

Egress Lighting Solutions Brochure Addendum Centralized Emergency Lighting Inverters

This **Controlled Power Company** brochure addendum references the major codes and standards that pertain directly to the selection and application of emergency lighting inverters in Canada.

In Canada, the requirements for emergency power and egress lighting are defined in the “National Building Code of Canada (NBCC) 2010”. Within the “NBCC 2010 Division B, Appendix A”, buildings are given major occupancy classifications and segmented into Groups A through F. These groups are then referenced in “Division B, Part 3” which provides emergency power runtime definitions (2 hours, 1 hour, and 30 minutes) based on a building’s height and classification, as well as the number and location of its occupants.

Examples of Major Occupancy Classifications: “NBCC, Division B, Appendix A, Article A-3.1.2.1.(1)”

Group A - Arenas, Churches, Movie Theaters,
School Classrooms

Group B - Assisted Living Facilities, Hospitals, Jails,
Penitentiaries

Group C - Apartments, Dorms, Hotels, Monasteries

Group D - Banks, Dental / Medical Offices, Police Stations
Without Detention Quarters

Group E - Department Stores, Exhibition Halls, Supermarkets

Group F - Aircraft Hangars, Factories, Feed Mills,
Warehouses

Note: **Controlled Power Company’s** single- and three-phase centralized emergency lighting inverters are all rated for the minimum battery runtime of 30 minutes required by CSA Standard C22.2 No. 141. Extended runtimes defined by the NBCC are available, consult factory for UL and C-UL listings.

The table above provides examples of buildings within the Major Occupancy Classifications Groups A – F of the “NBCC 2010, Division B, Appendix A”, and below are excerpts from “Division B, Part 3”, which support our inverters’ compliance with the NBCC code.

3.2.6 Additional Requirements for High Buildings

3.2.6.1. Application

- 1) This Subsection applies to a *building*
 - a) of **Group A, D, E, or F major occupancy** classification that is more than
 - i) 36 m high, measured between *grade* and the floor level of the top *story*, or
 - ii) 18 m high, measured between *grade* and the floor level of the top *story*, and in which the cumulative or total *occupant load* on or above any *story* above *grade*, other than the *first story*, divided by 1.8 times the width in meters of all *exit stairs* at that *story*, exceeds 300,
 - b) containing a **Group B major occupancy** in which the floor level of the highest *story* of that *major occupancy* is more than 18 m above *grade*,
 - c) containing a *floor area* or part of a *floor area* located above the third *story* designed or intended as a **Group B, Division 2 or 3 occupancy**, or
 - d) containing a **Group C major occupancy** whose floor level is more than 18 m above *grade*.

3.2.7 Lighting and Emergency Power Systems

3.2.7.4. Emergency Power for Lighting

- 1) An emergency power supply shall be
 - a) provided to maintain the emergency lighting required by this Subsection from a power source such as batteries or generators that will continue to supply power in the event that the regular power supply to the *building* is interrupted and
 - b) so designed and installed that upon failure of the regular power it will assume the electrical load automatically for a period of
 - (i) **2 h** for a *building* within the scope of Subsection 3.2.6.,
 - (ii) **1 h** for a *building* of **Group B major occupancy** classification that is not within the scope of Subsection 3.2.6., and
 - (iii) **30 min** for a building of any other occupancy. (See Appendix A.)



The NBCC also mandates conformance to the **Canadian Standards Association (CSA) C22.2 No. 141 Standard for Emergency Lighting Equipment**. The two paragraphs directly below highlight some of the requirements of this Standard, and its updates from No. 141-02 through 141-15.

CSA C22.2 No. 141-02, No. 141-10, and the most recent **No. 141-15**, define the requirements of Emergency Lighting Equipment, applicable to exit signs, unit equipment, emergency luminaires, and central power systems. In the event of a failure of the normal power supply, the equipment must provide a minimum of **30 minutes** backup time or longer as specified in the “Lighting and Emergency Power Systems” section of the NBCC. (30 minutes, 1 hour or 2 hours, etc., per NBCC occupancy classification requirements.) To comply with **CSA C22.2 No. 141-10**, central power systems have to include the **indicators (visual/audio) defined in section 4.4.4**. Our lighting inverter’s **“Intellistat”** monitor meets and exceeds the requirements.

CSA C22.2 No. 141-15 (section 4.4.6) further defines Emergency Lighting Equipment with **auto-testing/auto-diagnostic features** as **performing automatic testing** in a period not exceeding 30 days, **providing a visual diagnostic status**, and performing a full duration battery discharge test at least once a year. In addition to the visual diagnostic status, the equipment must optionally have a means to **connect to a supplemental central remote computerized monitoring system**. **Note:** This section of the Standard relates well to the U.S. NFPA 101 “Life Safety Code”, 7.9.3.1.3 – Periodic Testing of Emergency Lighting Equipment. *(See back cover of Egress Lighting Solutions brochure for illustration of our inverter’s automatic testing / reporting capability. Our inverter’s “Intellistat” monitor meets and exceeds the requirements defined in No. 141-15!)*

LIGHTING INVERTER COMPLIANCE

	CSA C22.2 No. 141			
	141-02 Listed	141-10 Listed	141-15 Compliant	141-15 Listed
EON Model EL3 (10kW - 33kW)		✓	✓	
EON Model EL3 (40kW - 55kW)				✓
eLITE Model ELE (16kW - 18kW)		✓	✓	
UltraLITE Model ELU (1.5kW - 14kW)		✓	✓	
UltraLITE Model ELC (600W - 2kW)	✓			

*Models are rated for the minimum of 30 minutes and listed to No. 141-02 and 141-10 at 20°C to 40°C, conform to these standards when supplied with longer runtimes, and either comply with or are listed to No. 141-15 at 20°C to 35°C as **Emergency Lighting Equipment with auto-testing/auto-diagnostic features**. (30-day automatic test duration default settings: 60 seconds for 30 minute-rated models; 5 minutes for runtimes greater than 30 minutes) **Note:** The “eLITE Model ELN” is Listed to UL 924, UL 1778, and C-UL listed to CSA Standard C22.2 No. 107.1-01.*

Centralized Emergency Lighting Inverter vs An Emergency Power Generator

When an emergency power generator is either mandated or is an emergency power source option as allowed by code...additional standards and regulations apply. Pertinent codes and standards include NBCC Article 3.2.7.5, CSA Z32 and Standard C282. The building type and classification will determine use, runtime, fuel and potential on-site fuel storage requirements. Such installations may require more extensive fire proofing, structural, mechanical, and electrical design modifications as compared to a centralized emergency lighting inverter. It is also important to consult with the “authority having jurisdiction” (AHJ) as to local codes.

Summary

Controlled Power Company’s Centralized Emergency Lighting Inverters are agency listed to both U.S. and Canadian standards. All output main and optional branch circuit breakers are monitored to meet CSA Standards. Three-phase configurations are available from 208/120 VAC to 600/347 VAC. Single-phase configurations include a 3-wire 208/120 VAC system, as well as a 347 or 600 VAC input, and a 347/120 VAC output.

Applicable U.S. Codes & Standards:

Article 700 of ANSI / NFPA 70, National Electric Code; NFPA 101, 111; UL 924 “Emergency Lighting Equipment”; and UL 924 “Auxiliary Lighting & Power Equipment”.