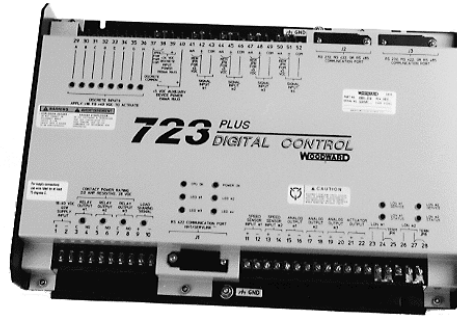


# 723PLUS Performance Control

## for Compressor-Drive Engines

### Applications

Based on Woodward's powerful 723PLUS/828 digital control platform, the Performance Control for Compressor-Drive Engines controls the speed, air/fuel ratio, and ignition timing of reciprocating engines in variable speed/load applications. The control includes inputs for two speed sensors (MPU or proximity) with firing torsional filters, for monitoring engine and turbocharger speed (or for redundant engine speed sensing), a notch filter to attenuate the effect of flexible coupling torsionals, a remote speed setting input, and inputs for air manifold pressure, fuel gas header pressure, and air manifold temperature with 3D curves for precisely mapping air/fuel ratio and ignition timing settings. Discrete raise/lower inputs are provided to adjust air manifold pressure and engine speed settings.



### Features

This Performance Control provides the following features:

- Improved fuel consumption and reduced emission levels by constantly monitoring and reacting to differing engine conditions.
- Reduced maintenance costs by improving combustion to alleviate damage produced by detonation and misfiring. Also reduces downtime caused by outdated pneumatic control systems.
- Elimination of over-fuelling problems on start up for repeatable, smooth starting.
- Elimination of overspeed on start up with the limiter and ramp functions built into the 723Plus/828 control.
- Communication capability—two separate serial interfaces for RS-232, RS-422, or RS-485 communications. The ports feature an industry standard Modbus<sup>®</sup> \* protocol (ASCII or RTU). The control easily interfaces to a station HMI (e.g., touch screen) for remote control, trending, and monitoring.
- Standard Woodward "ServLink – Watch Window" software enables monitoring, tuning, and upload / download of the control variables via PC. Watch Window is a valuable tool for troubleshooting system configuration, end devices and engine conditions.
- Easily expandable software platform using Woodward's GAP<sup>™</sup> Graphical Application Programmer. GAP is a Windows-based program which is fully self-documenting and produces engineering-style drawings as soon as the programming has been completed. The 723PLUS/828 can be easily customized to meet your specific site requirements. Woodward's LinkNet<sup>®</sup> I/O modules provide the control the power to handle many complex applications.
- Single source supply and responsibility.
- Extensive diagnostics capabilities.
- CSA Certified for Class I, Division 2, Groups A, B, C, D.

\*—Modbus is a trademark of Schneider Automation Inc.

\*\*—LON is a trademark of Echelon Corp.

- Configurable for speed, air/fuel ratio, and ignition timing in engine applications
- 32-bit microprocessor
- 1 Watch Window handheld programmer communication port
- 2 serial ports with Modbus<sup>®</sup>\* protocol
- 2 LON<sup>®</sup>\*\* (local operating network) channels
- Digital reference and ramps for speed, temperature, pressure, etc.
- Configurable update time groups—10 to 80 ms
- CSA Certified
- CE Compliant

## Programming

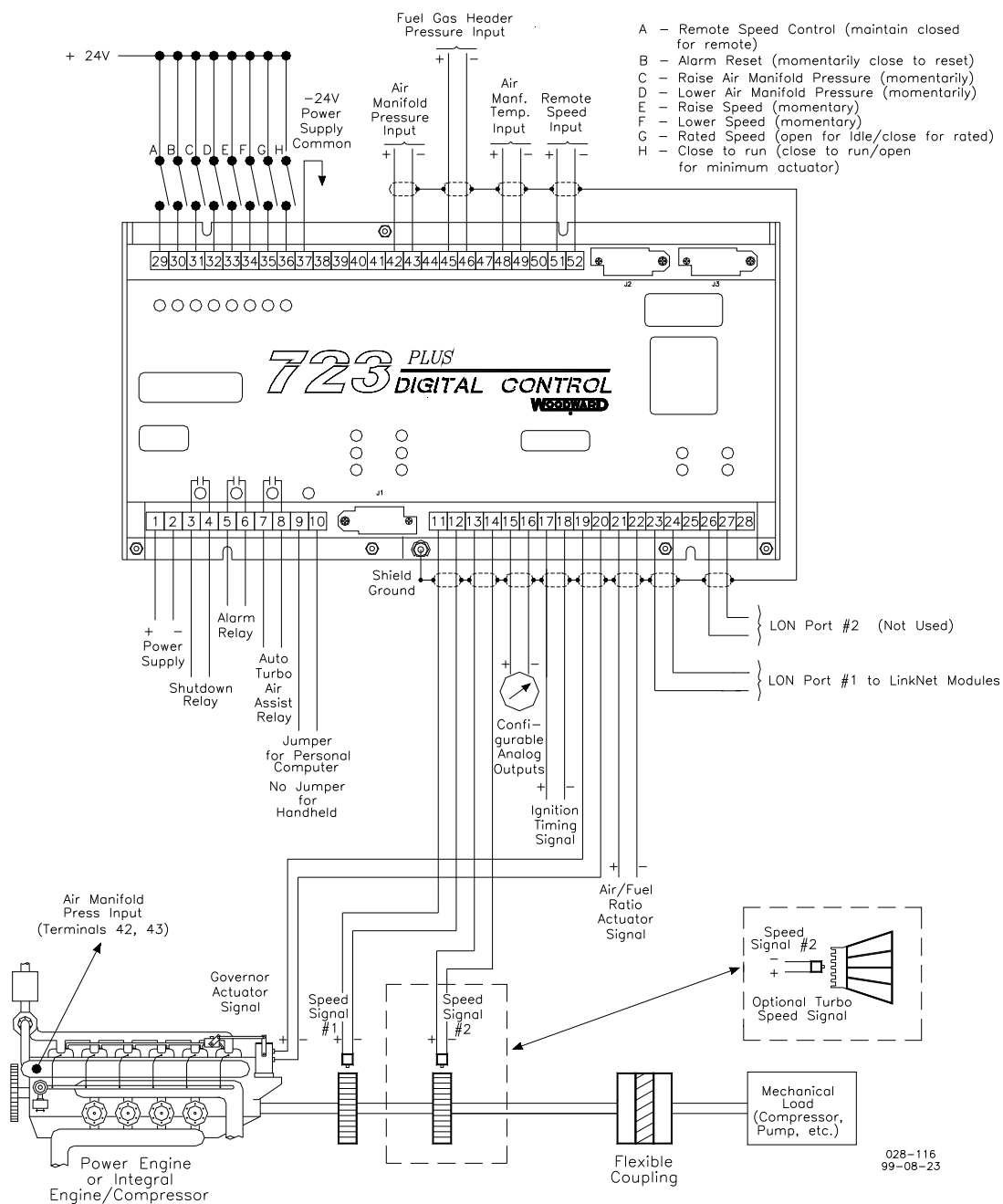
Woodward can provide custom programming for the 723PLUS Digital Control. Standard pre-programmed versions for power generation, marine, gas engine, mechanical drive, etc. are also available. The custom 723PLUS Digital Control can be programmed to meet specific needs for specialized functions in process, plant, engine and marine applications. The custom versions may be used as unit or engine level controls, or as supervisory controls for such things as sequencing, load shedding, heat recovery management, and system monitoring and alarming.

## Adjustments

Adjustments may be made quickly and easily through the Watch Window PC Interface or an optional handheld programmer. Both adjustment methods are menu-driven and record all set points.

## Self-Diagnostics

The 723PLUS Digital Control has integrated diagnostics to determine the control integrity. Memories, processor, and baseline power supply monitoring are included in the diagnostic tests.



Typical 723PLUS/828 Performance Control System Diagram

## Specifications

Low Voltage Model	18–40 Vdc (24 or 32 Vdc nominal)
High Voltage Model	90–150 Vdc (125 Vdc nominal)
Power Consumption	40 W nominal
Inrush Current (low voltage model)	7 A for 0.1 ms
Inrush Current (high voltage model)	22 A for 15 ms

### Input Power

### Inputs

<b>Speed Signal Inputs (2)</b>	
Speed Input Voltage	1.0–50.0 Vrms
Speed Input Frequency	Analog: 400 Hz to 15 kHz; Digital: 30 Hz to 15 kHz
Speed Input Impedance	10 k $\Omega$ $\pm$ 15%
	<b>NOTE</b> —EU Directive compliant applications are not currently able to use proximity switches due to the sensitivity of the switches.
<b>Discrete Inputs (8)</b>	
Discrete Input	24 Vdc, 10 mA nominal, 18–40 Vdc range
Response Time	10 ms $\pm$ 15%
Impedance	2.3 k $\Omega$
<b>Analog Inputs (4)</b>	
Analog Input	$\pm$ 5 Vdc or 0–20 mA, transducers externally powered
Common Mode Voltage	40 Vdc
Common Mode Rejection	0.5% of full scale
Accuracy	0.5% of full scale
<b>Load Sharing Input</b>	
Analog Input	0–4.5 Vdc
Common Mode Voltage	$\pm$ 40 Vdc
Common Mode Rejection	1.0% of full scale
Accuracy	1.0% of full scale

### Outputs

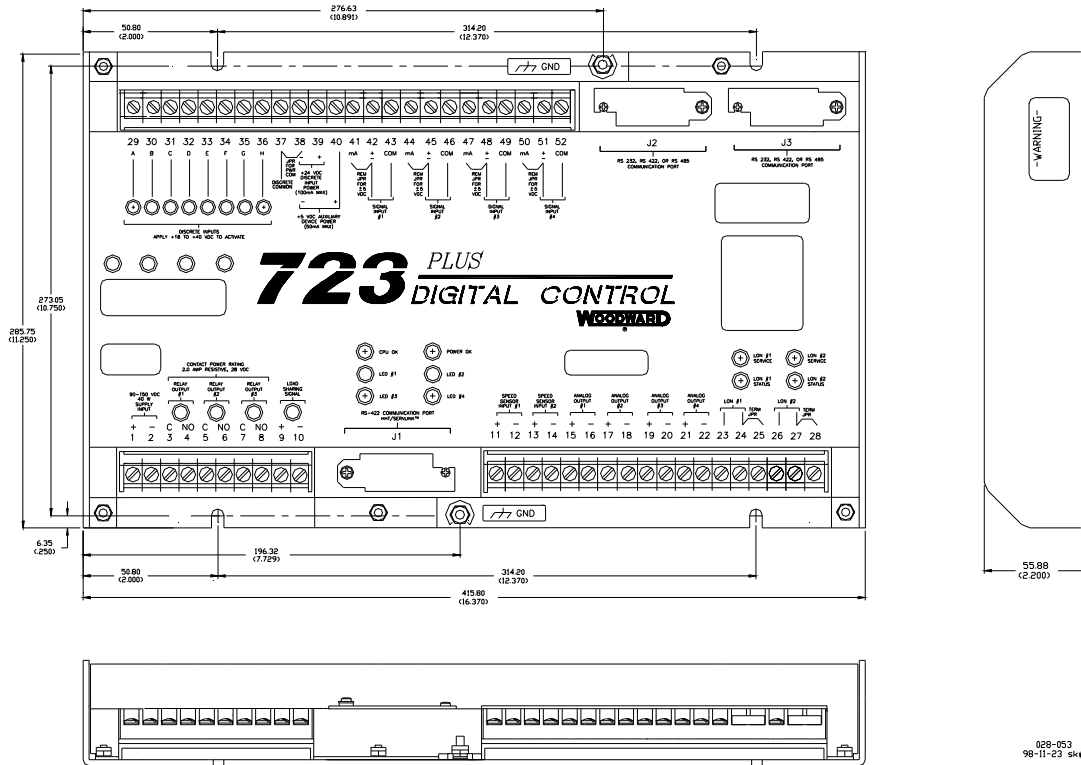
<b>Analog Outputs 0–1 or 4–20 mA (2)</b>	
Analog Output	0–1 mA or 4–20 mA (max. 600 $\Omega$ load)
Accuracy	0.5% of full scale
<b>Analog Outputs 0–20 or 0–200 mA (2)</b>	
Analog Output	0–20 mA (max. 600 $\Omega$ load) or 0–200 mA (max. 70 $\Omega$ load)
Accuracy	0.5% of full scale
<b>Relay Contact Outputs (3)</b>	
Contact Ratings	2.0 A resistive @ 28 Vdc; 0.5 A resistive @ 125 Vdc

### Environment

Operating Temperature	–40 to +70 °C (–40 to +158 °F)
Storage Temperature	–55 to +105 °C (–67 to +221 °F)
Humidity	95% at +20 to +55 °C (+68 to +131 °F)
	Lloyd's Register of Shipping Specification Humidity Test 1
Mechanical Vibration	Lloyd's Register of Shipping Specification Vibration Test 1
Mechanical Shock	US MIL-STD 801C Method 516.2, Proc. I, II, V
EMI/RFI Specification	Lloyd's Register of Shipping Specification EN 50081-2 and EN 50082-2

### Compliance

CSA Certified	Class I, Division 2, Groups A, B, C, & D
American Bureau of Shipping (ABS)	2007 Steel Vessel Rules 1-1-4/7.7, 4-2-1/7.3, 4-2-1/7.5.1, 4-9-3/17, 4-9-7/13, 4-9-2/11.7 & 4-9-4/23 (Low Voltage Models only)
Bureau Veritas (BV)	Certified for Environmental Category EC Code: 33 Certified for use on AUT-UMS, AUT-CSS, AUT-PORT and AUT-IMS Classed Vessels
Det Norske Veritas (DNV)	Certified for Marine Applications, Temperature Class B, Humidity Class A, Vibration Class B, EMC Class A, and Enclosure Class B per DNV Rules for Ships Pt. 4, Ch. 9 Control and Monitoring Systems and Pt. 4, Ch.'s 2 & 3, Rotating Machinery
Germanischer Lloyd (GL)	Environmental Category C; EMC2 per Type Tests Part 2, Edition 2003: Regulations for the Use of Computer and Computer on Board
Lloyd's Register (LR)	LR Type Approval Test Specification No. 1:1996 for Environmental Categories ENV1, ENV2, and ENV3
Nippon Kaiji Kyokai (NKK)	Rules Ch. 1, Part 7, of Guidance for the approval and Type approval of materials and equipment for marine use and relevant Society's Rules. (Low Voltage Models only)
Registro Italiano Navale (RINA)	RINA Rules for the Classification of Ships – Part C Machinery, Systems and Fire Protection – Ch. 3, Sect. 6, Tab. 1
European Union (EU)	Compliant with EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC



**723PLUS Outline Drawing**  
(Do not use for construction)



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