

## SECTION 26 24 16

### PANELBOARDS

#### PART 1 GENERAL

##### 1.01 SUBMITTALS

- A. Product Data: Include outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker arrangement and sizes, cable terminal sizes, enclosure NEMA rating, enclosure type (flush or surface), door type, and product data sheet.

#### PART 2 PRODUCTS

##### 2.01 ACCEPTABLE MANUFACTURERS

- A. Panelboards:
  - 1. General Electric.
  - 2. Eaton.
  - 3. Siemens.
  - 4. Square D.

##### 2.02 MATERIALS

- A. Panelboards:
  - 1. Panelboard assembly:
    - a) Bolt on, circuit breaker type, cabinet front with concealed trim clamps, door-in-door construction and flush lock, finished in manufacturer's standard enamel. Provide with silver-plated copper bus rated at 120/208V or 277/480V, 1Ø3W or 3Ø4W. Also provide silver-plated copper ground bus and full size neutral bus. Provide 200% rated neutral bus for panels with non-linear loads. Current rating 100, 125, 225, 250, 400 or 600 amperes with integrated short circuit rating of minimum 10,000 amperes RMS symmetrical at 240V and minimum 14,000 amperes RMS symmetrical at 480V. Interrupting rating of breakers shall not be less than maximum short circuit current available at the incoming line terminals. Panel shall be fully rated. Series rating is not allowed.
    - b) Panelboard types shall be as indicated below for the type of purposes indicated.
      - i) Lighting and Control, 277/480V.
      - ii) General purpose lighting and receptacles, 120/208V.
      - iii) Power distribution, 277/480V.
    - c) Provide flush or surface cabinet front as required with concealed hinges and trim concealed adjusting screws, hinged door-in-door construction with each door containing a flush lock all keyed alike. Provide 6 keys. Finish in manufacturer's standard gray enamel. Door-in-door enclosure shall contain two quarter-turn latches. Provide concealed hinge front to cover wiring gutter and wiring access areas. Provide a lockable hinged door with semi-concealed hinges to cover access to circuit breakers.
    - d) Two-section panelboards shall be constructed in the same manner as stand-alone panelboards. The hinged covers shall not cover the adjacent panelboard.
    - e) Non-linear load panelboards shall be provided in areas with heavy computer loads. These panelboards shall be provided with 200% rated neutrals, isolated grounds, and be fed from K-rated transformers.
    - f) All terminations shall be suitable for copper wire or cable and rated for use with conductors rated for 75 degree C.
    - g) Provide main circuit breaker on panels that are part of a riser distribution.
  - 2. Molded Case Circuit Breakers:

- a) Provide full size bolt-on, quick-make and quick-break, trip indicating circuit breakers with integral thermal and instantaneous magnetic trip in each pole. Provide circuit breakers listed as type SWD for applications where load will be switched at panelboard.
  - b) Piggyback breakers are not allowed. Single-pole breakers shall be a full module size, two poles shall not be installed in a single module.
  - c) Lighting and receptacle branch circuit breakers shall be minimum 20 ampere.
  - d) Shunt-trip breakers shall have coil rated to match control circuit input voltage.
  - e) GFCI breakers for equipment protection, such as de-ice systems or snowmelt systems shall be 30mA type.
  - f) Where main breakers are required, they shall be bolted to the ends of the main busses. Back-connected breakers and branch-mounted breakers are prohibited.
3. Load Centers: Load centers are prohibited.
  4. TVSS:
    - a) Provide Type 2 Surge Protective Device (SPD) for panels with heavy computer loads or other non-linear loads.
    - b) Provide Type 2 Surge Protective Device (SPD) for panels connected to emergency system per code requirements.
    - c) Do not provide SPD on panelboards if main electrical switchboard has a SPD unit, except where required by code for emergency systems panelboards.
  5. Provide set screw secured circuit breaker lockout devices for all branch breakers serving security systems, clock systems, fire alarm systems, kitchen hood control panel, or telephone and telecommunications equipment.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Install panelboards plumb. Install flush in finished areas.
- B. Provide directory cards, typed, showing each branch circuit load with spares and space written neatly in erasable pencil. Provide a note on the directory card indicating the size of the upstream overcurrent protection, feeder size, and feeder conduit size.
- C. For every three (3) unused spaces and/or three (3) spare breakers, stub one (1) 3/4" empty conduit out of flush-mounted panelboards into accessible areas.
- D. Provide identification of panelboards and wiring per Section 260553 Identification for Electrical Systems.
- E. Require phase balancing and show phase balancing to within 20 percent on the record drawings of completed panelboard installation.

**END OF SECTION 26 24 16**