



**Allen-Bradley**

**Bulletin 160 "Series C"  
Smart Speed Controllers**

**A Step  
Above  
the Rest**



Bringing Together Leading Brands in Industrial Automation

# A Step Above the Rest

## Bulletin 160 Smart Speed Controller (SSC™) with Sensorless Vector Performance

When the Bulletin 160 SSC was first introduced in the market, its innovative design helped set the standard for future microdrives. With the Series C design, power ratings through 5 HP, 4kW, increased functionality and an enhanced hardware design place the Bulletin 160 SSC a “Step Above the Rest” for small AC drive applications!

## Hardware Design Features



### Feed Through 6-Pole Power Terminals

Simplifies power wiring and grounding practices making the Bulletin 160 SSC the ideal choice for constant speed retrofits.

### Hinged Terminal Guards

Allows easy access to power terminals. Terminal screws can be easily removed for ring lug connections.

### Program Keypad Module

Provides local control and offers access to all program and display parameters.

### DIN Rail or Panel Attachable

Permits quick, low cost installation, fits on standard 35mm DIN rail and follows standard DIN dimensions.

### Programmable Output

(N.O./N.C. contact) Connects to your controls/indicators for monitoring specific drive/load conditions.

### Programmable Terminal Block

Provides flexibility in meeting a variety of applications without requiring additional external control logic.

# A Variety of Styles

## IP20 (Open Style) Drives

Feed through power wiring, DIN rail attachable and small package size make this design the ideal choice for conventional control panel layouts. With an overall width that is unrivaled throughout its power ratings, the control panel size can be greatly reduced resulting in significant cost savings.



*Panel or DIN Rail Attachable*

*0.5 to 3HP, (0.37 to 2.2kW) 3 Phase  
0.5 to 1HP (0.37 to .75kW) 1 Phase  
200-230V AC and 380-460V AC*



*Panel Attachable Only*

*5HP (4.0kW) 3 Phase  
2HP (1.5kW) 1 Phase  
200-230V AC and 380-460V AC*



## IP20 (Chassis Mount) Drives

The externally attached heatsink design reduces the drive's overall power dissipation by approximately 75% compared to the "open style" design. This greatly reduces the overall enclosure size making it an excellent choice for OEM equipment where panel size is limited. The gasketed heatsink assembly meets IP66 (NEMA Type 4/12 or 4X) environmental ratings when installed in an enclosure of like rating.

## IP66 (NEMA Type 4/12 and 4x) Configured Drives

If you are looking for a single source solution to your variable speed requirements, look no further. Our Configured Drives product offering has many standard options such as fused disconnects, pilot lights, selector switches and DeviceNet™ communications to name a few. In addition, custom enclosures and controls are also available to meet your specific requirements.

## Compliance certifications include

- cUL: UL 508C (U.S. and Canada)
- CE Low Voltage: EN60204-1 (Europe)
- CE EMC: EN61800-3 (Europe)
- C-Tick: AS/NZS2064.1 (Australia)

# Excellent Control Flexibility

Simplicity, flexibility and ease of use are the foundation of the Bulletin 160 SSC design. We accomplish this through two control models, Analog Signal Follower and Preset Speed. Each control model has a programmable terminal block providing the flexibility to meet a wide array of applications without the use of external control logic.



## Analog Signal Follower Model

The speed reference can be controlled via a  $\pm 10V$ , 0-10V or 4-20mA analog signal or a remote potentiometer. The following additional control methods can be attained by programming the control terminal block:

- Preset Speed Control – four preset speeds can be attained for applications where only digital inputs are available.
- PI Control – simple closed loop process control can be achieved by using an analog feedback signal as the master speed reference.
- Analog Control with One Preset – the command frequency can be switched from analog to one preset speed via a digital input providing application flexibility.

## Preset Speed Model

For applications where more than four presets are required or additional control flexibility is needed, the Preset Speed Model may be the answer. This model is controlled via three digital inputs that provide eight independent preset speeds and two speed dependent accel/decel ramp times.

## Optional 24V DC Interface Module

Digital control inputs should be either dry contact closure or open collector outputs, however, if 24V control is required an optional interface module can be used to accept 24V “sink logic” inputs.

# Outstanding Application Versatility

**The Bulletin 160 SSC is an excellent choice for applications controlled by an analog signal**

## **Fans & Pumps**

Refrigeration  
HVAC  
Paint Booths  
Metering  
Vent Hoods  
Slurry  
Exhaust  
Injection  
Clean Room (PI)

## **Machine Tool**

Lathes  
Saws  
Milling Machines  
Woodworking  
Drill Presses  
Grinders



*And many other applications where analog control signals are used.*

**In applications where multiple specific preset speeds are required, the Bulletin 160 SSC can be the solution**

## **Manufacturing & Material Handling**

Conveyors  
Monorails  
Packaging  
Trolleys  
Winders  
Palletizers  
Mixers  
Feeders

## **Commercial Applications**

Laundry Machines  
Automatic Car Washes  
Automatic Doors  
Dock Levelers



*And many other applications where digital control inputs are used.*

# Simple Operator Interface

Start up is made simple using one of four different operator interface devices. The four options are:



## Ready/Fault Panel

Provided as standard equipment, this control panel tells the operator whether the drive is *Ready* for operation or if a *Fault* condition is present. An ideal, low cost solution to applications where parameter monitoring is not required and parameter adjustments are unwanted.



## Program Keypad Module

Ordered separately or as a factory installed option, this interface provides the ability to monitor and/or change all drive parameters as well as provide local keypad control (start, stop, reverse). This module also reports specific fault codes, input status and drive status information that can be used in performing diagnostics and troubleshooting.



## Remote Keypad Module

Panel design is simplified using this remote mounted interface. Designed to meet IP65 (NEMA Type 4) requirements, this module can be used in place of separate panel attached control inputs. This reduces installation time and minimizes control wiring.

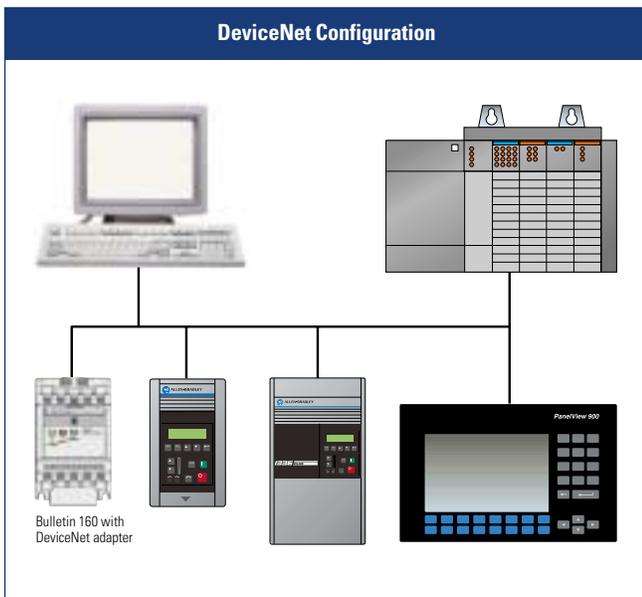


## CopyCat Keypad Module

Parameter programming is simplified using this hand held programming interface. Parameters can be uploaded and downloaded saving valuable installation time and ensuring accurate, repeatable setup.

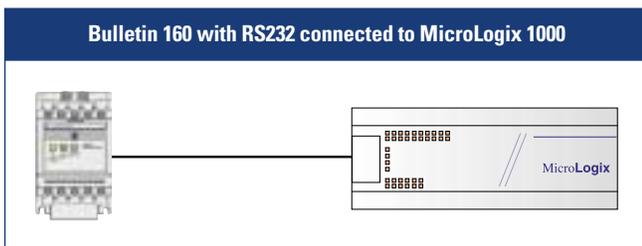
# Cost Effective Communications

Optional DeviceNet™ and RS232 communication modules provide a low cost solution for control and monitoring the drive. These modules attach directly to the front of the drive (in place of the Program Keypad Module or Ready/Fault Panel) adding less than 1" (25mm) to the overall depth. This reduces installation time and saves valuable panel space.



## DeviceNet Communication Module

- EDS files are self-generated (using DeviceNet Manager Software) helping to simplify DeviceNet connectivity.
- Node address and baud rate can be set via DIP switches.
- DIP switch factory defaults allow node address and baud rate to be configured via the network.
- Offers tremendous flexibility to interface with various Allen-Bradley Products.

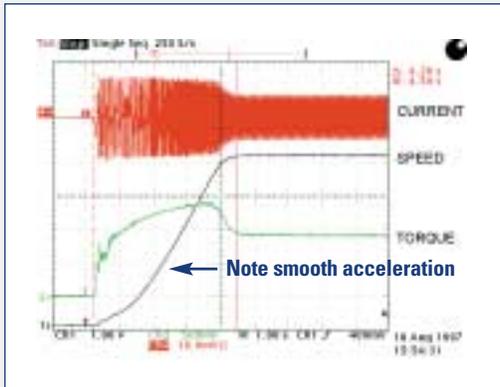


## RS-232 Communication Module

- Provides serial interface to SLC 500™, PLC®, MicroLogix™ or any computer using DF-1 protocol!
- Supports point-to-point communications for easy, fast and low cost data examination.
- Supports Multi-Drop RS-485 Network configuration with the use of 1761-AIC+ modules.
- Can be used with DriveExplorer™ or DriveTools 32™ software for uploading, downloading or monitoring drive parameters.



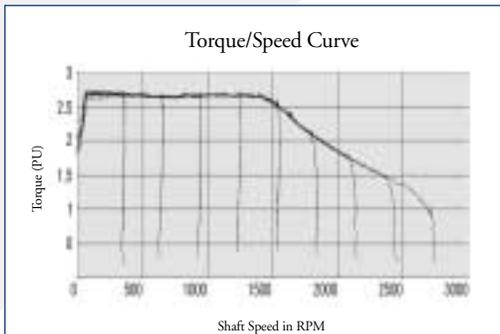
# Outstanding Sensorless Vector Performance



Accelerating @ 150% load with 0.1 sec accel setting

## Acceleration Performance

Excellent current regulation allows faster acceleration which results in more cycles per hour. Smooth, controlled current and torque reduce undesirable mechanical vibrations. This helps prolong equipment and motor life. The hybrid current limit function utilizes both firmware and hardware control to minimize the possibility of nuisance trips during fast accelerations, constant speed operation and deceleration.

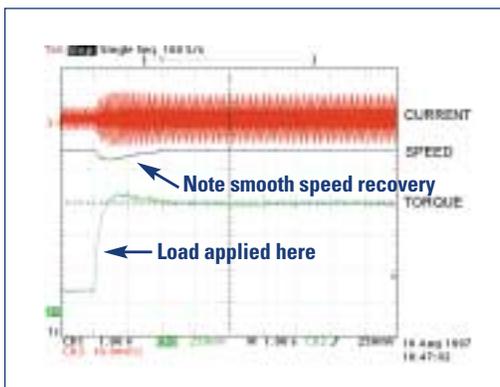


Test curve shows progressive loading of motor from at speed, no load condition to a stall.

## Torque/Speed Performance

The Auto-Boost feature (IR Compensation) automatically adjusts output voltage to improve low speed torque performance. Improved torque performance is maintained across the entire speed range.

The Slip Compensation feature helps improve overall speed regulation. This allows the drive to help maintain the desired commanded output frequency even as loading increases.

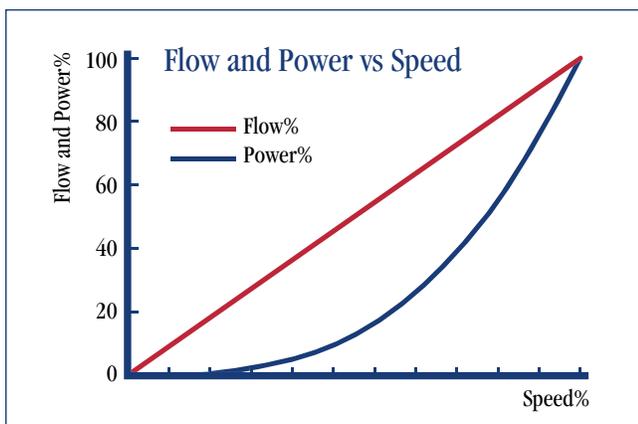


Dynamic Response to 150% shock load.

## Response to Load Change

The Slip Compensation feature and Hybrid Current Limit function allow the drive to maintain control of current and speed. This helps avoid nuisance tripping and improve process efficiency. Even with shock loads demanding 150% torque, the Bulletin 160 SSC maintains tight control of both current and speed.

# Reduced Maintenance and Operational Costs



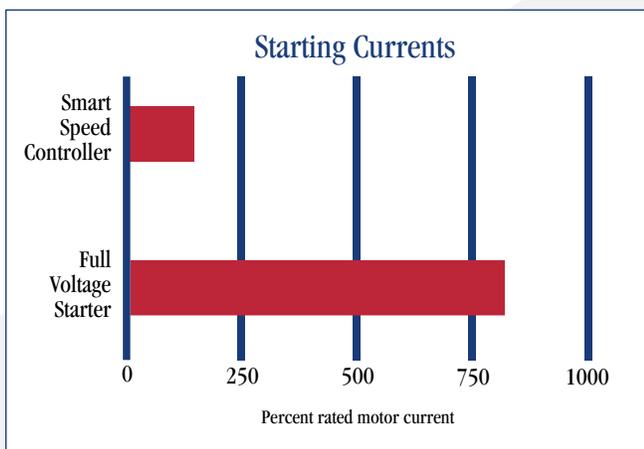
## Reduce Energy Usage and Operating Costs

Reducing the speed of a centrifugal pump/fan load drastically reduces power consumption. Both drive models offer you the speed control to accomplish this. In addition, the large reduction in starting current can save utility demand charges.

## Improved Efficiency and Reduced Maintenance Costs

Variable speed allows you to better control your process and reduce maintenance costs compared to mechanical and electromechanical devices such as:

- gearboxes
- belts and sheaves
- valves
- outlet dampers
- reversing starters
- reduced voltage starters
- multi-speed starters
- multi-speed motors



## Prolong Equipment and Motor Life

Adjustable acceleration and deceleration times provide inherent soft starting and stopping. This is further enhanced by the drive's programmable "S" Curve adjustment. This means a huge reduction in starting currents and elimination of excessive starting torques.

# Application Friendly Design

The many design features of the Bulletin 160 SSC drive provide the application flexibility needed to meet today's changing plant floor environment.

Feature	Benefit
Relay Precharge Circuit	Limits inrush current and simplifies selection of branch circuit protection devices
Electronic Motor Overload Protection	(UL listed and IEC compliant) Saves the extra cost and panel space of installing a separate overload relay
Programmable Control Terminal Block	Helps minimize additional external control logic
Integrated MOVs	Provides 6 KV transient protection
Optional 24V Interface	Allows 24V "sink logic" inputs from PLC controls
Ground Fault Protection	Provides ground fault protection in most conditions
Configurable Output Contact	Provides status condition/alarming
Instantaneous Software Current Trip	Provides protection against unexpected changes in load conditions
Auto-Boost	Provides excellent torque performance
Slip Compensation	Provides tighter speed regulation
Hybrid Current Limit	Designed to eliminate nuisance tripping
Self Generating EDS Files	Reduces DeviceNet installation costs
Plug-in Communication Options	Eliminates need for additional panel space
Diagnostic Fault Indication	Aids in troubleshooting
Three Fault Code Buffers	Enhances diagnostics to reduce maintenance costs
Built-in Brake Transistor	Allows connection of simple brake resistors
Programmable Duty Cycle	Meets a wide range of braking applications
Fast I/O Response Time	Increases productivity/throughput
Undervoltage/Overvoltage Autoclear	Simplifies control logic and increases up time
Auto-Restart/Run On Power Up	Provides automatic recovery from fault conditions/line loss
Skip Frequency	Helps eliminate mechanical vibrations

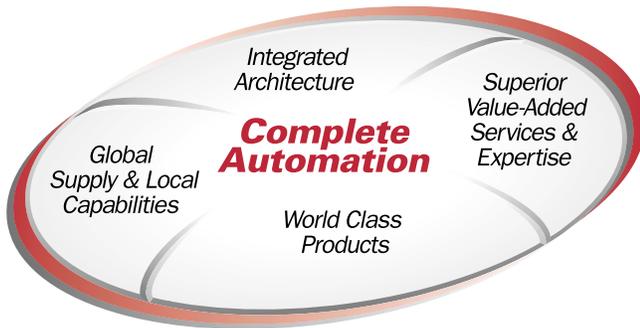
# Meeting Global Expectations

## The Global Marketplace Demands a Lot from a Product.

Complying with global standards is one of many ways that the Bulletin 160 SSC meets these demands.

At Rockwell Automation, we accomplish this by subjecting the Bulletin 160 SSC design to extensive qualification tests and also by following extremely thorough manufacturing and production test procedures. Our quality system meets the exacting requirements of ISO 9001 and is accredited by DNV. Each drive is individually tested to the degree of quality and reliability demanded by the global marketplace.





The Allen-Bradley Bulletin 160 Smart Speed Controller (SSC) is a world class product that provides the application flexibility needed to meet today's changing plant floor environment. Its simplistic design will help save time and money in set-up, integration and maintenance of your automation system.

For Allen-Bradley Drives support, there are specialists at local sales offices and distributor locations across North America and around the world. We also offer global technical services, specializing in a full spectrum of value-added services and expertise to help simplify maintenance and enhance productivity.

Rockwell Automation is committed to helping you meet ever-changing customer demands for more, less expensive product in less time. Our capabilities enable us to become your "Complete Automation"™ partner.

*SSC, DriveExplorer, DriveTools32, SLC 500, PLC, MicroLogix, Complete Automation and the Complete Automation graphic are trademarks of Rockwell Automation.*

*DeviceNet is a trademark of the Open DeviceNet Vendor Association.*

**Reach us now at [www.rockwellautomation.com](http://www.rockwellautomation.com)**

Wherever you need us, Rockwell Automation brings together leading brands in industrial automation including Allen-Bradley controls, Reliance Electric power transmission products, Dodge mechanical power transmission components, and Rockwell Software. Rockwell Automation's unique, flexible approach to helping customers achieve a competitive advantage is supported by thousands of authorized partners, distributors and system integrators around the world.

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