

CPC

Current-to-Pressure Converter

Applications

The Woodward Current to Pressure Converter (CPC) is designed for positioning steam and fuel valves and/or the associated servos. A 4–20 mA in/out signal is linearly and proportionally converted into a hydraulic output pressure. The CPC can thus interface with any electronic control, such as Woodward MicroNet™ systems and the Woodward 505 Control. It connects to pressure-operated servo systems and to single-acting power cylinders. The CPC is suited for new as well as retrofit applications.

Description

The CPC is an electrohydraulic, pressure-regulating valve, which consists of a valve, an actuator, a pressure sensor, and on-board electronics.

The electronics perform the signal conditioning by comparing the actual output pressure with the command, which results in a reference signal for the valve position. This reference signal is then compared with the actual position, resulting in a drive signal. The driver circuit then outputs the appropriate signal to the actuator, which positions the hydraulic valve to the required position.

The valve consists of two ports; one from supply to output, and one from output to tank. By opening one of these ports, the output pressure decreases or increases.

Two output signals are provided: a 4–20 mA signal, representing the actual output pressure, and a relay output, indicating a malfunction of the CPC.

Features

The CPC has an anodized aluminum housing, coupled with a cast, anodized aluminum top cover. This enclosure contains the printed circuit board, the pressure sensor, and the actuator. The rotor of the actuator is directly coupled to the one-stage hydraulic valve.

The construction of the hydraulic valve in the CPC tolerates contaminant particles up to 40 µm.

Upon loss of power, a return spring will force the output pressure to the drain pressure (failsafe).

A brass cable gland is provided for cable access with electrical signals.

The CPC mounts to a manifold with a standard instrument mounting-hole pattern according to DIN 19213.



- Precise fluid pressure control
- Linear operation
- Adjustable output pressure range
- Two output signals
- Contaminant tolerant
- Standard instrument mounting
- Models are available with certification for Canadian Hazardous Locations
- Models are available compliant with the applicable CE Directives—ATEX, Machinery, and EMC

Accessories

A standard stainless steel adapter plate (part number 4349-231), with or without close-off valves, can be supplied with the CPC. To replace the obsolete I/H converter, use adapter plate 3689-097.

Specifications

Electrical

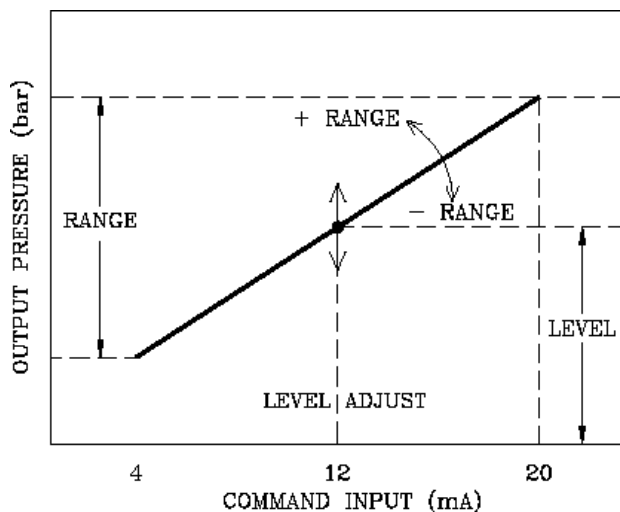
Connections	9 screw terminals on the internal printed circuit board suitable for 0.2–4 mm ² solid or 0.2–2.5 mm ² stranded wire (24–12 AWG). 1.5mm ² (16 AWG) is recommended for the power lines, and 0.75 mm ² (18 AWG) for all other connections.
Cable Entry	Via cable gland—cable diameter 9–12 mm
Supply Voltage	18–32 Vdc (24 Vdc nominal)
Power Consumption	8 W during steady state, 120 W peak (3 seconds maximum)
Current Input Signal	4–20 mA into 250 Ω
Analog Output Signal	4–20 mA—maximum external load: 300 Ω . Accuracy = $\pm 1\%$ of full scale
Discrete Output Signal	Relay—jumper selectable for normally open or normally closed. Maximum rating 1 A at 30 Vdc
Dither Frequency	10–30 Hz—Default setting is 30 Hz
Dither Amplitude	Zero is minimum and default. Maximum depends on adjusted frequency and dynamic characteristics of the entire system.

Hydraulic

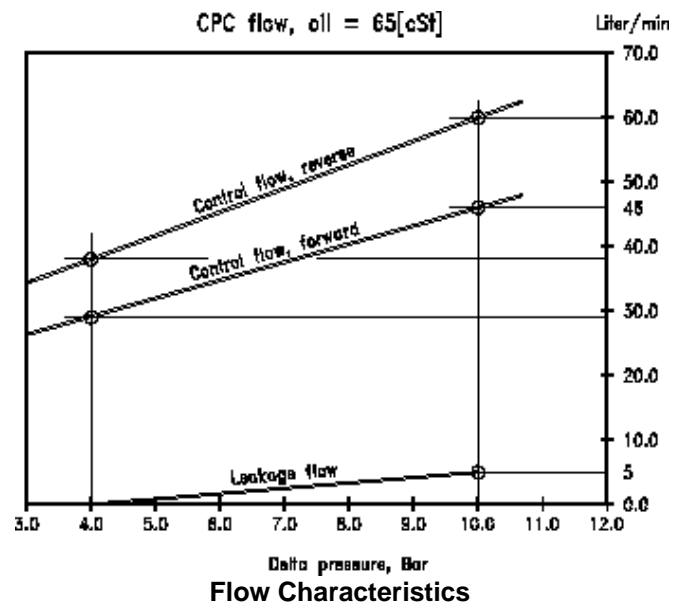
Connections	Flat mounting face, hole pattern according to DIN 19213. Hydraulic connections via an adapter plate (optional).
Supply Pressure	17 bar (250 psi) maximum. At least 0.5 bar higher than the maximum output pressure.
Output Pressure	Minimum level: 1 bar (14.5 psi) Maximum level: 15 bar (217.5 psi) Minimum range: 1 bar (14.5 psi) Maximum range: 14 bar (203 psi)
Standard Pressure Range	4–20 mA gives 1.5 to 4.5 bar (21.75 to 65.25 psi)
Recommended Filter Rating	Nominal 40 μm and 75 μm absolute (B40,=75)
Viscosity	20 to 100 cSt
Leakage	Depends on viscosity and supply pressure—see figure
Flow Capacity	Depends on viscosity and pressure difference—see figure
Technical Manuals	89543 (standard version) 26248 (explosion-proof version)

Performance

Frequency response	10–30 ms time constant, small step, blocked load (no servo system attached to the CPC). Ultimate dynamic response depends on total servo system and dynamic adjustments to the CPC.
Linearity	0.2% of full range
Repeatability	0.1% of full range
Temperature Drift	0.01% full range /°C



Output Pressure vs. Command Input



Flow Characteristics

Environmental

Ambient Temperature	-20 to +85 °C standard unit -20 to +60 °C explosion-proof unit
Oil Temperature	60 °C maximum, 80 °C peak
Maximum Surface Temperature	85 °C, provided above temperature requirements are fulfilled
Vibration	Lloyd's LR type approval test specification 1, test 2, 5–100 Hz at 4.0 G
EMC	EN 61000-6-2 and EN 61000-6-4
Dust and Waterproof	IP65 per EN60529

Physical

Dimensions	See outline drawing
Height x Width x Depth	Approximately 220 x 170 x 200 mm
Weight	Approximately 10 kg without oil
Mounting	Four M10 threaded holes, 23 mm deep, on the face with the hydraulic ports, according to DIN 19213

Regulatory Compliance

European Compliance for CE Marking

These listings are limited only to those units bearing the CE Marking.

EMC Directive: Declared to 89/336/EEC COUNCIL DIRECTIVE of 03 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility.

ATEX – Potentially Explosive Atmospheres Directive: Declared to 94/9/EC COUNCIL DIRECTIVE of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres. KEMA 03ATEX2427X

Zone 1, Category 2, Group II G, EEx d IIC T4

For use in an ambient temperature range of -20 to +60 °C

Other European Compliance

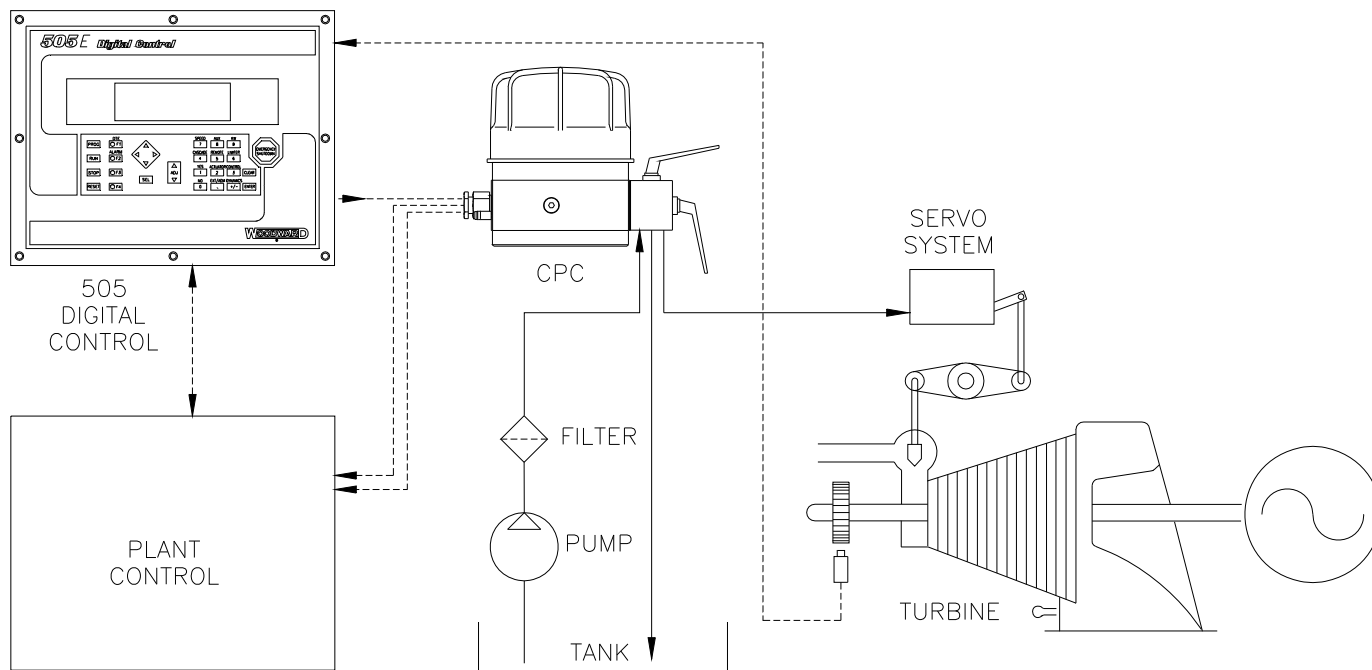
Compliance with the following European Directives or standards does not qualify this product for application of the CE Marking:

Machinery Directive: Compliant as a component with 98/37/EC COUNCIL DIRECTIVE of 23 July 1998 on the approximation of the laws of the Member States relating to machinery.

North American Compliance

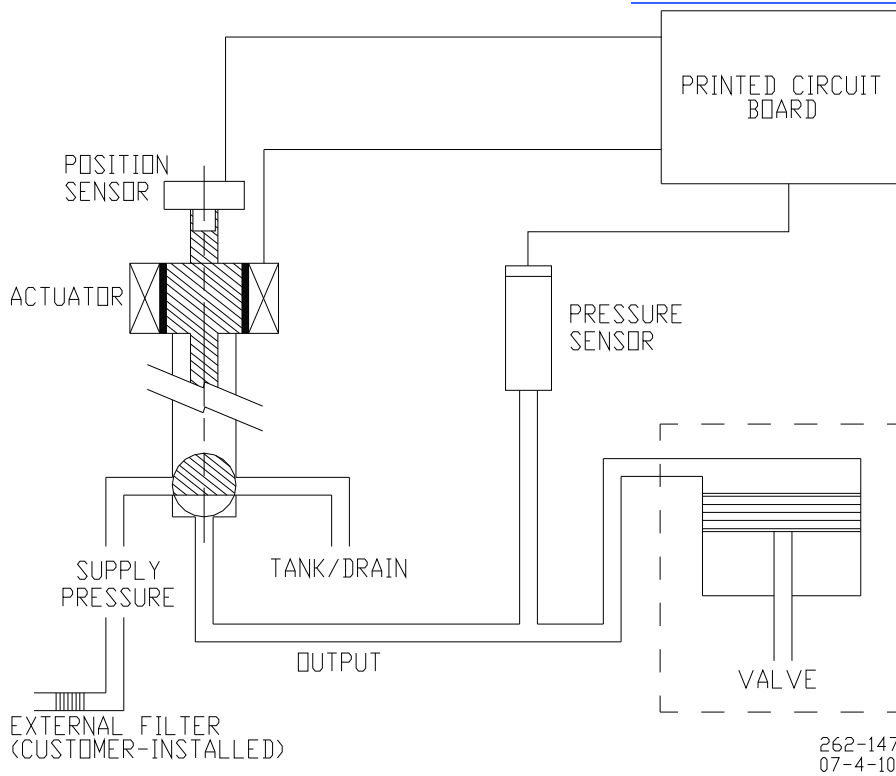
These listings are limited only to those units bearing the CSA agency identification.

CSA: CSA Certified for Class I, Division 2, Groups B, C, and D, T4 at 60 °C Ambient for use in Canada



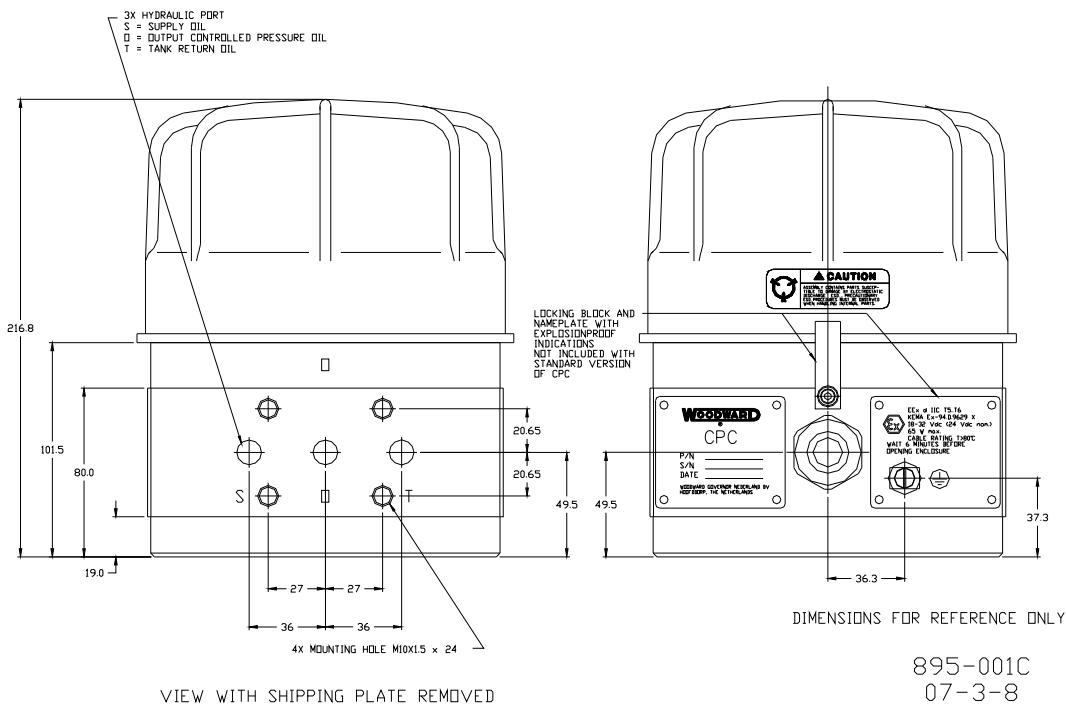
TU-1637
96-06-12 KDW

Typical System Using the CPC



Hydraulic Schematic

262-147
07-4-10



VIEW WITH SHIPPING PLATE REMOVED

DIMENSIONS FOR REFERENCE ONLY

895-001C
07-3-8

CPC Outline Drawing (Do not use for construction)



PO Box 1519, Fort Collins CO, USA 80522-1519
1000 East Drake Road, Fort Collins CO 80525
Tel.: +1 (970) 482-5811 • Fax: +1 (970) 498-3058
www.woodward.com

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