

SECTION 230937

ENCLOSED MOTOR CONTROLLERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Manual motor starters.
- B. Magnetic motor starters.
- C. Combination magnetic motor starters and disconnects.

1.2 RELATED SECTIONS

- A. Section 23 05 29 - Supporting Devices.
- B. Section 23 05 53 - Mechanical Identification: Engraved nameplates.
- C. Section 26 28 13 - Fuses.

1.3 REFERENCES

- A. NFPA 70 - National Electrical Code.
- B. NECA "Standard of Installation", published by National Electrical Contractors Association.
- C. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches.
- D. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays Rated Not More Than 2000 Volts AC or 750 Volts DC.
- E. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices.
- F. NEMA ICS 6 - Industrial Control and Systems: Enclosures.
- G. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
- H. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems (International Electrical Testing Association).

1.4 SUBMITTALS

- A. Submit under the provisions of Division 01.
- B. Product Data: Provide catalog sheets showing voltage, controller size, ratings, and size of switching and overcurrent protective devices, short circuit ratings, dimensions, and enclosure details.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.

1.5 SUBMITTALS AT PROJECT CLOSEOUT

- A. Submit under the provisions of Division 01.
- B. Maintenance Data: Replacement parts list for controllers.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with a minimum of three (3) years' documented experience.

1.7 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and indicated.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. General Electric.
- B. Square D.
- C. Westinghouse.
- D. Substitutions: Under the provisions of Division 01.

2.2 MANUAL CONTROLLERS

- A. Manual Motor Controller: NEMA ICS 2, AC general-purpose Class A manually operated, full-voltage controller with overload element, red pilot light, N.O. auxiliary contact, and toggle operator.
- B. Fractional Horsepower Manual Controller: NEMA ICS 2, AC general-purpose, Class A, manually operated, full-voltage controller for fractional horsepower induction motors, with thermal overload unit, red pilot light, and toggle operator.
- C. Motor Starting Switch: NEMA ICS 2, AC general-purpose Class A manually operated, full-voltage controller for fractional horsepower induction motors, without thermal overload unit, with red pilot light and toggle operator.
- D. Enclosure: NEMA ICS 6; Type as required to meet conditions of installation.

2.3 AUTOMATIC CONTROLLERS

- A. Magnetic Motor Controllers: NEMA ICS 2, AC general-purpose Class A magnetic controller for induction motors rated in horsepower.
- B. Two Speed Controllers: Include integral time delay transition between FAST and SLOW speeds.
- C. Coil operating voltage: 120 volts, 60 Hertz.

- D. Overload Relay: NEMA ICS; bimetal.
- E. Enclosure: NEMA ICS 6, Type as required to meet conditions of installation.

2.4 PRODUCT OPTIONS AND FEATURES

- A. Auxiliary Contacts: NEMA ICS 2, 2 each normally field convertible contacts in addition to seal-in contact.
- B. Cover Mounted Pilot Devices: NEMA ICS 2, standard duty oiltight type.
- C. Pilot Device Contacts: NEMA ICS 5, Form Z, rated A150.
- D. Indicating Lights: LED type.
- E. Selector Switches: Rotary type or as indicated.
- F. Relays: NEMA ICS 2.
- G. Control Power Transformers: 120 volts secondary, 100-wa minimum, in each motor starter. Provide fused primary and secondary, and bond unfused leg of secondary to enclosure.

2.5 DISCONNECTS

- A. Combination Controllers: Combine motor controllers with protector non-fusible switch disconnect in common enclosure. Obtain IEC Class 2 coordinated component protection.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Installation of enclosed controllers by Division 26, in accordance with the manufacturer's instructions.
- B. Install enclosed controller's plumb. Provide support in accordance with Section 26 05 29.
- C. Height: 4 ft. to operating handle.
- D. Provide fuses for fusible switches; refer to Section 26 28 13 for product requirements.
- E. Select and install overload heater elements in motor controllers to match installed motor characteristics.
- F. Provide engraved plastic nameplates under the provisions of Section 23 05 53.
- G. Provide neatly typed label inside each motor controller door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating. Place label in clear plastic holder.

END OF SECTION