

# SMC-3, SMC Flex, and SMC-50 Smart Motor Controllers

Bulletin 150

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## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
SMC-50 User Manual, publication <a href="#">150-UM011</a>	Provides complete user information for SMC-50 controllers.
SMC Flex User Manual, publication <a href="#">150-UM008</a>	Provides complete user information for SMC Flex controllers.
SMC-3 Installation Instructions, publication <a href="#">150-IN004</a>	Provides installation instructions for SMC-3 controllers.
Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a>	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, <a href="http://www.rockwellautomation.com/global/certification/overview.page">http://www.rockwellautomation.com/global/certification/overview.page</a>	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at <http://www.rockwellautomation.com/global/literature-library/overview.page>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.



## Overview

Rockwell Automation offers a wide array of starting solutions that range from electromechanical to solid-state. Products that use these methods include across-the-line starters, Smart Motor Controllers (SMC™s), and variable frequency drives.

## SMC Controllers

Allen-Bradley SMC controllers are micro-processor based soft starters that are designed to maximize the efficiency of motor starts and stops. SMC controllers are designed to operate 3-phase motors. They feature built-in overload protection and use six silicon-controlled rectifiers (SCRs) (two per phase) to vary the conduction period and control the voltage (and thus, the torque) to the motor during starting, running, and stopping.

Once the motor has been started and is up to speed, full input voltage is applied to the motor. At this point, units with internal bypass power structures bridge the SCRs with their integral bypass contacts, which are rated for AC1 current levels. Bridging the SCR minimizes heat and allows a smaller product for space-conscious applications. In solid-state power structures, the SCRs are always in the circuit switching current. This allows increased robustness for harsher environments (such as shock-type loads) and more aggressive duty cycles.

Allen-Bradley SMCs are ideal for a wide range of applications. The product family consists of three major offerings.

### SMC-3

Compact design provides true three-phase control, increased intelligence and unmatched performance. Motor and system diagnostics and an electronic overload with adjustable trip class reduce downtime and protect valuable assets.

- Compact footprint
- Easy and secure setup
- Integrated bypass
- Five start/stop modes

### SMC Flex

Modular design features advanced intelligence, performance, and diagnostics; communications flexibility; removable control module, power modules, and fan assembly in a cost-effective package for your demanding production applications.

- Modular for simplified installation and maintenance
- Built-in LCD and keypad or personal computer (PC) software setup
- Integrated bypass
- Nine start/stop modes and three slow-speed modes
- Full metering and diagnostics

### SMC-50

Designed for customer flexibility – advanced monitoring and protection, superior communications capabilities, and energy saver mode help increase efficiency and reduce downtime.

- Application scalability
  - Normal and heavy-duty ratings
  - Expandable I/O and sensor capability
  - Network integration capabilities
- LCD or personal computer PC software setup
- Integrated bypass or solid-state power structures available
- External bypass optional
- Seventeen start/stop modes and three slow-speed modes

## Control Mode Overview

Allen-Bradley SMC controllers have multiple control modes available to control standard 3-phase induction motors, depending upon the product selected. For a full description of the control modes available for each product type, consult the appropriate product user manual.

Control Mode	Description	Diagram	Available With
Soft Start	Output voltage is ramped from user-adjustable initial torque setting out to user selectable start time.		SMC-3 SMC Flex SMC-50
Kickstart	User-selectable voltage boost at startup to break away loads		SMC-3 SMC Flex SMC-50
Current Limit	User-adjustable current limit start by maintaining a constant current to the motor.		SMC-3 SMC Flex SMC-50
Pump Control	Used to reduce fluid surges during starting and/or stopping of a pump.		SMC Flex SMC-50
Sensorless Linear Speed Acceleration and Deceleration	Motor acceleration and deceleration are kept at a constant rate during starting and/or stopping. Presents the least amount of stress on mechanical components.		SMC-50
Torque Control	Provides a torque ramp from user-selectable initial torque setting to user-selectable maximum torque setting over the defined ramp time.		SMC-50
Dual Ramp Start	Ability to select between two start profiles with separately adjustable ramp times and initial torque levels.		SMC Flex SMC-50