MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

WOODWARD

8200-226

SERVO POSITION CONTROLLER

Used with the applicable Woodward SPC configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

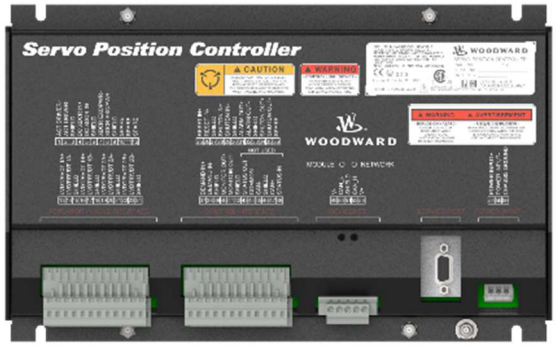
Source: Woodward Product Specification 03455, revision 2021; SPC driver data and connection drawings.

WOODWARD

Product Specification **03455**
(Revision -, 1/2021)

SPC Servo Position Controller

Applications



The Servo Position Controller (SPC) is a servo valve driver that accepts a CANOpen™ *, DeviceNet™ ** or 4-20 mA input position demand signal from a system controller, and accurately positions proportional or integrating servo-valves. The SPC has the required accuracy, responsiveness, and redundancy required for steam or gas turbine hydraulic fuel valve control. For valve position sensing, the SPC accepts feedback signals from one or two (redundant) ac devices or one dc device.

A Windows based service tool is used to configure the SPC, adjust tunables, and monitor parameters via a personal computer. For ease of service, SPC configurations can be done either while connected or disconnected to the unit. Once a configuration has been created, this program allows configurations to be uploaded and downloaded to other SPCs as desired.

The SPC's position feedback circuit includes integral excitation and signal conditioning circuitry for LVDT and RVDT based position sensing devices.

Description

The SPC is a field programmable servo-driver that controls one integrating or proportional servo-valve, and accepts single or dual feedback signals for valve position sensing.

This compact digital driver is available for either CANOpen or DeviceNet control. Both versions can also use 4-20 mA analog as a primary or backup control signal.

The SPC's associated PC service tool program allows a user to configure, auto-calibrate, dynamically adjust, and manually stroke the controlled servo. Auto-calibration routines make servo setup easy and greatly reduce installation times.

The SPC driver is classified for heavy industrial environments, and can be easily bulkhead mounted in IP20 locations.

Protection

The SPC includes protection and alarm indication for the following faults:

Comm Time-out	Analog Input Out-of-Range
Feedback Open-Wire	Feedback Voltage Out-of-Range
Position Error	Internal SPC Faults
Actuator Open/Short	Driver Overcurrent

- Digital control via CANOpen or DeviceNet
- Analog control via 4-20mA input demand signal
- Field configurable
- Accepts redundant command signals
- Accepts redundant feedback signals
- Compatible with ac or dc feedback signals
- Includes LVDT or RVDT excitation circuitry
- (4-20) mA position readout
- Sulfur-resistant conformal coated
- Certified for Class I, Division 2, Groups A, B, C, D, and T4 locations
- Certified for Zone 2 IIC, and T4 locations
- CE compliant

A hard-wired shutdown contact input and relay driver output are provided to allow for interfacing with external protection circuits.

*- CANOpen is a trademark of CAN in Automation, Inc (CiA)

**-DeviceNet is a trademark of Open DeviceNet Vendor Association, Inc (ODVA)

Redundancy

Optionally the SPC can be configured to accept redundant position commands and redundant servo position feedback signals. The SPC has accepts CANOpen or DeviceNet as the primary control signal while using 4–20 mA analog as a backup control signal. Upon failure of either signal, control will automatically switch to the healthy input signal. The SPC also has the capability to accept two servo position feedback signals and switch to the healthy feedback signal when one of the feedback signals fails.

Driver Specifications

Analog Position Input Demand:
Current Input: 4-20mA (200-ohm input impedance)
Input Power:
24 V (dc) / (18 to 32) V (dc)
Actuator Drive Output (Configurable Options):

Bipolar Output with adjustable null current and the following configurable ranges:	±250 mA, ±100 mA, ±50 mA, ±25 mA, ±10 mA
Unipolar Output Current with the following configurable ranges:	(0 to 250) mA, (0 to 100) mA, (0 to 50) mA, (0 to 25) mA
Dither:	Adjustable current amplitude at a frequency of 25 Hz, and a duty cycle of 25 %

Position Loop Accuracy:

CANOpen or DeviceNet:	±0.25 % of full scale at 25 °C, temperature sensitivity of less than ±150 ppm/°C Analog (4 to 20) mA: ±0.25 % of full scale at 25 °C, temperature sensitivity of less than ±300 ppm/°C

Position Sensing (2 Channels):

Voltage Feedback:	Accepts 3, 4, 5, or 6 wire LVDTs or RVDTs (single excitation driver), (0 to 12) V (dc), (12 to 0) V (dc)
Current Feedback:	Accepts (4 to 20) mA, (20 to 4) mA position transducer feedback signals

Relay Driver Outputs (Alarm & Shutdown):
Isolated FETs designed for direct control connection with or without interposing relays

Voltage Range:	(18 to 32) V (dc)
Max Current:	500 mA, (10 µA leakage)

Environmental:

Operating Temperature Range:	(–40 to +70) °C
Shock:	US MIL-STD-810C method 516.2, procedure 1 (30 Gs, 11 ms half sine pulse)
Vibration:	Lloyd's Register Test Specification No.1, 1996, Vibration Test 1 (5 Hz to 13 Hz, ±1 mm, 13.2 Hz to 100 Hz, ±0.7 g)
Humidity:	Lloyd's Register Test Specification No.1, 1996, Humidity Test (48 Hr Cyclic – Condensing)
Size:	(330 x 203 x 76) mm) / (13 x 8 x 3) inches
Mounting:	Bulkhead mounted
Ingress Protection:	IP20

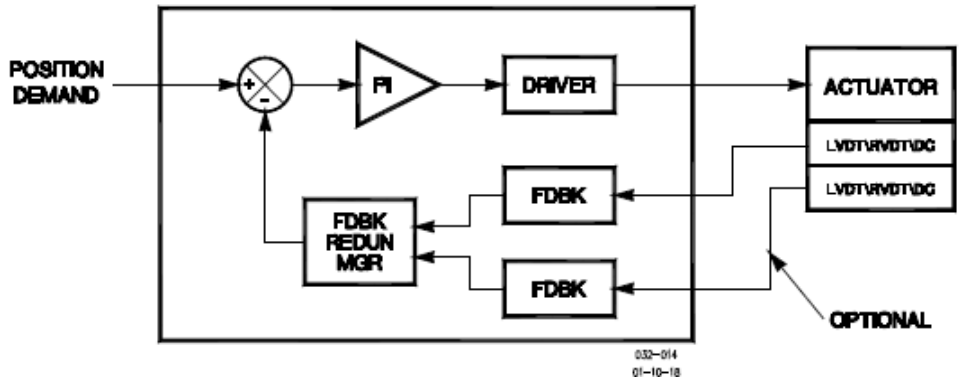
Pollution Resistance:

Particulate Pollution Resistance:	IEC 664-1 Pollution Degree 2 (Normally only nonconductive pollution occurs. Temporary conductivity caused by condensation is to be expected.)
Gaseous Pollution Resistance:	The polyacrylate conformal coating withstands NO2, CO2, SO2, and H2S gases per IEC 60068-2-60: 1995 Part 2.60 Method 1 and 4 (Flowing Mixed Gas Corrosion Test). It will withstand levels typical of telecommunications and computer installations as defined by Battelle Labs Class III (between IEC 60721-3-3 classification 3C1 and 3C2, light industrial to urban industrial, heavy traffic).

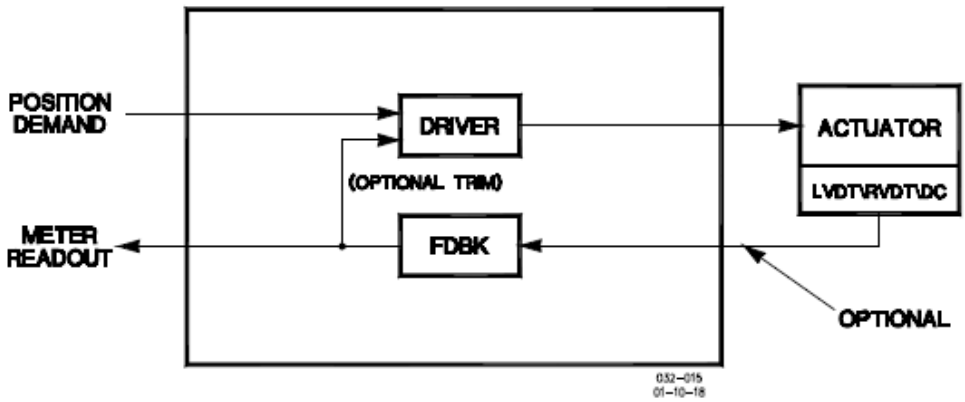
Regulatory Compliance

European Compliance for CE Marking:
EMC Directive: 2014/30/EU
ATEX Directive: 2014/34/EU, 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 the United States and Canada.
Other European and International Compliance:
EAC Ex: Certified per EAC certificate TC RU C-US.МЮ62.B.04627
Marine: (Models 8200-225 & 8200-226):
American Bureau of Shipping (ABS): 2017 Steel Vessels Rules 1-1-4/7.7, 1-1-Appendix 3, 1-1-Appendix 4, 4-8-3/13.3, 4-2-1/7.3
Det Norske Veritas (DNV): DNV GL rules for classification – Ships, offshore units, and high speed and light craft
Temperature Class B, Humidity Class B, Vibration Class A and EMC
Class B. Enclosure protection according to Rules to be provided upon installation onboard.
Lloyd's Register: ENV1, ENV2 and ENV3 as specified in Test Specification No. 1, 1996.

Functional Block Diagram

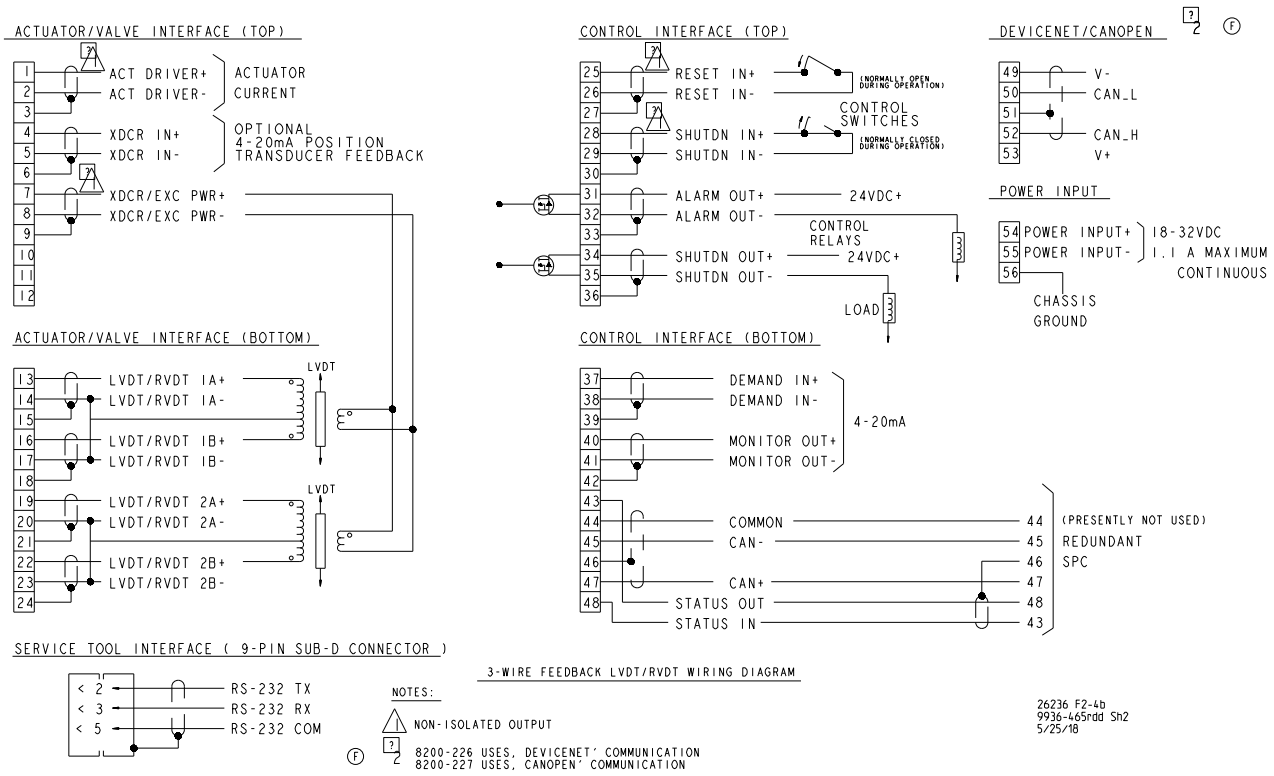


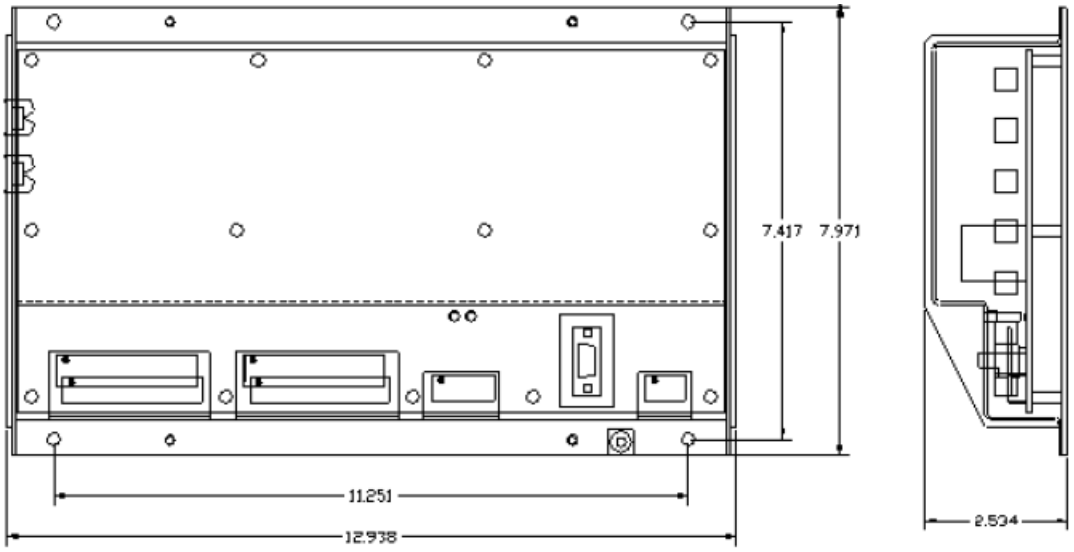
Typical Integrating Actuator Block Diagram



Typical Proportional Actuator Block Diagram

Wiring Diagram





SPC Outline Drawing
(Don not use for construction)

WOODWARD

PO Box 1519, Fort Collins CO 80522-1519, USA
1041 Woodward Way, Fort Collins CO 80524, USA
Phone +1 (970) 482-5811
Email and Website—www.woodward.com

Woodward has company-owned plants, subsidiaries, and branches, as well as authorized distributors and other authorized service and sales facilities throughout the world. Complete address / phone / fax / email information for all locations is available on our website.

For more information contact:

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