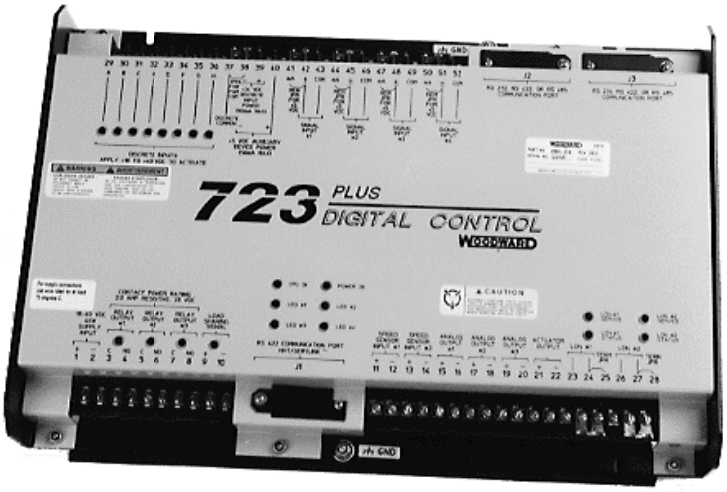
723PLUS Digital Control

Standard Applications

Applications



The Woodward 723PLUS Digital Control manages and controls reciprocating engines (gas, diesel, or dual fuel) used in power generation, marine propulsion, and industrial engine and process markets. Standard application software is available which provides a variety of off-the-shelf control solutions for these markets. The following is a listing of the standard (level 1) programmed and configurable 723PLUS Digital Controls:

Power Generation	Marine	Industrial
8280-412 DSLC™ Loadshare, LV	**8280-418** Single Engine Propulsion—Low Speed, LV	**8280-410** Speed Control, LV
8280-413 DSLC Loadshare, HV	**8280-419** Single Engine Propulsion, LV	**8280-411** Speed Control, HV
8280-414 Analog Loadshare, LV	**8280-422** Dual Engine Mechanical Load Share—Low Speed, LV	**8280-424** Performance Control '424', LV
8280-415 Analog Loadshare, HV	**8280-423** Dual Engine Mechanical Load Share, LV	**8280-598** Performance Control '598', LV
8280-416 DSLC/MSLC Gateway, LV	**8280-1042** Single Engine Propulsion—DSLC Input, LV	**8280-464** Process Control, LV
8280-417 DSLC/MSLC Gateway, HV		**8280-465** Process Control, HV
8280-466 DSLC Loadshare—Low Speed, LV		
8280-467 DSLC Loadshare—Low Speed, HV		

Programming

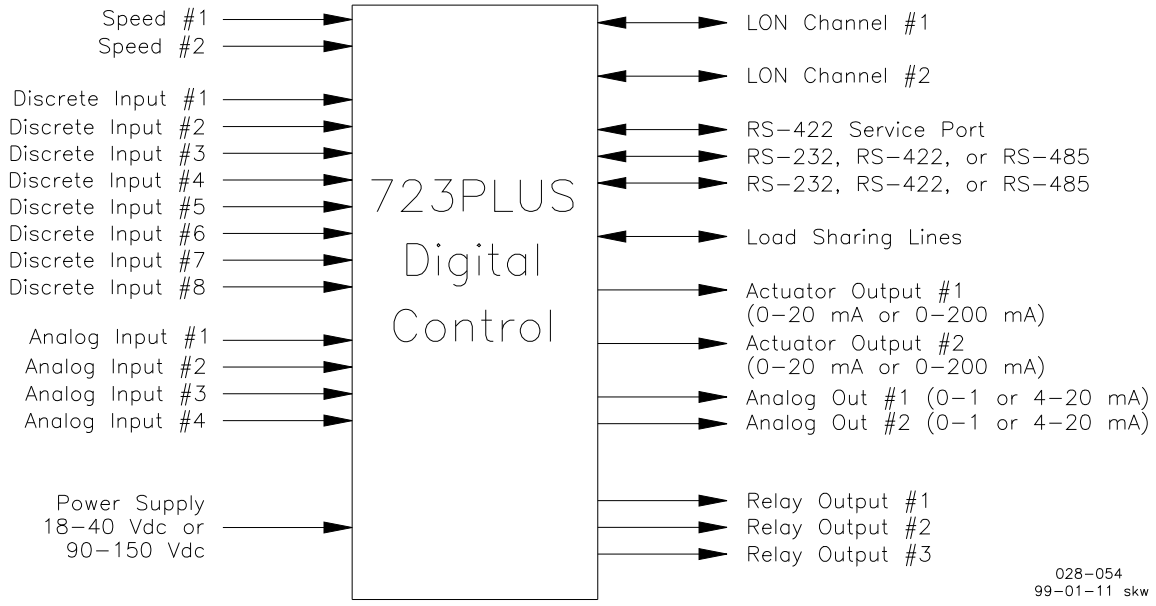
The controls listed above are standard pre-programmed 723PLUS Digital Controls. Woodward and its authorized Distributors can provide custom programming for the 723PLUS/828 Digital Control to meet the need for specialized functions in process, generator plant, engine, and marine applications. The custom version may be a variation of standard control software or totally new. The custom version may be used as a unit control or as a system control 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 or Control View PC Interface [not supported on 8280-1042] or an optional hand held programmer. Both adjustment methods are menu-driven and record all set points. More information is on the Industrial Controls section of our website (www.woodward.com).

*—Modbus is a trademark of Schneider Automation Inc.
**—LON is a trademark of Echelon Corp.

- Programmed and configurable for off-the-shelf control and monitoring in power generation, industrial engine, process, and marine applications
- 32-bit microprocessor
- 1 Watch Window or hand held programmer communication port
- 2 serial ports with Modbus® * and Servlink protocol choices
- 2 local operating network (LON® **) channels
- Digital reference and ramps for speed, pressure, temperature, etc.
- Configurable update time groups—10 to 80 milliseconds
- CSA Certified
- CE Compliant



723PLUS Control Block Diagram

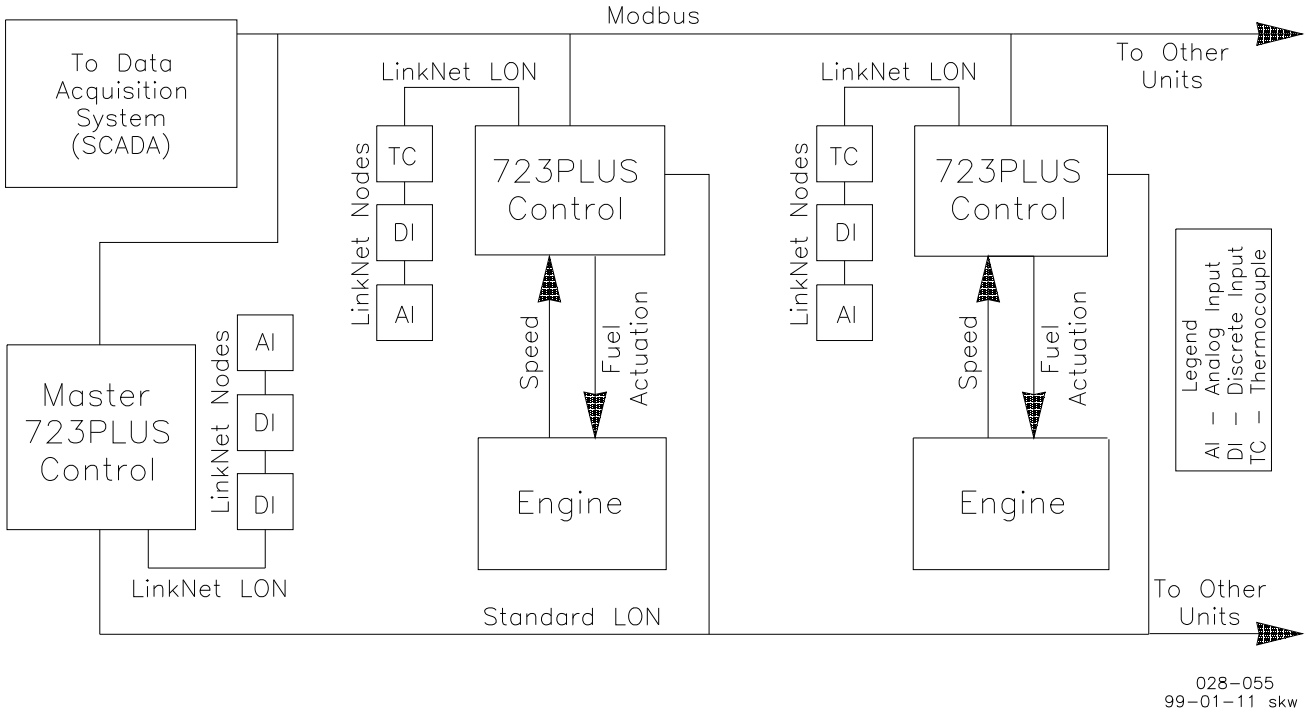
Communications

The 723PLUS Digital Control provides two separate serial interfaces for RS-232, RS-422, or RS-485 communications. In some models both ports feature an industry-standard Modbus protocol (ASCII or RTU) that can interface to a Modbus master device such as a Human/Machine Interface (HMI). In other models one port features an industry-standard Modbus protocol (ASCII or RTU), and the other port features Woodward Servlink protocol for a Watch Window or Control View PC interface. Baud rates are tunable to meet specific user requirements.

The 723PLUS control can also communicate using the local operating network (LON) protocol for digital communications. The 723PLUS/828 control I/O ports may be expanded through LinkNet® nodes. Typical LinkNet nodes include thermocouple, RTD, analog, and discrete type I/O.

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 System Diagram

Specifications

Input Power

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

Inputs

Speed Signal Inputs (2)	
Speed Input Voltage	1.0–50.0 Vrms
Speed Input Frequency	Magnetic Pickup: 400 Hz to 15 kHz Proximity Switch: 30 Hz to 15 kHz
Speed Input Impedance	10 kΩ ± 15%
	NOTE—EU Directive compliant applications are not currently able to use proximity switches due to the sensitivity of the switches.
Discrete Inputs (8)	
Discrete Input	24 Vdc, 10 mA nominal, 18–40 Vdc range
Response Time	10 ms ±15%
Impedance	2.3 kΩ
	NOTE—For Lloyd's Register applications, use only control-supplied power.
Analog Inputs (4)	
Analog Input	±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
Load Sharing Input	
Analog Input	0–4.5 Vdc
Common Mode Voltage	±40 Vdc
Common Mode Rejection	1.0% of full scale
Accuracy	1.0% of full scale

Outputs

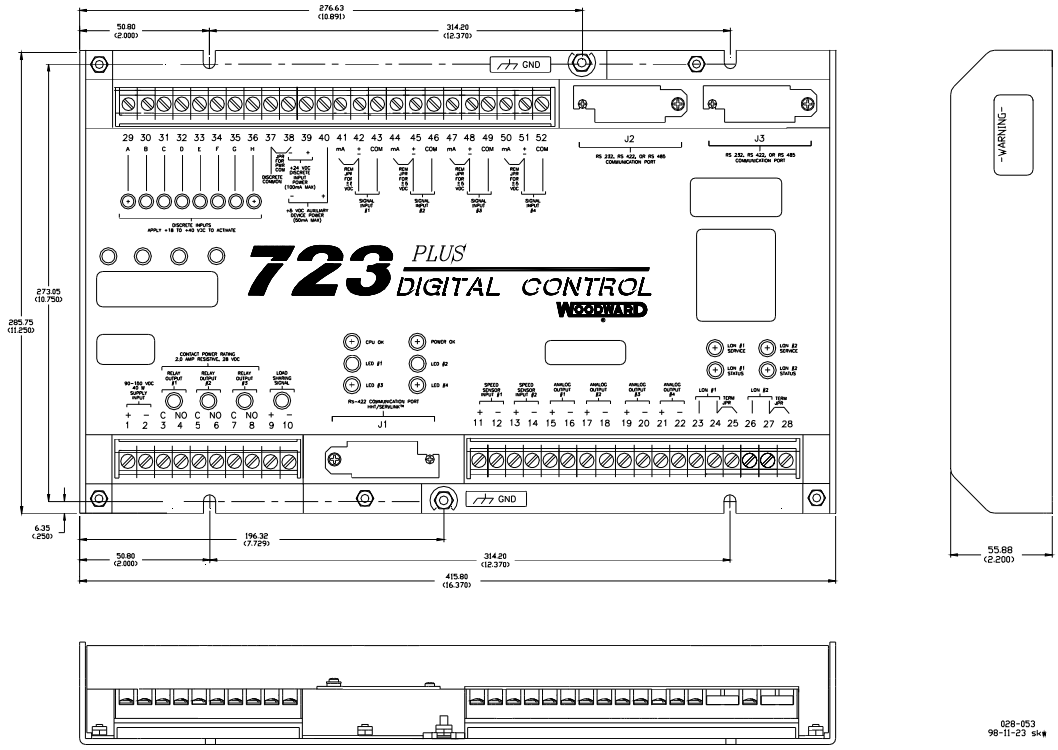
Analog Outputs 0–1 or 4–20 mA (2)	
Analog Output	0–1 mA or 4–20 mA (max. 600 Ω load)
Accuracy	0.5% of full scale
Analog Outputs 0–20 or 0–200 mA (2)	
Analog Output	0–20 mA (max. 600 Ω load) or 0–200 mA (max. 70 Ω load)
Accuracy	0.5% of full scale
Relay Contact Outputs (3)	
Contact Ratings	2.0 A resistive @ 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 Spec. Humidity Test 1
Mechanical Vibration	Lloyd's Register of Shipping Spec. Vibration Test 1
Mechanical Shock	US MIL-STD 810C 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 Digital Control Outline Drawing
(Do not use for construction)

Hardware Manual 02877

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