

2018 Canadian Electrical Code

SUBJECT: Section 46 – Emergency power supply, unit equipment, exit signs, and life safety systems

Purpose

The purpose of this Standata is to clarify the allowable circuit configurations for exit signs and the activation of emergency lighting when supplied by unit equipment.

Discussion

Industry has requested clarification on the allowable circuit configurations for the installation of unit equipment (emergency lighting) and exit signs. A compliant installation requires application of several code rules together.

The information covered here deals with exit signs and emergency lighting provided from battery power and deals only with internally illuminated exit signs and unit equipment constructed in conformance to CSA C22.2 No. 141 Emergency Lighting Equipment. The following information is provided to assist industry.

Code References

Unit equipment

46-304 Supply connections

- 1) Receptacles to which unit equipment is to be connected shall be not less than 2.5 m above the floor, where practicable, and shall be not more than 1.5 m from the location of the unit equipment.
- 2) Unit equipment shall be permanently connected to the supply if
 - a) The voltage rating exceeds 250 V; or
 - b) The marked input rating exceeds 24 A.
- 3) Where the ratings in Subrule 2) are not exceeded, the unit equipment shall be permitted to be connected using the flexible cord and attachment plug supplied with the equipment.
- 4) Unit equipment shall be installed in such a manner that it will be automatically actuated upon failure of the power supply to the normal lighting in the area covered by that unit equipment.

Exit signs

46-400 Exit signs (see Appendices B and G)

- 1) Where exit signs are connected to an electrical circuit, that circuit shall be used for no other purpose.
- 2) Notwithstanding Subrule 1), exit signs shall be permitted to be connected to a circuit supplying emergency lighting in the area where these exit signs are installed.
- 3) Exit signs in Subrules 1) and 2) shall be illuminated by an emergency power supply where emergency lighting is required by the *National Building Code of Canada*.
- 4) The circuitry serving luminaires used to illuminate exit signs that are not connected to an electrical circuit shall comply with Subrules 1) to 3), as required by the *National Building Code of Canada*.

Issue of this STANDATA is authorized by
the Provincial Electrical Administrator

[Original Signed]

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Objective of these rules

The objective of the rules for emergency lighting and exit signs is to provide a clear and recognizable path of travel for evacuation without persons being impeded or delayed in moving to a safe space. A minimum level of lighting must be maintained during an emergency or in a power failure condition.

Interpretation**CE Code 46-304 (4)**

- CE Code rule 46-304 4) requires unit equipment (emergency lighting) to be installed in such a manner that it will automatically activate upon failure of the power supply to the normal lighting in the same area covered by that unit equipment.
- Connecting unit equipment to a different circuit on the same panelboard as the normal lighting without provisions to automatically activate the unit equipment on failure of the power supply to the normal lighting does not meet the objective of the code.
- In order for emergency lighting to be activated when lighting in the affected area is interrupted, when battery power (unit equipment) is used, it must be on or controlled by the circuit that also serves the normal lighting in that area
- For large open areas with multiple normal power lighting circuits serving these areas, a possible design is to use a dedicated normal power lighting circuit that is connected to luminaires along the means of egress. The unit equipment (emergency lighting) is connected to this dedicated normal power lighting circuit so that it is activated whenever this circuit fails. This ensures that the means of egress will always be adequately illuminated. It is recommended that designs for large areas be reviewed with the local Authority Having Jurisdiction.
- How the circuits can be configured is covered by rule 46-400 which must work in conjunction with the requirements of 46-304 4).

CE Code 46-400

- CE Code 46-400 1) – requires that the power supply for the exit sign be provided from a branch circuit that is used for no other purpose – a dedicated circuit for exit signs only.
- However, 46-400 2) waives the dedicated circuit requirement under specific conditions. The exit sign may also be supplied from a circuit that supplies emergency lighting in the same area where the exit signs are installed. Unit equipment fits into the category of emergency lighting, so a circuit supplying unit equipment could also supply exit signs.
- Another exemption under 46-400 2) for what source circuit can supply an exit sign: In order to meet the requirements of 46-304 4) for unit equipment to activate when the normal lighting in the same area fails, the normal lighting circuit serving that area will typically supply or control the unit equipment. In order to allow this to happen, a key interpretation of 46-400 2) is as follows.
- It is intended by the notwithstanding sub-rule 46-400 2) to allow use of a lighting circuit supplied from the normal ac power source to feed both the normal area lighting and the unit equipment for emergency lighting located in that particular area and to also feed the electrically connected exit signs located in that area.

CE Code 2-100 3) a) Marking of equipment.

- It is important to be able to identify these circuits for testing purposes. At each branch circuit panelboard, equipment is to be marked that it controls emergency lighting unit equipment and/or exit signs.