



Bus Control Systems



Pneumatic Bus Control System
mounted on a butterfly valve

For Multiple Automated Valve Applications

Overview

Specially equipped Hayward actuated valves, as well as numerous other associated devices, can be linked via standardized communication networks within plants. While conventional communication architecture dictates as many as 8-12 wires run from PLC controls to each automated valve, bus architecture allows all actuated valves in the network to be controlled via a pair of daisy-chained wires – providing a level of enhanced flexibility and utility while dramatically reducing installation and maintenance costs.

Since communication protocols are as varied as the 100 or so manufacturers of programmable logic controllers (PLCs), Hayward actuated valves are equipped with AS-I modules that freely communicate with all PLC brands regardless of protocol. For modulating applications that require communication modules compatible with the specific PLC used, Hayward offers modules compatible with the most popular protocols including Device Net, Profibus, Modbus, Fieldbus, and several others.

Why Bus Is Better

Conventional actuated valve systems, especially modulating systems, often require the running of discrete bundles of wire from the central control station to each actuator in the network. These wiring bundles include power, control and feedback wiring. Use of Hayward's bus control system allows all actuated valves in the network to be linked via a single pair of daisy-chained wires.

Other compatible devices such as flow meters, temperature sensors, and other instrumentation can also be included in the network. Electronic "addresses" assigned to each actuated valve enable the PLC to command any actuator in the network independently of all other actuated valves.

The advantages of bus control over conventional control are numerous:

- Wiring is greatly simplified
- Power from the air solenoid in pneumatic actuation applications can be supplied via the bus connection
- Troubleshooting and future modifications are relatively simple
- Other devices can be included in the network
- Speed, reliability, and flexibility are greatly enhanced
- Net applied cost is often a fraction of conventional control costs

Applied Cost Savings

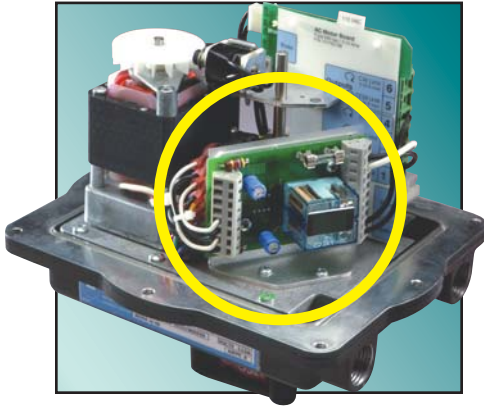
The industry standard for discreet wiring (design conduit, wire, and installation) is approximately \$8 per linear foot vs. a comparable bus system which can be installed for approximately \$2 per linear foot.

Using these cost factors, a modulating system requiring 20 actuators installed an average of 200 feet from the PLC would cost approximately \$32,000 to connect. An equivalent bus system would cost approximately \$8,000 with the resulting savings more than offsetting the cost of bus compatible actuated valves.

In bus control systems, the greatest cost savings are often realized later since troubleshooting is often accomplished through visual review of the system via a PC instead of physically tracing wires. Future modifications and system expansions are also greatly simplified.



Bus Control Systems



Electric Bus Module
(highlighted by yellow circle)

A Choice of Electric or Pneumatic Automation

Hayward bus control systems are designed to work with Hayward's EVS Series Electric and Series PH or PK Pneumatic Actuators. The bus control module for the electric actuator fits inside the actuator housing, and the one for the pneumatic actuator is contained in a small housing that mounts directly to the actuator. The module provides power and signal to the actuator.

Pneumatic Bus Module Features

- NEMA 4, 4X, and IP67 Enclosure (UL, CSA, and CE Listed)
- Transparent Screw-On Lexan® Cover
- Large Color-Coded Visual Open/Closed Indicator
- Solid State Inductive Positioning Sensors
- Integral High Flow, Low Power Consumption Solenoid Valve in Brass or Stainless Steel
- Enclosed Protected Pilot Solenoid
- AS-I or Device Net Twisted Pair Solenoid Power*
- Choice of 120 VAC or 24 VDC Operation
- Manual Override

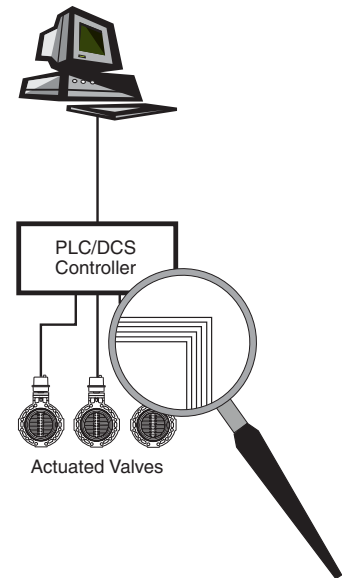
*Auxiliary power must be provided to the solenoid for Foundation Fieldbus applications.

Electric Bus Module Features

- Flexible, Housing-Enclosed Plug-In Type Protocol Module
- Several Different Protocol Modules to Handle Varying Application Requirements

Conventional I/O Architecture

Business Systems Operator Workstations



Fieldbus I/O Architecture

Business Systems Operator Workstations

