

SECTION 26 29 00
ENCLOSED IEC MAGNETIC CONTROLLERS, MOTOR

PART 1 - GENERAL

1.1 SCOPE

- A. Enclosed IEC horsepower rated magnetic non-combination starters and contactors for single and three phase induction type motors rated up to 60 Hp @ 575 VAC.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract apply to this section.

1.3 SUBMITTALS

- A. Submit shop drawings and product data for approval and final documentation in the quantities listed according to the Conditions of the Contract. All transmittals shall be identified by customer name, customer location and customer order number.

1.4 RELATED STANDARDS AND COMPLIANCES

- A. The motor controllers shall be manufactured and tested according to the latest applicable standards and compliances of the following agencies and directives:
 - 1. NFPA 70 – National Electrical Code.
 - 2. NEMA ICS 6 - Industrial Control Enclosures
 - 3. UL60947-4-1 – Harmonized UL and IEC standards for Industrial Control Equipment.
 - 4. Restriction of Hazardous Substances (RoHS)
- B. Unit(s) must be certified by the following agencies:
 - 1. cULus

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Engage a firm with at least 60 years experience in manufacturing motor controllers.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in factory labeled packages.
- B. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from potential damage from weather and construction operations. Store so condensation will not form on or in controller and if necessary, apply temporary heat where required to obtain suitable service conditions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. The Motor Controllers shall be manufactured by Siemens or pre-approved equal. Approved manufacturers are as follows:
 - 1. SIEMENS
 - 2. []

2.2 NON-COMBINATION TYPE MAGNETIC MOTOR CONTROLLERS (SIEMENS Class 3RE4 or EQUAL)

A. Overview

1. Description: UL60947-4-1 horsepower rated IEC magnetic controller for induction motors rated in horsepower
2. Controller type: **[Select from below]**
 - a. ***[Non-reversing starter, 1-phase, 2-pole]***
 - b. ***[Non-reversing starter, 3-phase, 3-pole]***
 - c. ***[Reversing starter, 1-phase, 3-wire, 2-pole]***
 - d. ***[Reversing starter, 3-phase, 3-pole]***
 - e. ***[Non-reversing contactor, 1-phase, 2-pole]***
 - f. ***[Non-reversing contactor, 3-phase, 3-pole]***
 - g. ***[Reversing contactor, 1-phase, 3-wire, 2-pole]***
 - h. ***[Reversing contactor, 3-phase, 3-pole]***
3. Power Contacts shall be:
 - a. Composed of silver alloy.
 - b. Totally enclosed in contactor housing.
 - c. Double break.
4. Coil operating voltage: ***[24] [120] [208] [240] [277] [480] [600] [] volts [60] [] Hz; [24 VDC]***
5. Wiring: Straight-through wiring with all terminals clearly marked.
6. Overload Relay: **[Select a or b below]**
 - a. ***[Ambient Compensated Bimetal with the following features:***
 - 1.) ***Built-in trip Class 10 heater elements***
 - 2.) ***Current adjustment***
 - 3.) ***Built-in normally closed and normally open contacts***
 - 4.) ***Automatic and manual reset***
 - 5.) ***Visual trip indication***
 - 6.) ***Manual test***
 - 7.) ***Phase failure sensitivity***
 - 8.) ***Provision for an optional sealable cover to prevent tampering***
 - 9.) ***Provision for optional remote reset]***
 - b. ***[Solid-State with the following features:***
 - 1.) ***Selectable trip Class 5, 10, 20 and 30***
 - 2.) ***4:1 current adjustment range***
 - 3.) ***Built-in normally closed and normally open contacts***
 - 4.) ***Automatic and manual reset***
 - 5.) ***Visual trip indication***
 - 6.) ***Test function and self-monitoring***
 - 7.) ***Phase failure and unbalance protection***
 - 8.) ***Provision for an optional sealable cover to prevent tampering***
 - 9.) ***Electrical remote RESET integrated***
 - 10.) ***Internal ground fault detection (selectable)***
 - 11.) ***Internal power supply]***
7. Enclosure: NEMA ICS 6, Type ***[1] [3/3R/4/12] [4X 304 SS] [], [as indicated] [as required to meet conditions of installation].***

B. Accessories

1. Pilot Devices: 22mm cULus Certified with NEMA type rating matching or exceeding that of the enclosure in which the device will be mounted on. Contacts shall be constructed with silver alloy. Contacts shall be rated for 5 – 500 V AC/DC and a thermal current of 10

- A. Contacts shall have a mechanical service life and electrical endurance of 10,000,000 operations.
 - a. Pushbutton: *[Start – Stop] [Fwd - Rev - Off]*
 - b. Selector Switch: *[Hand/Off/Auto] [Off/On] [Fwd/Off/Rev]*
 - c. Indicating Light(s): *[Red On] [Green Off]]*
- 2. Auxiliary Contacts: Maximum current rating of 10 A, *[1] [2]]* normally open and *[1] [2]]* normally closed contacts in addition to the seal-in contact.
- 3. Control Power Transformers: *[480] [240]]* volt primary and *[120]]* volt secondary, *[_VA minimum, in each motor starter] [as scheduled.]* Provide fused *[primary and] secondary* and connect non-fused leg of secondary to enclosure.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The Contractor shall install all equipment in accordance with the contract drawings and manufacturers recommendations and manuals.
- B. Install enclosed controllers where indicated, in accordance with manufacturer's instructions.
- C. Install fuses in fusible switches.
- D. *[Overload relays shall be dial set to match installed motor characteristics.]*
- E. Adjust all circuit breakers, switches, access doors and operating handles for free mechanical and electrical operation as described in manufacturer's instructions.
- F. Clean interiors of all enclosed electrical equipment to remove construction debris, dirt and shipping materials.
- G. Repaint scratched or marred exterior surfaces to match original finish.

3.2 ADJUSTMENTS AND CLEANING

- A. The Contractor shall perform necessary field adjustments to place the equipment in final operating condition. The settings shall be in accordance with the approved protective device coordination study or as directed by the Engineer.

3.3 TESTING

- A. Perform factory and installation tests in accordance with applicable NEC, NEMA and UL requirements.

3.4 WARRANTY

- A. Equipment manufacturer warrants that all goods supplied are free of non-conformities in workmanship and materials for one year from date of initial operation, and not more than eighteen months from date of shipment.

END OF SECTION