

Section 16483000
ASTAT-CD™
Reduced Voltage Starters

PART 1.03 REFERENCES

- A. ANSI/NFPA 70, National Electrical Code
- B. CSA
- C. NEMA ICS 1, Industrial Control and Systems: General Requirements
- 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 6, Industrial Control and Systems: Enclosures
- F. UL 508, Industrial Control Equipment
- G. UL 845, Motor Control Centers

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 MANUFACTURED ASSEMBLIES

A. Furnish solid-state reduced voltage starters GE Type ASTAT-CD™ (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. Electrical characteristics shall be as indicated in drawings.
- B. Applications (typical): belted equipment, centrifuges, centrifugal fans, compressors, conveyors, crushers, extruders, fans/blowers, mixers, packaging equipment, pumps, textile machinery.
- C. Starter shall include the following components:
 - 1. Control panel:
 - a. 4 character digital alphanumeric display panel;
 - b. 4- button control keypad to program controller and select parameters to view;
 - c. 4 DIP-switches to control optional functions: 7 and 14 percent jog speed, communications, linear ramp, no load motor detection.
 - 2. Terminal strips:

Section 16483000
ASTAT-CD™
Reduced Voltage Starters

- a. 4 terminal strip for control power input;
- b. 7 terminal output strip for 3 auxiliary relays: Programmable Start (Run)/Alarm (Fault); Up to Speed; DC Brake:
 - 1) Output relay ratings shall be NEMA B300.
 - 2) DC ratings shall be for alarm purposes only.
- c. 12 terminal input strip: Start; Stop (Reset); Jumper override of energy Saver; Jog slow speed, (if used); Jumper to motor thermistor; 0-5 VDC tachometer, (if used);
- d. Communications port for [{RS - 422}{RS - 485}] connection plug.

D. Control characteristics

1. Starting

- a. Initial voltage (pedestal): 30 to 95 percent line voltage
- b. Initial (starting) torque: 10 to 90 percent full voltage starting torque
- c. Kick start: 95 percent line voltage (90 percent full voltage starting torque) adjustable 0 to 999 milliseconds
- d. (Full load) Motor current: 40 to 100 percent rated starter current
- e. Current limit: 100 to 450 percent motor full load current
- f. Acceleration ramp time: 0 to 999 seconds (240 seconds maximum without tachometer feedback)

2. Running

- a. Energy savings: reduce output volts according to power factor of running motor to optimize system energy usage
- b. Override energy savings: output voltage set equal to input voltage

3. Stopping

- a. Coasting: Power removed from motor with no soft stop or DC brake.
- b. Brake time by ramp: Soft stop, 1 to 999 seconds, adjustable, independent of starting ramp (longer than coast down time).
- c. Brake time by DC injection: DC brake, adjustable 0 to 99 seconds (set no longer than actual stop time).
- d. Braking current by DC injection: adjustable, 50 to 250 percent of motor full load current.

4. Options

Section 16483000
ASTAT-CD™
Reduced Voltage Starters

- a. Linear ramp: 0 to 999 seconds, tachometer feedback required, DIP-switch 3 selected.
- b. Slow speed: Full load current, at 7 or 14 percent speed, (DIP-switch 4 selected) 120 second time limit for either slow speed

E. Protection functions

1. Current limit: 100 to 450 percent motor full load current
2. Overload (I^2t): as indicated in contract figures
3. Loss of input phase: Trip at 3 seconds
4. Thyristor short circuit: Trip at 200 milliseconds
5. Heat sink overheating: Trip at 200 milliseconds (setpoint 80 plus or minus 5 degrees C, reset 50 plus or minus 10 degrees C)
6. Motor thermistor: Trip at 200 milliseconds with resistance above 2800 to 3200 ohms, resets when resistance drops below 750 to 1000 ohms
7. Loss of output phase: Trip at 3 seconds
8. Stalled rotor: Trip at 200 milliseconds
9. Supply frequency error: motor will not start unless frequency in 48 to 62 Hz range.
10. No motor load: 10 seconds (DIP switch 2 selected)
11. CPU error: 60 milliseconds
12. Memory: last 4 error codes
13. Long start time: twice accelerating time, 240 seconds maximum
14. Long slow speed time: 120 seconds

F. Features

1. SCR repetitive peak inverse voltage rating: 1600 V
2. Transient protection: Metal oxide varistors
 - a. QC2F through QC2M - 120 joule protection devices
 - b. QC2N through QC2QS - 220 joule protection devices

G. Display functions and codes

1. 19 basic functions (plus 3 for factory use)
2. 11 display running codes
3. 17 display error codes

Section 16483000
ASTAT-CD™
Reduced Voltage Starters

H. Communication (Optional)

1. Transmission mode: [{RS-422}{RS-485}], [{2}{4}]-wire, semiduplex, 1:N
2. Transmission method: Asynchronous (1 bit start, 1 bit stop, 8 bit ASCII data, selectable parity: odd, even, none.)
3. Baud rate: selectable as indicated in drawings.
4. Error detection: Parity and CHECKSUM
5. Maximum distance: 3300 feet (1000 meters)
6. Maximum number ASTAT™ stations on network: 16

2.04 ACCESSORIES

2.05 TESTING N/A

2.06 FINISH