SECTION 262816.13 - ENCLOSED CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUBMITTAL REQUIREMENTS

A. Product Data

1. For each type include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes. Include current ratings, voltage ratings, short circuit current ratings, accessories, breaker features, trip unit information as appropriate, etc.

PART 2 - PRODUCTS

2.1 MOLDED-CASE CIRCUIT BREAKERS

A. Acceptable Manufacturers: Subject to being equivalent and subject to compliance with requirements, provide product by one of the manufacturers listed below. If not listed, submit as substitution.

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution
3. Siemens Industry, Inc.
4. Square D; a brand of Schneider Electric

B. Characteristics:

1. 50 through 60 Hz., with RMS symmetrical interrupting current rating as required to accommodate the available fault current for the respective application.
2. 250VAC rated, for projects with service-entrance line to line voltage not exceeding 240V.

C. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

D. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Provide adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

E. Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:

1. Instantaneous trip
2. Long- and short-time pickup levels
3. Long- and short-time time adjustments
4. Ground-fault pickup level, time delay, and I2t response

F. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.

G. Ground-Fault, Circuit-Interrupter (GFCI) Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).

H. Features and Accessories:

1. Standard frame sizes, trip ratings, and number of poles.
2. Lugs: Mechanical type, suitable for number, size, trip ratings, and conductor material.
3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
4. Ground-Fault Protection: Comply with UL 1053; remote-powered type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
5. Auxiliary Contacts: One single pole, double throw with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.

2.2 MOLDED-CASE SWITCHES

A. Acceptable Manufacturers: Subject to being equivalent and subject to compliance with requirements, provide product by one of the manufacturers listed below. If not listed, submit as substitution.

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution
3. Siemens Industry, Inc
4. Square D; a brand of Schneider Electric

B. Characteristics:

1. 50 through 60 Hz., with RMS symmetrical interrupting current rating as required to accommodate the available fault current for the respective application.

C. General Requirements: MCCB with fixed, high-set instantaneous trip only, and short-circuit withstand rating equal to equivalent breaker frame size interrupting rating.

D. Features and Accessories:

1. Standard frame sizes and number of poles.
2. Lugs: Mechanical type, suitable for number, size, trip ratings, and conductor material.

2.3 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location. Refer to drawings for NEMA type. Provide the following enclosure types if not noted on drawings, or if not noted otherwise on drawings.

1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
2. Outdoor Locations: NEMA 250, Type 3R.
3. Wash-Down Areas: NEMA 250, Type 4X, Stainless Steel.
4. Other Wet or Damp, Indoor Locations: Type 3R.
5. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

2.4 ACCESSORY COMPONENTS AND FEATURES

A. Provide construction and bracing as required to permit shipping, rigging, etc. of products in any physical position or orientation without compromising product warranty.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install individual wall-mounted units with tops at uniform height unless otherwise indicated, or unless units must be stacked vertically, or unless field conditions otherwise dictate. Where applicable, install enclosed circuit breakers that function as a local disconnecting means within sight of controller position unless otherwise indicated. Size units according to load being served or as noted on drawings, whichever frame size requirement is larger. Provide units with horsepower ratings suitable to the loads where applicable. Install overcurrent protection and accessories as necessary to fulfill requirements of each application as applicable.

END OF SECTION 262816.13