

Special Specification 6448

Panelboards



1. DESCRIPTION

Furnish and install distribution and lighting and appliance branch circuit panelboards of the types and ratings shown on the plans or as directed. Include all accessories and appurtenances as indicated or as required for proper equipment operation.

Ensure the Item meets Buy America requirements.

1.1. Definitions. The following definitions apply:

- Distribution panelboard: Panelboard with main lugs or overcurrent protective device rated at no greater than 1,200 Amperes, typically with 10% or less of the branch devices being single pole.
- Lighting and appliance panelboard: Panelboard with main lugs or overcurrent protective device rated at no greater than 600 Amperes, typically with 60% or more of the branch devices being single pole.

2. REFERENCES

Perform the work in accordance with the following:

- Item 618, "Conduit,"
- Item 620, "Electrical Conductors," and
- Special Specification, "Testing, Training, Documentation, Final Acceptance and Warranty."

3. SUBMITTALS

Submit manufacturer's standard product data and project-specific shop drawings.

3.1. Product Data. Include complete data for all circuit breaker ratings and accessories used in panelboards as shown on the plans.

3.2. Shop Drawings. For each panelboard in the project, include:

- equipment rated voltage,
- integrated equipment rating,
- enclosure finish and NEMA type,
- detailed enclosure dimensions, including anchor points, conduit entrance locations and requirements,
- circuit breaker frame sizes and trip ratings, including time-current curves, and
- nameplate legends.

4. MATERIALS

Ensure each panelboard is a factory-assembled, dead-front, metal-enclosed assembly conforming to the applicable requirements of NEMA standard PB-1.1 and UL standards, complete from incoming line-side terminations to load-side terminations. Ensure each panelboard bears the UL label. Enclose panelboards that are indicated or designated for indoor use with enclosures that comply with NEMA-1. Ensure conductors are properly terminated per NEC and manufacturer's requirements. Use panelboards that have electrical ratings and configurations as shown on the plans or as directed.

- 4.1. **Integrated Equipment Ratings.** Use equipment with the following integrated ratings:
- 480Y277 V and 480 V/3-phase equipment: At least 35,000 Amperes interrupting current (AIC) root mean square (RMS), or as shown on the plans.
 - 208Y120 V, 208 V/3-phase and 120/240 V/single-phase equipment: At least 10,000 AIC RMS.

Do not use series-ratings of equipment associated with specific overcurrent-protection devices to achieve integrated equipment ratings.

- 4.2. **Panelboard Cabinets.** Form panelboard cabinets of code-gauge galvanized steel. Form front panels of code-gauge cold rolled steel that has been bonderized after fabrication. Use "door-in-door" style cabinet front panels for lighting and appliance panelboards that are mounted to cabinets with concealed hinges and means of adjustment, with the door-in-front panel providing access to the overcurrent protective devices.

Mount cabinet front panels for distribution panels to the cabinet using concealed hinges and means of adjustment. Multi-panel front panels are unacceptable. Ensure surface-mounted panelboards have front panels that match the dimensions of the cabinet face. Use the manufacturer's standard grey enamel to finish the front panel.

Use flush-mounted locks with master-keyed cylinders for all cabinet fronts.

- 4.3. **Panelboards.** Provide panels with main lugs as scheduled or otherwise shown on the plans or as directed. Provide panel termination types coordinated with conductor terminations. Provide panelboards with copper busses of the ratings scheduled, designed to accommodate all indicated devices and spaces, complete with taps and trim.

Size busses to limit temperature rise within the panelboard enclosure to 50°C above an ambient temperature of 40°C. Provide properly rated equipment ground busses in all panelboards. Ensure panelboards indicated to have isolated ground busses also have neutral busses rated at 100% of the phase bus rating.

- 4.4. **Overcurrent Protective Devices.** Provide bolt-on type, thermal-magnetic trip circuit breakers with common trip handle for all poles. For distribution panel circuit breakers, provide adjustable electronic trip circuit breakers to aid in total system coordination.

5. CONSTRUCTION

- 5.1. **Installation.** Using a calibrated torque wrench, tighten all bus connections and all accessible mechanical fasteners, after placing switchboard as shown on the plans, in accordance with the manufacturer's written instructions and NEMA PB-2.1, "General Instructions for Proper Handling, Installation, Operation, and Maintenance Deadfront Distribution Switchboards Rated 600 Volts or Less."

Inspect the completed installation for physical damage, proper alignment, anchors, and ground connections. Measure the insulation resistance of each bus section phase-to-phase and phase-to-ground for 1 min. each, following NEMA and NEC requirements for resistance deviations. Adjust all operating mechanisms for free mechanical movement; adjust trip and delay settings to the provided values.

6. MEASUREMENT

This Item will be measured by each panelboard shown on the plans, complete-in-place, connected, energized, tested, and made fully operational.

7. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Panelboard." This price will be full compensation for

all equipment described or required under this Item, and for furnishing all labor, equipment, tools, materials, and incidentals necessary to complete the work.