Introduction
In order to assure protection of equipment, the system components must be applied within their short-circuit current (withstand) rating in accordance with NEC 110.10. In order to verify this, the system components’ short-circuit withstand ratings must be known and the available fault current must not exceed these values. Often, this requires investigation of product standards and the use of current-limiting devices to assure proper protection of equipment. The proper protection of metering installations will be explored in this article.

Individual Metering Equipment
Metering equipment is listed to UL 414. Per Section 14 of UL 414, the minimum short-circuit withstand rating for meter sockets is 10,000A rms. Meter sockets rated 10,000A rms do not require short-circuit testing. Meter sockets with short-circuit withstand ratings above 10,000A rms must be tested to withstand a peak current of 30,000A. Note: testing does not assure protection of the watt-hour meter.

Table 14.1 of UL 414 lists the available ratings for meter sockets with fuses and circuit breakers. Ratings with Class R, J, and T fuses are available up through 200,000A rms. The ratings with circuit breakers are available only up through 25,000A rms. The rating achieved depends upon the type/class and size of fuse or circuit breaker. Higher ratings with specific circuit breakers are available but require additional testing in accordance with Section 15 of UL 414 and must limit the peak let-through current to 30,000A or less.

Multi-Metering Installations
Multi-metering equipment is listed to UL 67. Per the testing requirements of UL 67, the minimum short-circuit withstand rating of multi-metering equipment is 10,000A rms. Multi-metering equipment rated 10,000A rms does not require short-circuit testing. The overcurrent protective devices in multi-metering equipment with short-circuit withstand ratings above 10,000A rms must be tested to let-through a peak current of 30,000A or less. Note: testing does not assure protection of the watt-hour meter.

Protection of Metering Installations
Because the available fault current for commercial and industrial installations is often in excess of 10,000A rms or 30,000A peak, the overcurrent protective device must either:
(1) Limit the available fault current to a value below the meter socket short-circuit withstand rating, or
(2) Be tested, listed, and marked with the meter socket to have a short-circuit withstand rating equal to or greater than the available fault current.

Protection of metering installations often requires current-limiting devices such as Class J or T fuses. Protection with fuses can be verified by the equipment testing and listing or by the use of let-through charts, to assure the let-through current is less than the short-circuit withstand rating.

Cold Sequence Metering
Some utilities now require cold sequence metering for all commercial and industrial installations. Cold sequence metering is arranged such that overcurrent protection is provided between the utility supply and the meter to provide isolation and protection of the entire metering installation. A hot sequence metering arrangement does not have overcurrent protection between the utility supply and meter. Thus, for hot sequence metering, faults on the load side of the meter, but ahead of the main overcurrent protection, the metering equipment is unprotected.

The diagram below shows a cold sequence metering installation that requires Class J/T fuse protection.

With multi-metering equipment, a main fusible disconnect may need to be limited in size (600A or less) to assure optimum protection of metering equipment. For larger commercial and industrial installations, special fusible metering equipment may be needed. The diagram below shows a typical multi-metering installation with a main fusible disconnect.

Conclusions
With commercial and industrial metering installations, the protection of metering equipment must be verified. In order to provide proper protection, the application of current-limiting fuses may be required. Contact the local utility for specific protection requirements of metering installations.