

In-Pulse™

Electronic Fuel Injection (EFI) Control

Designed to control a wide range of Woodward electrical low-pressure gas admission valves and electric-hydraulic high-pressure rail valves.



The In-Pulse control is designed for engine skid mounting, provided the environmental specification is not exceeded, thus allowing installation during engine production. This considerably reduces the on-site wiring required during engine installation.

INTRODUCTION

The In-Pulse™ system has been developed to control a range of Woodward electrical low pressure gas admission valves and electric-hydraulic high-pressure rail valves. These valves provide a means of injecting fuel or other fluids into engines operating within a speed range of 1 to 2100 rpm (range depends on the valve being driven). Plate type solenoid operated gas admission valves (SOGAVs) are suitable for in-manifold injection only, whereas the rail valve provides actuation of both in-cylinder and in-manifold type injection devices.

APPLICATION

The primary purpose of the Woodward In-Pulse control is to control the timing and duration of injection events for up to 20 injection outputs.

The In-Pulse control is a stand-alone unit that receives speed and angular position information from the engine via the speed, top dead center (TDC), and phase signals. The In-Pulse control then uses this information to calculate the injection timing and duration for all cylinders and then individually drives each valve accordingly.

PROGRAMMING

The In-Pulse control system is programmed using Woodward's proven Graphical Application Programmer (GAP). GAP is a high level, block oriented programming language specifically designed for simple and quick implementation of difficult control strategies. GAP functions are easily modified and expanded, allowing ready expansion to meet your individual application needs.

This flexibility allows for complex tasks such as closed-loop injection control or injection can be controlled externally by most Woodward controls, including the 500 series, 700 series, and MicroNet™ controls.

OPTIONS/ACCESSORIES

The In-Pulse control requires MPU's to detect engine speed and TDC. For four-cycle engines, an additional MPU is required to detect engine phase. Alternatively, a camshaft-driven encoder can be used in place of all the sensors. A selection of electric and electric-hydraulic valves are available on request.

For programming and configuration of the application, a user interface connection port is included. A hand-held terminal or PC can be used to communicate with this output port.

- Controls Up to 20 Outputs
- Individual Injection Timing/Duration Adjustment
- Precise Speed Control
- Communication Via RS-232-422 and Local Operating Network (LON)
- ABL/GAP Programming Flexibility
- CE Compliant



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Distributors & Service

Woodward has a network of distributors and service facilities. For your nearest representative call 1 800-835-5182 or see the Worldwide Directory on our web site.

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SPECIFICATIONS

POWER SUPPLY

- Power Rating (high voltage version)90–140 Vdc (110 Vdc nominal)
- Power Consumption (high voltage version)300 W nominal. The voltage source must be capable of providing 7 A for 2 milliseconds without dropping below 90 Vdc.
- Power Rating (low voltage version)18–32 Vdc (24 Vdc nominal)
- Power Consumption (low voltage version)300 W nominal. The voltage source must be capable of providing 14 A for 2 milliseconds without dropping below 18 Vdc.

ANALOG INPUT CHANNELS

- Number of Channels2
- Input Signal Range4–20 mA @ 250 W or 1–5 Vdc @ 10 kW

ANALOG OUTPUT CHANNEL

- Number of Channels1
- Output Signal Range4 to 20 mA @ 600 W max. or
20 to 160 mA @ 50 kW max.

SERIAL COMMUNICATION PORTS

- Number of Ports2
- ConfigurationRS232 or RS422

OTHER COMMUNICATION PORTS

- Number of Ports1
- TypeLON Network

DISCRETE INPUTS

- Number of Inputs2
- Ratings21 Vdc nominal @ 3 mA
75 Vdc nominal @ 3 mA;
110 Vdc nominal @ 3 mA

DISCRETE OUTPUTS

- Number of Outputs.....2
- Ratings0.6 A @ 115 Vac breaking;
4 A @ 28 Vdc breaking

TEMPERATURE RANGES

- Ambient Operating Temperature-40 to +70 °C (-40 to +158 °F)
- Storage Temperature-40 to +85 °C (-40 to +185 °F)

VIBRATION SPECIFICATION

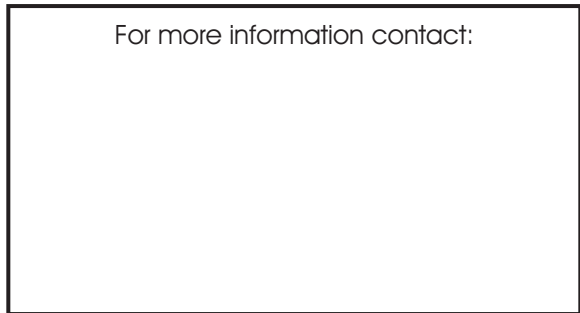
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EMI/RFI SPECIFICATION

-EN50082-2

CLASSIFICATIONS

-UL, cUL, CLASS I, DIVISION 2, Groups A, B, C and D LRS Test Specification 1
-Declaration of Incorporation for CE approval



For more information contact: