	4416	3642	5115	B
EON—**X—16KW—*S**	16	4634	4416	4118	5456	
EON—**X—17KW—*S**	17	4872	4654	4356	5797	
EON—**X—20KW—*S**	20	5502	5168	4356	6820	480/277 VAC Output = B 208/120 VAC Output = C
EON—**X—22KW—*S**	22	5702	5368	5270	7502	C
EON—**X—24KW—*S**	24	5940	5606	5270	8184	
EON—**X—26KW—*S**	26	6267	5934	5508	8866	
EON—**X—28KW—*S**	28	6159	5826	5400	9548	
EON—**X—30KW—*S**	30	6659	6326	5900	10230	
EON—**X—32KW—*S**	32	6959	6626	6200	10912	
EON—**X—33KW—*S**	33	7259	6926	6200	11253	

VOLTAGE CONFIGURATIONS		
**X = INPUT — OUTPUT VAC, 60 Hz		
LL = 208/120 - 208/120	LN = 208/120 - 480/277	LV = 208/120 - 600/347
NL = 480/277 - 208/120	NN = 480/277 - 480/277	NV = 480/277 - 600/347
VL = 600/347 - 208/120	VN = 600/347 - 480/277	VV = 600/347 - 600/347

NOTES: Each model includes 90 minutes of battery back-up time, per UL 924 Emergency Lighting Equipment. Battery run times other than 90 minutes are available under UL 924 (Auxiliary Lighting and Power Equipment) and C-UL (for Canada) – consult factory.

¹ Unit weights include the weight of the batteries for standard 90 minute runtime. Battery weights vary according to desired runtimes – consult factory for runtimes other than 90 minutes.

² Stated full load BTU's for 480/277 VAC input – output models. Consult factory for BTU's of other models.

³ Cabinet configurations reflect 90 minutes of battery back-up time, and are determined by the number and model of batteries used. Consult factory for cabinet configurations of models with other runtimes. (See Page 6 for cabinet configuration dimensions.)

emergency lighting inverters.

www.TotalOnlineProtection.com

WARRANTY: Controlled Power Company guarantees the inverter to be free from defects in material and workmanship for a period of (2) years following shipment from the factory. Inverters installed within the contiguous United States (lower 48 states) and Canada include a startup service, after which a 1st year factory authorized on-site labor warranty is provided. Batteries are covered under a 1-year full, 14-year pro-rated warranty. Consult factory for details.

 **CONTROLLED POWER COMPANY**
"World's recognized authority in power treatment"

 **TOTAL ONLINE PROTECTION**
CRITICAL POWER SERVICES

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