Combination motor controllers are available with many different short-circuit current ratings (SCCR). Some of the ratings are equal to the rating of the short-circuit protective device (SCPD) used within the combination, while others can be marked with a short-circuit rating greater than that of the SCPD. This is allowable per UL 508 clause 52.2.2.1, which states:

“A circuit breaker with a lower interrupting rating is able to be used when the combination is evaluated and subjected to the appropriate requirements of the Standard for Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures, UL 489.”

Basically, after the combination has been short-circuit tested (evaluated), the circuit breaker must meet the performance requirements of UL 489. This is additionally emphasized in UL 508’s replacement, UL 60947-4-1, specifically clause 9.3.4.2.3.

“UL 60947-4-1 clause 9.3.4.2.3 (plus UL deviation):

9) If a circuit breaker with rated ultimate short-circuit breaking capacity less than combination switching device, the protected starter or the protected switching device is employed, the circuit breaker shall be tested to trip as follows:

1. Circuit breakers with instantaneous trip relays or releases: at 130 percent of the trip current.
2. Circuit breakers with overload relays or releases: at 250 percent of the rated current of the circuit breaker.”

Combination motor controllers within Siemens tiastar™ motor control centers (MCCs) have been evaluated by design tests in accordance with the requirements of UL 845 clause 5.4.2. Like the requirements of UL 508 and UL 60947-4-1, the combination motor controllers found within Siemens LV MCCs have been evaluated by design tests in accordance with the requirements of UL 845 clause 5.4.2.

For example, a combination unit can have a 100 kA at 480 Vac short-circuit current rating even though the branch circuit protective device is a ED63B100 circuit breaker, which only has an interrupting rating of 25 kA at 480 Vac.

These higher levels values can be achieved due to the added impedance of the contactor, internal wiring, and other items that make up an MCC.

The short-circuit current rating of the entire unit can be found on the rating label attached to each MCC unit.
Excerpt from UL 845 Fifth Edition:

“5.4.2 Combination motor control units

A combination motor control unit, for other than variable speed drives, may have a short-circuit current rating greater than the short-circuit current rating of any individual component if evaluated by design tests.

For combination motor control units containing a variable speed drive, the short-circuit current rating shall not be greater than the interrupting rating of the short-circuit protective device. When the short-circuit protective device is an instantaneous-trip circuit breaker, it shall be evaluated by design tests.”

Excerpt from UL 508 Fifth Edition:

“52.2.2 Protective devices

52.2.2.1 For a motor control device or overload relay intended to be used with circuit breakers, the protective devices used for the test are to be sized in accordance with 51.1.3.1 and are to be selected as follows:

a) A circuit breaker installed within a combination motor control device is considered to be representative of all other breakers of the same manufacturer, rating, and frame construction. The interrupting rating of the circuit breaker is to be at least the marked short-circuit current rating of the motor control device.

Exception: A circuit breaker with a lower interrupting rating is able to be used when the combination is evaluated and subjected to the appropriate requirements of the Standard for Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit Breaker Enclosures, UL 489.”

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