



SERVICE ENTRANCE RATED ATS AND APPLICATION OF STANDARD AND 100% RATED OVERCURRENT DEVICES

ENGINEERING BRIEF

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As per the National Electrical Code (NEC) and Canadian Electrical Code (CEC) Part I, overcurrent protection is required for all power distribution feeder circuits. When standard rated Automatic Transfer Switches (ATS) are utilized in a system, overcurrent protection devices are required upstream of the ATS on both the generator and utility supplies. For Service Entrance Rated ATS equipment, integral overcurrent protection is required on the utility supply of the ATS when it is used as a Service Entrance device.

Overcurrent devices are typically listed (i.e. certified) with two different overcurrent protection ratings: Standard or optional 100% Rated. The rules for determining the maximum continuous load that can be applied to these two types of overcurrent devices when used in a facility, is governed by the NEC and CEC.

When standard overcurrent devices are selected during the design of a facility, NEC Article 215 and CEC Section 8 state that overcurrent protection for feeders must be sized for the connected load, which is the combination of the continuous loads (i.e. the load that will normally continue uninterrupted for three (3) or more hours) multiplied by a factor of 1.25, plus the non-continuous loads (i.e. the variable and/or intermittent loads).

Example:

Feeder A	200 Amps Continuous Load x 1.25	= 250 Amps
	250 Amps Variable/Intermittent Load	= <u>250 Amps</u>
	Total Load	= 500 Amps

Therefore a 500A standard overcurrent device would be required for Feeder A.

When optional 100% Rated overcurrent devices are selected during the design of a facility, an exception to NEC Article 215 and CEC Section 8 rule can be applied. The exception states that if a 100% rated and marked overcurrent device is used, the rating of the overcurrent device is to be sized for the connected load, which is the combination of the continuous loads (i.e. the load

that will normally continue uninterrupted for three (3) or more hours), plus the non-continuous loads (i.e. the variable and/or intermittent loads) without requiring a 1.25 multiplier for the continuous load component.

Example:

Feeder A	200 Amps Continuous Load	= 200 Amps
	250 Amps Variable/Intermittent Load	= <u>250 Amps</u>
	Total Load	= 450 Amps

Therefore a 450A 100% rated overcurrent device would be required for Feeder A.

The owner/consulting engineer is normally responsible for the following items when designing a facility:

- a) Selecting either standard or 100% rated overcurrent protection devices for use in the system.
- b) Calculating the feeder loads per the NEC/CEC rules based on the type of overcurrent device selected.
- c) Selecting the amperage size of all overcurrent devices.
- d) Specifying if optional 100% rated overcurrent devices are required for any feeders.

It is the responsibility of the ATS manufacturer to supply listed (i.e. certified) equipment, which meets the requirements of the project specification that will dictate the use of either standard or 100% rated overcurrent devices in a Service Entrance Rated Automatic Transfer Switch.

Please contact our sales representative network or Thomson Technology factory staff for further information if required.