



SECTION 26-24-16 - 27

26 LEV Load Centers

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PART 1 GENERAL

1.1 SCOPE

- A. The Contractor shall furnish and install load centers incorporating circuit breakers of the number, rating and type as specified herein and as shown on the contract drawings.

1.2 REFERENCES

- A. The load center and all components shall be designed, manufactured and tested in accordance with the latest applicable standards of UL and NEMA including:
 - 1. UL 67 –Panelboards
 - 2. UL 50 –Cabinets and Boxes
 - 3. UL 489 –Molded Case Circuit Breakers
 - 4. UL 869 –Service Equipment
 - 5. UL 943 – Ground-Fault Circuit-Interrupters
 - 6. UL 1699 – Arc-Fault Circuit-Interrupters
 - 7. Federal Specification W-C 375B – Circuit Breakers

1.3 SUBMITTALS – FOR REVIEW/APPROVAL

- A. The following information shall be submitted to the Engineer:
 - 1. Component list
 - 2. Dimension outline drawing
 - 3. Knockout configurations
 - 4. Load center ratings including:
 - a. Voltage
 - b. Continuous current
 - c. Short-circuit rating
 - 5. Breaker ratings including:
 - a. Voltage
 - b. Continuous current
 - c. Interrupting ratings
 - 6. Cable terminal sizes
 - 7. Product data sheets

1.4 SUBMITTALS – FOR CONSTRUCTION

- A. The following information shall be submitted for record purposes:
 - 1. Final as-built drawings and information for items listed in Paragraph 1.04, and shall incorporate all changes made during the manufacturing process
 - 2. Wiring diagrams

QUALIFICATIONS

- B. For the equipment specified herein, the manufacturer shall be ISO 9001 certified.
- C. The manufacturer shall have produced electrical products for a minimum period of five (5) years.

1.5 REGULATORY REQUIREMENTS

- A. The load centers shall be UL certified and contain the appropriate UL Mark.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Equipment shall be handled and stored in accordance with the manufacturer's instructions.

1.7 OPERATION AND MAINTENANCE MANUALS

- A. Equipment operation and maintenance manuals shall be provided with each assembly shipped, and shall include instruction leaflets and instruction bulletins for the complete assembly and each major component.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Leviton
- B. □ _____
- C. □ _____

The listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety. Products in compliance with the specification and manufactured by others not named will be considered only if pre-approved by the Engineer ten (10) days prior to bid date.

2.2 RATINGS

- A. Load centers shall be rated for 240 volts ac and shall have short-circuit ratings as shown on the drawings or as herein scheduled, but not less than 10,000 amperes rms symmetrical.
- B. Breakers shall be a minimum of 125-ampere frame. Breakers 15- through 125-ampere trip size shall take up the same pole spacing.
- C. Load centers shall be certified with a UL short-circuit rating. When series ratings are applied with integral or remote devices, a label shall be provided. Series ratings shall cover all trip ratings of installed frames. It shall state the conditions of the UL series ratings including:
 - 1. Size and type of upstream device
 - 2. Branch devices that can be used
 - 3. UL series short-circuit rating

2.3 CONSTRUCTION

- A. Load centers shall be Leviton or approved equal meeting all ratings and features specified herein.
- B. All interiors, with the exception of the branch circuit breakers, shall be completely factory assembled with main breaker or main lugs. Interiors must be field convertible from main breaker to main lugs or vice-versa.
- C. Interiors shall be designed so that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be designed so that circuits may be changed without machining, drilling or tapping.
- D. Only full-size breakers are permitted – No tandems, twins or half breaker will be accepted.

2.4 BUS

- A. Bus bars for the main and cross connectors shall be of copper construction in accordance with UL standards. Busing shall be braced throughout to conform to industry standard practice governing short-circuit stresses in load centers. All connection points shall be tin-plated copper.
- B. Neutral bus shall have a suitable lug for each outgoing feeder requiring a neutral connection that is the same of same ampacity as the branch circuit.

2.5 WIRING/TERMINATION

- A. Phase and Neutral branch wiring up to 4 AWG shall terminate directly to the load center interior without the necessity for circuit breakers.
- B. All wire connectors and terminals shall be of the anti-turn solderless type and suitable for copper or aluminum wire of the sizes indicated. All connectors shall meet the "Requirements for Wire Connectors and Soldering Lugs" UL 486B.
- C. All load centers where marked shall be suitable for use with 60/75 degrees C rated wire.

2.6 CIRCUIT BREAKERS

- A. Circuit breakers shall be 1-inch wide per pole. Multi-pole circuit breakers shall be of a stack pole design to provide electrical phase isolation and have an internal common trip.
- B. The circuit breaker calibration shall not be affected by environmental changes in relative humidity, ambient temperature or altitude. Breaker trip units shall be hydraulic-magnetic type.
- C. All circuit breakers shall be operated by a rocker-type handle and multi-pole circuit breakers shall have an internal common trip mechanism. The circuit breakers shall incorporate trip mechanisms that are mechanically trip-free from the handle.
- D. The circuit breaker trip handle shall provide color coded operational status indication to visually designate: ON, OFF, and TRIPPED.
- E. Load centers shall be suitable for use in systems having a short-circuit capacity as indicated on the drawings.
- F. All terminals shall be listed for use with copper or aluminum conductors. Terminals shall be of the box lug design. The terminals shall meet UL 486B requirements and shall be suitable for use with either 60 degree or 75 degree C wire. (Unless otherwise specified)
- G. Breakers shall be SWD rated and/or HACR rated as required.
- H. Branch breakers shall be full-size and have a range of 15 amperes through 125 amperes. Ground fault breakers for personnel (5 ma) and equipment (30 ma) protection shall be available through 60 amperes: 2 pole breakers as indicated on the drawings.
- I. Where indicated on drawings, supply combination arc fault circuit interrupters (AFCI) or dual-purpose arc fault circuit interrupters with ground fault circuit interruption (AFCI w/GFCI). AFCI breakers shall be conforming to UL Standard 1699 and as defined by Article 210-12 of Section A of the _____ NEC.
- J. Circuit breakers with AFCI &/or GFCI technology shall provide LED indicating lights for clear indication of trip. Dual function (AFCI & GFCI) breakers must provide separate indication to specify an AFCI trip or GFCI trip. AFCI &/or GFCI breakers must indicate trip without resetting the breaker to provide indication.
- K. GFCI circuit breakers must provide true End of Life per UL 943 and not take the breaker exception to 6.30.2 (d) & 6.30.2 (e) by not providing unprotected power in the event the solenoid or SCR fail.
- L. Main Circuit Breakers shall be a molded case design. Main breakers 225 amperes and less shall have a side-to-side toggle mechanism allowing for top or bottom mounting. Main breakers utilizing 4-pole bundled mains are not permitted.

2.7 ENCLOSURES

- A. Load centers shall have NEMA 1 general purpose or NEMA 3R rainproof enclosures as indicated on the drawings and shall be surface mounted, except where noted.
- B. Boxes shall be made from cold rolled code gauge sheet steel having multiple knockouts, except where noted. Raintight boxes shall use galvanized steel or an approved coating system which meets or exceeds standards for outdoor type 3R enclosures. Boxes shall be of sufficient size to provide at least a minimum code gutter space on all sides.
- C. Boxes shall be factory assembled into a single rigid structure.
- D. Provide circuit breaker marking labels and directories.

2.8 FINISH

- A. Boxes and trims shall be finished with a high scratch resistant aesthetically pleasing finish. The finish paint shall be of a type to which field applied paint will adhere.

PART 3 EXECUTION

3.1 INSTALLATION

- A. The equipment shall be installed in accordance with manufacturer's installation instructions.
- B. The equipment shall conform to the NEC and all local codes.

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□ Note to Specification Writer: Insert data in blanks