

SECTION 16481 ENCLOSED MOTOR CONTROLLERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Manual motor starters.
- B. Combination magnetic motor starters.

1.2 REFERENCES

- A. ANSI/NEMA ICS 6 - Enclosures for Industrial Controls and Systems.
- B. NEMA AB 1 - Molded Case Circuit Breakers.
- C. NEMA ICS 1 - Industrial Control Devices, Controllers, and Assemblies.

1.3 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 16010.
- B. Provide product data on motor starters and combination motor starters, relays, pilot devices, and switching and overcurrent protective devices.

1.4 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Section 16010.
- B. Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

PART 2 - PRODUCTS

2.1 MOTOR STARTERS

- A. Acceptable Manufacturers.
 - 1. *Square D.*
 - 2. *General Electric.*
 - 3. *Siemens.*
 - 4. *Allen-Bradley.*
 - 5. Substitutions: Or Approved Equal.
- B. Manual Motor Starters:
 - 1. Fractional Horsepower Manual Starter: NEMA ICS 2; AC general-purpose Class A manually operated, 1 pole, full-voltage controller for fractional horsepower induction motors, with thermal overload unit, and toggle operator.
 - 2. Enclosure: ANSI/NEMA ICS 6; Type 1 for interior locations, Type 4 for exterior locations.

- C. Magnetic Motor Starters:
 - 1. Magnetic Motor Starters: NEMA ICS 2; AC general-purpose Class A magnetic controller for induction motors rated in horsepower.
 - 2. Full Voltage Starting: Non-reversing type.
 - 3. Coil Operating Voltage: 120 volts, 60 Hertz.
 - 4. Size: NEMA ICS 2; size as shown on Drawings.
 - 5. Overload Relay: NEMA ICS 2; bi-metal.
 - 6. Enclosure: NEMA ICS 6; Type 1 for interior locations, Type 3R for exterior locations.
 - 7. Combination Motor Starters: Combine motor starters with motor circuit protector disconnect in common enclosure.
 - 8. Auxiliary Contacts: NEMA ICS 2; two and field convertible contacts in addition to seal-in contact.
 - 9. Control Transformers: 240V : 120V; 0.5 kVA, primary fused.
 - 10. Indicating Lights: NEMA ICS 2; RUN: green in front cover.
 - 11. Selector Switches: NEMA ICS 2; HAND/OFF/AUTO in front cover.
 - 12. Relays: NEMA ICS 2.

- D. Controller Overcurrent Protection and Disconnecting Means:
 - 1. Motor Circuit Protector: NEMA AB 1; circuit breakers with integral instantaneous magnetic trip in each pole.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install motor control equipment in accordance with manufacturer's instructions.
- B. Select and install heater elements in motor starters to match installed motor characteristics.
- C. Motor Data: Provide neatly typed label inside each motor starter enclosure door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating.
- D. Mount combination type motor starters locally to equipment being served, with top at 60 inches (maximum) above adjacent floor, with not less than 36 inches clearance in front of starter (floor to ceiling).

END OF SECTION 16481