

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

WOODWARD

8200-226

SERVO POSITION CONTROLLER

Used with the applicable SPC servo and actuator control configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Woodward SPC Servo Position Controller Manual 26236 Revision W

Regulatory Compliance

European Compliance for CE Marking:

- EMC Directive:** Declared to Directive 2014/30/EU of the European Parliament and the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility (EMC)
- ATEX Explosive Atmospheres Directive:** Directive 2014/34/EU on the harmonization of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres
Zone 2, Category 3, Group IIC Ex nA IIC T4 Gc X IP20

North American Compliance:

CSA: CSA Certified for Class I, Division 2, Groups A, B, C, & D, T4 at 70 °C Ambient for use in Canada and the United States.
Certificate 1250622

This product is certified as a component to be used within a suitable enclosure. The final assembly is subject to acceptance by CSA International or the authority having jurisdiction.

Marine: Models 8200-225 & 8200-226 American Bureau of Shipping, Steel Vessel Rules 4-9-7/13, 1-1-4/3.7, 2003

Det Norske Veritas, Rules for Classification of Ships, High Speed and Light Craft and Mobile Offshore Units

Lloyd's Register for ENV1, ENV2, and ENV3 as specified in Test Specification No.1, 1996

IMPORTANT

This equipment is considered indicator equipment and is not to be used as metrology equipment. All measurements need to be verified using calibrated equipment.

General Installation and Operation Notes and Requirements:

- The Servo Position Controller is suitable for use in Class I, Division 2, Groups A, B, C, and D per CSA for Canada and US or non-hazardous locations only.
- Wiring must be in accordance with North American Class I, Division 2 or European Zone 2 wiring methods as applicable, and in accordance with the authority having jurisdiction.
- Per EN 60079-15:2010: Device meets ATEX Zone 2 requirements when installed in an ATEX compliant IP54 or better enclosure.
- The SPC chassis must be connected to PE Ground (Potential Earth) using the ground lug. The wire used for the PE Ground must be the same size used for the input wire.

Models 8200-225 and 8200-226 are suitable for marine applications per:

- American Bureau of Shipping, Steel Vessel Rules 4-9-7/13, 1-1-4/3.7, 2003
- Det Norske Veritas, Rules for Classification of Ships, High Speed and Light Craft and Mobile Offshore Units
- Lloyd's Register for ENV1, ENV2, and ENV3 as specified in Test Specification No.1, 1996.

Chapter 1.

General Information

The SPC (Servo Position Controller) is available in two model configurations:

8200-226: DeviceNet Control with Analog Backup (or Analog primary demand)

8200-227: CANopen Control with Analog Backup (or Analog primary demand)

Models 8200-224 & 8200-225 are inactive and replaced by above item numbers.

The SPC positions a hydraulic or pneumatic actuator based on a position demand signal received from a control. The SPC positions a single-coil actuator using single or dual position feedback devices. The position demand signal can be sent to the SPC via DeviceNet or CANopen, (4 to 20) mA, or both. A software program running on a Personal Computer (PC) allows the user to easily configure and calibrate the SPC.

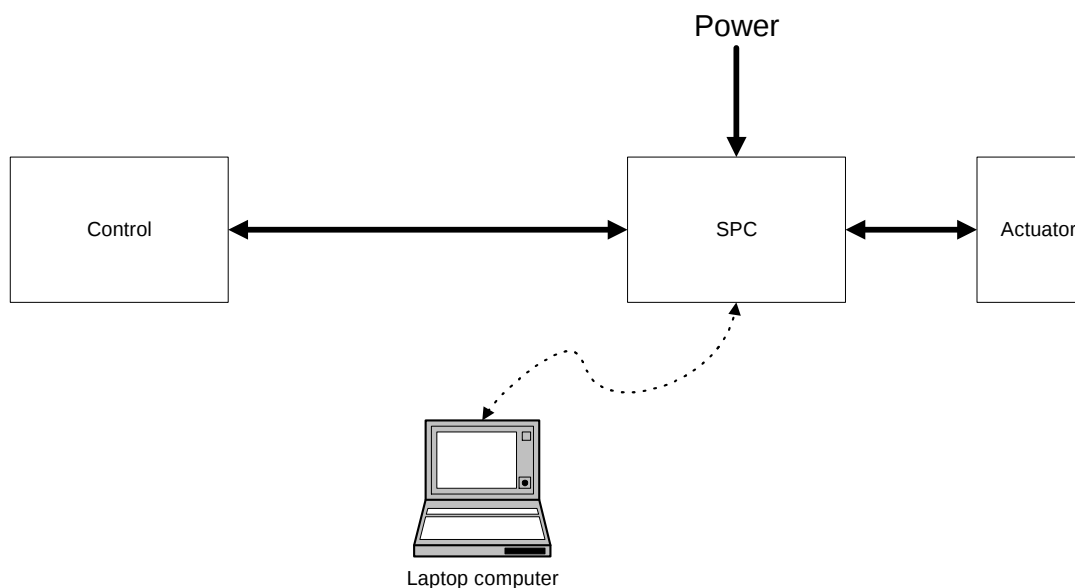


Figure 1-1. SPC Connections

The SPC Service Tool is used to configure, calibrate, adjust, monitor, and troubleshoot an SPC. The service tool runs on a PC and communicates with the SPC through a serial connection. The serial port connector is a 9-pin sub-D socket and uses a straight-through cable to connect to the PC. Woodward offers a USB to 9-pin Serial Adapter kit if needed for new computers that do not have a 9-pin serial connector (P/N 8928-463). This kit contains a USB adapter, software, and a 1.8 m (6 feet) serial cable. (See Chapter 4 for SPC Service Tool installation instructions.)

The SPC is configured by using the SPC Service Tool's configuration file editor to create a file that is then loaded into the SPC. The SPC Service Tool can also read an existing configuration from an SPC into the configuration file editor.

See Chapter 4, SPC User's Guide, for detailed instructions on using the SPC Service Tool.

The first time an SPC is connected to an actuator, it must be calibrated to the actuator's position feedback transducer. The user is guided through the calibration process by the service tool. Calibration can also be performed by the control via the Digital Control link (DeviceNet or CANopen). The calibration procedure can be found in the GAP help file.

Redundant SPC Interface

These terminals are reserved for a possible future feature and must be left unconnected.

DeviceNet Interface (8200-226 Model)

The SPC can be alternatively controlled via a network interface. The standard DeviceNet 5-pin plug-in connector allows connection to a DeviceNet network. Red/green indicators are provided to indicate the module and network status. The SPC conforms to DeviceNet Specification Release 2.0 as a Group II only slave. This product has been self-tested by Woodward and found to comply with ODVA Protocol Conformance Test Version 16.

The DeviceNet baud rate and MAC address can be configured using the “DeviceNet” tab under the Configuration File Editor in the Service Tool.

SPC DeviceNet Electronic Data Sheets (EDS) for selected Woodward products that conform to Group II on DeviceNet Specification Release 2.0 can be downloaded from the Woodward website. From www.woodward.com/software, select **DeviceNet Electronic Data Sheets (EDS)**.

The different values are either 4 or 2 bytes long. The entire value must be gathered before the application can be updated. After each index is received, the index sent must be increased by one with looping back to zero when the max is reached.

See Appendix B for specific signal addresses.

CANopen Interface (8200-227 Model)

The SPC can be alternatively controlled via a network interface. The standard CANopen 5-pin plug-in connector allows connection to a CANopen network. Red/green indicators are provided to indicate the module and network status.

The CANopen baud rate and Node Id can be configured using the “CANopen” tab under the Configuration File Editor in the Service Tool. The possible options are:

- 125kbps
- 250kbps
- 500kbps

Per CiA DS-102 Standard, the following are the recommended maximum cable lengths. Differences in the baud rate and the cable length affect the number of units that can be put onto a network.

Table 2-1. Recommended Maximum Cable Lengths and Number of Units

Baud Rate	Cable Length	Number of SPC on link
500kbps	100m	10
250kbps	250m	5
125kbps	500m	2

IMPORTANT

The use of controlled impedance (120 ohm) cable is recommended for proper CAN bus operation. See ISO 11898 series standards for further information.

See Appendix D for specific signal addresses.

IMPORTANT

SPC model 8200-227 requires SPC Service Tool version 14.05 or later to function correctly. This tool version also supports the 8200-226.

Models 8200-224 and 8200-225 can use version 1.2 or later.

Loading an updated version of the Service Tool will automatically remove any previous versions of the Service Tool on the PC. You will receive a prompt that the software will remove the previous version when installing the later version of the Service Tool.

Existing configuration files that reside inside the SPC control created with an earlier version of the Service Tool can be downloaded/saved onto a PC. The downloaded configuration file will automatically be converted to the latest version of the Service Tool.

Finding Detailed Operating Instructions

From the Windows Start menu, select **Programs**, then **Woodward**, then **SPC Service Tool**, and finally select **SPC Service Tool**. Once the SPC Service Tool has started, select **Help** from the menu, and then select **User's Guide**.

The User Guide describes how to configure and calibrate the SPC, and how to monitor and control operation using the service tool, the Digital Control Network, and the analog and discrete I/O lines.

LED Status Indicators

The SPC has two LEDs for status indication. The Network Status LED provides information about the Digital Network port. The Module Status LED provides information about the general operating status of the SPC.

Table 4-1. Network Status LED

LED state	Indicates
Off	SPC is not on-line
Flashing Green	SPC is on-line but no connections have been established
Green	SPC is on-line and allocated to a master
Flashing Red	One or more connections have timed out
Red	SPC is unable to communicate

Table 4-2. Module Status LED

LED State	Indicates
Off	SPC is not powered
Flashing Green	SPC requires configuration and/or calibration
Green	SPC is running normally
Red	SPC internal fault—unit may need to be replaced

Minimum Computer Requirements

- Microsoft Windows 95 / 98 / Me / NT 4.01 2000 / XP
- 300 MHz Pentium CPU
- 64 MB RAM
- 800 by 600 pixel screen
- Serial Port
- Serial Extension Cable

Appendix C.

SPC Driver with Pollution Resistance

SPC Part Number	Rev	Description
8200-226	C	Servo Position Controller with silicon coating
8200-226	D	Servo Position Controller with polyacrylate coating

SPC revisions prior to Rev C are coated with a silicon coating material.