

SECTION 16470000.P01
LIGHTING AND APPLIANCE
PANELBOARDS - A-SERIES®

PART 1 GENERAL

A. The requirements of the Contract, Division 1, and Division 16 apply to work in this Section.

1.01 SECTION INCLUDES

A. Lighting and appliance panelboards

1.02 RELATED SECTIONS

A. 16475, Overcurrent Protective Devices

1.03 REFERENCES

The panelboards and protection devices in this specification are designed and manufactured according to latest revision of the following standards (unless otherwise noted).

A. ANSI 61

B. ANSI/NEMA KS 1, Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts)

C. ANSI/NEMA PB 1, Panelboards

D. ANSI/NFPA 70, National Electrical Code

E. ASTM - American Society of Testing Materials

F. CSA C22.2 No. 29, Panelboards and Enclosed Panelboards

G. CSA C22.2 No. 5.1, Molded Case Circuit Breakers

H. Federal Specification W-C-375, Rev. B, Amend. 1, Circuit Breakers, Molded Case; Branch Circuit and Service

I. Federal Specification W-P 115, Rev. C, Panel, Power Distribution

J. NEMA AB 1, Molded Case Circuit Breakers and Molded Case Switches

K. NEMA PB 1.1, General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less

L. UL 489, Molded-Case Circuit Breakers and Circuit-Breaker Enclosures

M. UL 50, Enclosures for Electrical Equipment

N. UL 67, Panelboards

O. UL 943, Ground-Fault Circuit-Interrupters

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1.04 DEFINITIONS

A. Overcurrent Protective Device -- a circuit breaker pole or single fuse. Example: a 2-pole device is considered 2 protective devices.

1.05 SYSTEM DESCRIPTION

A. Short circuit rating of panelboards shall be the interrupting rating of lowest rated device in the panel or applicable UL series rating for proper main and branch device combinations.

B. Panelboards shall have a maximum of 42 protective devices per panel, including sub-feeders and excluding main overcurrent protective devices. For more than 42 devices, 2 or more panelboards are required.

C. With 2 or more panelboards, sub-feed lug or thru-feed lugs shall be used in all but 1 section of each panelboard. Lugs shall have same capacity as incoming mains. Cable inter-connections shall be field installed.

D. Protective devices shall be molded case circuit breakers.

1.06 SUBMITTALS

A. Manufacturer shall provide copies of following documents to owner for review and evaluation in accordance with general requirements of Division 1 and Division 16:

1. Product Data on specified product;
2. Shop Drawings on specified product;
3. Certified trip curves for each specified product;

1.07 PROJECT RECORD DOCUMENTS

A. Maintain an up-to-date set of Contract documents. Note any and all revisions and deviations that are made during the course of the project.

1.08 OPERATION AND MAINTENANCE DATA

A. Manufacturer shall provide copies of installation, operation and maintenance procedures to owner in accordance with general requirements of Division 1 and Division 16.

B. Submit operation and maintenance data based on factory and field testing, operation and maintenance of specified product.

1.09 QUALITY ASSURANCE (QUALIFICATIONS)

A. Manufacturer shall have specialized in the manufacture and assembly of lighting and appliance panelboards for [50] years.

B. Lighting and appliance panelboards shall be listed and/or classified by Underwriters Laboratories in accordance with standards listed in Article 1.03 of this specification.

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C. Installer has specialized in installing lighting and appliance panelboards with [minimum _ years documented experience].

1.10 REGULATORY REQUIREMENTS

1.11 MOCK-UPS (FIELD SAMPLES)

1.12 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect, and handle products in accordance with recommended practices in manufacturer's Installation and Maintenance Manuals.

B. Deliver each lighting panelboard in individual shipping cases for ease of handling. Each panelboard shall be wrapped for protection.

C. Inspect and report concealed damage to carrier within specified time.

D. Store in a clean, dry space. Maintain factory protection or cover with heavy canvas or plastic to keep out dirt, water, construction debris, and traffic. (Heat enclosures to prevent condensation.)

E. Handle in accordance with NEMA and manufacturer's written instructions to avoid damaging equipment, installed devices, and finish.

1.13 PROJECT CONDITIONS (SITE ENVIRONMENTAL CONDITIONS)

A. Follow (standards) service conditions before, during and after panelboard installation.

B. Lighting and appliance panelboards shall be located in well-ventilated areas, free from excess humidity, dust and dirt and away from hazardous materials. Ambient temperature of area will be between minus [30] and plus [40] degrees C. Indoor locations shall be protected to prevent moisture from entering enclosure.

1.14 SEQUENCING AND SCHEDULING

1.15 WARRANTY

A. Manufacturer warrants equipment to be free from defects in materials and workmanship for 1 year from date of installation or 18 months from date of purchase, whichever occurs first.

1.16 MAINTENANCE SERVICE

A. Furnish complete service and maintenance of lighting and appliance panelboards for [{1 year}{5 years}] <specify other service contract time period> from date of substantial completion.

B. Include _____.

1.17 EXTRA MATERIALS

A. Provide [{parts}{spares}] as indicated in drawings.

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1.18 FIELD MEASUREMENTS

A. Make all necessary field measurements to verify that equipment shall fit in allocated space in full compliance with minimum required clearances specified in National Electrical Code.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. General Electric Company products have been used as the basis for design. Other manufacturers' products of equivalent quality, dimensions and operating features may be acceptable, at the Engineer's discretion, if they comply with all requirements specified or indicated in these Contract documents.

2.02 EQUIPMENT

A. Furnish General Electric A-Series® Lighting Panelboards, Type [{"AL"}{"AQ"}{"AE"}{"AD"}] (or equal) as indicated in drawings.

2.03 COMPONENTS

Refer to Drawings for: actual layout and location of equipment and components; current ratings of devices, bus bars, and components; voltage ratings of devices, components and assemblies; and other required details.

A. Ratings

1. Lighting and appliance panelboards shall be rated as indicated in drawings.
2. Maximum current ratings for mains, sub-feeds and branches, respectively, shall be specified in drawings.

B. Enclosure

1. Boxes shall be a nominal [20] inches wide and [6] inches deep with wire bending space per National Electric Code.
2. Fronts shall be reinforced steel with concealed hinges and concealed trim adjusting screws. Trim clamps are unacceptable.
3. All door locks shall be corrosion proof Valox (or equal) with retractable latches. All door locks shall be keyed for a single key.
4. Clear Lexan (or equal) directory card holders shall be permanently mounted on front door.
5. All panelboard series ratings shall be prominently displayed on dead front shield.
6. Interiors shall permit top or bottom incoming cables.

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C. Bus bars

1. Bus bars shall be phase sequenced, fully insulated and supported by high impact Noryl (or equal) interior base assemblies.
2. Bus bars shall be mechanically supported by zinc finished galvanized steel frames to prevent vibration and damage from short circuits.
3. Terminations shall be UL tested and listed and suitable for UL [copper] [aluminum] wire.
4. Provide [1] continuous bus bar per phase. Each bus bar shall have sequentially phased branch circuit connectors for [plug-in for type AL or] bolt-on branch circuit breakers. Bus bars shall be rated as indicated in drawings.
5. Split solid neutral bus shall be plated and located in main compartment for all incoming neutral cables to be same length.
6. Lugs shall be rated for 75 degree C terminations.
7. Main lugs for copper conductors shall be [bolted] [compression] lugs. Lugs for aluminum conductors shall be compression lugs.
8. Lug bodies shall bolt in place.

D. Circuit Breakers

1. Molded case circuit breakers shall be < [plug-in] { and } { or } { bolt-on } > devices for 120/240V panels and shall be bolt-on for 277/480V panels.
2. All circuit breakers shall have thermal and magnetic trip elements in each pole.
3. [2] [3] pole breakers shall have internal common trip crossbars for simultaneous tripping of each pole.
4. Circuit breakers shall not be restricted to any mounting location due to physical size.
5. All branch breakers 15 to 100 amperes shall be able to be mounted in any panel position for twin or double mounting without space penalty. Sum of ratings for 2 such twin mounted devices shall not exceed 180 amperes.
6. Main and sub-feed circuit breakers may be vertically or horizontally mounted.
7. Branch breaker panelboard connections shall be copper to copper.
8. All panelboard terminations shall be rated as indicated in drawings.
9. All breakers shall have an over center mechanism and be quick make and quick break.
10. All breakers shall have handle trip indication and a trip indicator in window of circuit breaker housing.
11. Breaker handle and faceplate shall indicate rated ampacity.
12. Circuit breaker escutcheon shall have standard ON/OFF markings.

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13. Main breakers shall be UL listed for use with: Shunt, Under Voltage, and Ground Fault Shunt Trips; Auxiliary and Alarm Switches; and Mechanical Lug Kits.

14. Branch breakers shall be UL listed for use with: Shunt Trips, Auxiliary and Alarm Switches.

E. Contactors shall be mechanically held [{GE Type CR160MC} {ASCO Type 920}] (or equal).

2.04 ACCESSORIES

A. Contactor control relays

B. Tork (or equal) time clocks

C. Locking devices for < {breakers } {and } {or } {operating handles} >.

D. Furnish nameplates for each device as indicated in drawings. Color schemes shall be as indicated on drawings.

< {E . Provide Transient Voltage Surge Suppression } system as specified in Section 16479010. >

2.05 TESTING

2.06 FINISH

A. Boxes shall be corrosion resistant, zinc finish galvaneal.

B. Fronts shall be powder finish painted ANSI 61 gray.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that A-Series® panelboards are ready to install.

B. Verify field measurements are as [{shown on Drawings} {instructed by manufacturer}].

C. Verify that required utilities are available, in proper location and ready for use.

D. Beginning of installation means installer accepts conditions.

3.02 LOCATION

3.03 INSTALLATION

Additional provisions and editing may be required for this part.

A. Install per manufacturer's instructions.

B. Install required safety labels.

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3.04 FIELD QUALITY CONTROL

- A. Inspect installed panelboards for anchoring, alignment, grounding and physical damage.
- B. Check tightness of all accessible mechanical and electrical connections< with calibrated torque wrench>. Minimum acceptable values are specified in manufacturer's instructions.
- C. Test each key interlock system for proper functioning.

3.05 ADJUSTING

- A. Adjust all <{circuit breakers}{, }{access doors}{, }{operating handles}> for free <{mechanical}{ and / or }{electrical}> operation as described in manufacturer's instructions.

3.06 CLEANING

- A. Clean interiors of panels to remove construction debris, dirt, shipping materials.
- B. Repaint scratched or marred exterior surfaces to match original finish.

END OF SECTION