

## SECTION 26 29 13

## ENCLOSED MOTOR CONTROLLERS

## PART 1 - GENERAL

## 1.1 SECTION INCLUDES

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

## 1.2 RELATED SECTIONS

- A. Section 26 00 00 – General Electrical Requirements.

## 1.3 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.

## 1.4 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Division 01 and Section 26 00 00.
- B. Provide product data on motor starters and combination motor starters, relays, pilot devices, and switching and overcurrent protective devices.

## 1.5 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Division 01 and Section 26 00 00.
- 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 (combination motor starters).
  - 1. *Cerus Industrial*
  - 2. Substitutions: Or approved equal.
- B. Acceptable Manufacturers (manual motor starters).
  - 1. *Square D*

2. *General Electric*
  3. *Siemens*
  4. Substitutions: None permitted.
- C. 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.
- D. Combination Motor Starters
1. Motor Starter shall be enclosed in a Type 1 or Type 4 UL rated enclosure. Type 1 enclosure shall include pre-cut holes for conduits with removable plugs.
  2. Motor Starter shall be rated for NEMA class B motors for AC-3 switching and AC-4 switching. Starter shall be sized to equivalent NEMA rating for AC-3 switching.
  3. Controls and annunciation shall include Hand- OFF- Auto keypad with 20 mm snap dome actuation. Keypad shall be water tight and liquid tight. LED indication shall include Hand, Off, Auto, Run and Overload. Overload reset shall be available by holding Hand and Off for five seconds.
  4. Control inputs shall include: Auto Wet input, Auto Dry input, Permissive Auto input, Damper Status Input and Override Input. Automatic control inputs shall be capable of accepting a transistorized input without the need for interposing relays. Wet control inputs shall accept AC or DC inputs from 10 to 138VAC or DC.
  5. Damper control shall be built into the starter to provide 24VAC or 120VAC damper control and monitoring.
  6. Override input shall disable the starter from operating in either Hand or Auto mode.
  7. Protective Functions-
    - a. Electronic Overload shall provide phase failure and phase loss protection, stall, and class 1 - 30 selectable overload protection. Phase failure protection shall initiate when phase loss is greater than 70% for 3 seconds or phase unbalance is greater than 50% for more than 5 seconds.
    - b. Cycling fault protection shall be integral to the starter. Cycling fault shall be enabled whenever the starter is cycled more than 1000 times in a one hour period. This feature shall be selectable to be disabled. Cycling fault shall cause overload LED to blink rapidly.
  8. Motor Starters shall be equipped with an integral Motor Circuit that is UL listed 508. The breaker and shall carry a UL 508F rating (up to 100A frame size) which provides for coordinated short circuit rating for use with the motor contactor and provides an interrupting rating for the breaker and contactor combination.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install motor control equipment in accordance with manufacturer's instructions.
- B. Provide motor controllers at equipment as specified under Section 26 00 00.

- 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 26 29 13