

Construction Specifications for Littelfuse Indicator Fuses

Note to Specification Writer: The following specifications are for use in bidding documents for new construction projects or major additions having their own electric service. It is a performance specification suitable for use where Federal funds are involved as well as privately funded projects. Because of the unique indicating feature and the operating characteristics of Littelfuse POWR-GARD Products Indicator Series fuses, this specification insures that these fuses are provided. This specification is also suitable for projects where existing fuses will be changed to Indicator fuses. In order to maintain selectivity with other fuses in the system, all fuses must be of the same manufacture.

FUSE SPECIFICATIONS

General

Fuses shall be delivered to the job site in manufacturer's original packaging, and shall be kept in a clean, dry, protected environment until ready for installation. Fuses shall not be inserted in equipment until the equipment is installed in place, completely connected, and tested for insulation integrity. To insure that system coordination and selectivity is maintained, all fuses shall be of the same manufacture. Fuses shall be of the type and ampere rating indicated except where electrical system changes require modification of ampere ratings. In all such cases, the engineer shall be advised and his/her approval obtained prior to any proposed changes.

0.01 Mains, Feeders, and General Purpose branch circuits including Service Entrance Equipment.

0.011 601 to 6000 ampere circuits shall be protected with UL Listed Class L fuses with an interrupting rating of 200,000 amperes. Class L fuses shall have ten seconds time delay at 500% rated current; shall have 99% pure silver fuse links to obtain maximum current limitation; and shall have "O" ring seals between the end bells and the fuse body to prevent sand leakage and improve current limiting ability.

Class L fuses shall be Littelfuse **KLPC** Series fuses.

0.012 0 to 600 ampere circuits shall be protected with UL listed Class R or J time-delay fuses with an interrupting rating of 200,000 amperes. Overload element of dual element fuses shall open at a temperature less than 300 degrees F., and shall be thermally-reversible to withstand repeated cycling.

0.121 600 volt UL Listed Class R fuses shall be true dual-element, time delay and have an indicating feature which clearly indicates when the fuse has opened (blown). Indicating feature shall be completely integral with the main fuse body and shall be clearly visible from front of the fuse when installed in equipment. In order that indicating fuses shall be suitable for use in all equipment, the indicating feature shall not use pop-out pins or similar means for indication. The means of Indication shall completely isolate voltage after operation and be visible when the circuit has been de-energized.

600 volt Class RK1 fuses shall be Littelfuse indicating **LLSRK_ID** series fuses.

600 volt Class RK5 fuses shall be Littelfuse indicating **FLSR_ID** series fuses.

0.122 600 volt UL Listed Class J fuses shall be time delay fuses and have an indicating feature which clearly indicates when the fuse has opened (blown) as herein specified in section 0.121.

600 volt Class J fuses shall be Littelfuse indicating **JTD_ID** series fuses.

0.123 250 volt UL Listed Class R fuses shall be true dual-element, time delay fuses. Fuses shall be of indicating type where possible as herein before specified in section 0.121.

250 volt fuses 30 amperes and below shall be Littelfuse **FLNR** series fuses.

250 volt fuses 35 through 600 amperes shall be Littelfuse **FLNR_ID** series fuses.

0.02 Motor Circuit fuses.

0.021 General. It is the intent of these specifications that each individual motor branch circuit be protected by the minimum fuse ratings which will permit satisfactory operation of the motor without nuisance openings. Maintaining minimum fuse ratings provides maximum protection to the circuit components and reduces damage during fault conditions. Whenever possible, fuses shall be rated as indicated on drawings. If motor characteristics are such that these ratings are not adequate, fuse ratings shall be increased the minimum necessary to permit satisfactory operation of the motor, but in no case shall the maximum fuse ratings exceed those permitted by the National Electrical Code.

0.022 Individual motor branch short-circuit and ground fault protection when NEMA motor controllers are used in the circuit:

0.0221 Motors 440 to 600 volts. Fuses for individual motor branch-circuit protection shall be 600 volt, Class RK1 dual-element indicating fuses as specified in 0.0121 above.

0.0222 Motors 240 volts and below. Fuses for individual motor branch-circuit protection shall be 250 volt, Class RK5 dual-element fuses as specified in 0.0122 above.

0.023 Individual motor branch short-circuit and ground fault protection when IEC motor controllers are used in the circuit and IEC Type 2 coordination, "no damage protection" is required. IEC controllers require maximum current limitation. Most manufacturers of IEC controllers have published tables specifying the fuse classes and maximum fuse ratings which will offer Type 2 protection for their controllers. These ratings shall not be exceeded. Fuses shall be Class J or CC fuses.

0.0231 Class J fuses for Type 2 coordination shall be Littelfuse UL Listed, time-delay Class J indicating fuses; Series **JTD_ID**.

0.0232 Class CC fuses for Type 2 protection shall be Littelfuse UL Listed, time-delay Class CC fuses; Series **CCMR**.

0.024 Fuses in motor control centers (MCC) containing NEMA motor controllers. Provide time-delay Class RK1 or RK5 fuses as herein before specified in those MCC which will accept Class R fuses. Where MCC manufacturers have standardized on Class J fuses, provide time-delay Class J fuses as herein before specified.

0.03 Fuses Protecting Molded Case Circuit Breaker Panelboards

0.031 Fully-rated panelboards. Molded case circuit breaker panelboards having a short-circuit rating equal to or exceeding the available short-circuit current at the point where the panelboard is applied shall be protected with indicating Class RK1 or Class RK5 fuses as herein before specified.

0.032 Series-rated panelboards. Molded case circuit breaker panelboards having short-circuit ratings less than the available short-circuit current at the point where the panelboard is

applied, shall be protected by Class and maximum fuse ratings listed by the panelboard manufacturer for UL series ratings. Whenever possible they shall be time-delay Class RK1 indicating fuses or Class J indicating fuses as herein before specified. Where manufacturers indicate only Class "T" fuses, the fuses shall be Littelfuse 300 volt **JLLN** series for panelboards rated to 250 volts and 600 volt **JLLS** series from 251 to 600 volts.

- 0.04** Lighting fixture protection. Lighting fixture ballasts shall be individually protected on their line side (including internally protected ballasts) to serve as a disconnect means for servicing and to provide additional short-circuit protection. In each instance, fuse size and type shall be as recommended by the fixture or ballast manufacturer.
- 0.041** Fluorescent fixtures. Fluorescent fixtures shall be protected by Littelfuse **LGR** or **LMF** fuses in Littelfuse **LHR** in-line fuseholders or Class CC fuses shall be Littelfuse **CCMR** or **KLKR** located in Littelfuse **571** series fuseholders mounted in a readily accessible position to facilitate changing fuses.
- 0.043** Street lighting, parking lot lighting and other outdoor security lighting. Outdoor lighting shall be protected with Class CC fuses contained in Littelfuse **LEC** series fuseholders.
- 0.05 Spare Fuses and Spare Fuse Cabinet(s)**
- 0.051** Spare Fuses. After project is completed, energized and in service, and all fuses opened during start-up have been replaced, contractor shall deliver to the building management ten percent spare fuses (minimum three) of each size and type fuse installed.
- 0.052** Spare Fuse Cabinet(s). Provide spare fuse cabinet(s) in the quantities indicated or as may be necessary to contain the complete spare fuse inventory. Spare fuse cabinets shall be approximately 36" high by 24" wide and 12" deep with a side hinged door equipped with a gasket to help exclude dust and dirt. Spare fuse cabinets shall be located where indicated by the owner in a location convenient to switchboard(s). Spare fuse cabinet(s) shall be sturdily constructed of welded sheet steel with interior shelf(s); shall be designed to be wall hung; and shall be finished switchboard gray in color. Cabinet door(s) shall be plainly marked "Spare Fuse Cabinet" and shall have provisions for key locking. All cabinets shall be keyed alike.

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