

Bus Control System

For cost effective multiple automated valve installations



Pneumatic Bus Control System mounted on a butterfly valve

Hayward's unique Bus Control System for multiple automated valve applications will dramatically reduce installation and maintenance costs...as well as provide a level of enhanced flexibility and utility never before possible.

Applications

Systems that utilize 8 or more electric or pneumatic actuators can benefit from Hayward's Bus Control System Technology. Typically these systems have automated valves controlled by a programmable logic controller (PLC). What Hayward Bus Technology does is to allow all the actuators in the systems to be controlled by the PLC with just a single pair of wires. While all installations can utilize and benefit from Hayward Bus Technology, the greatest potential for cost savings comes when the actuators are located at a distance of 50 feet or more from the PLC. Typical applications include multiple automated valve systems in aquariums, zoos, water parks, water treatment plants and chemical processing plants.

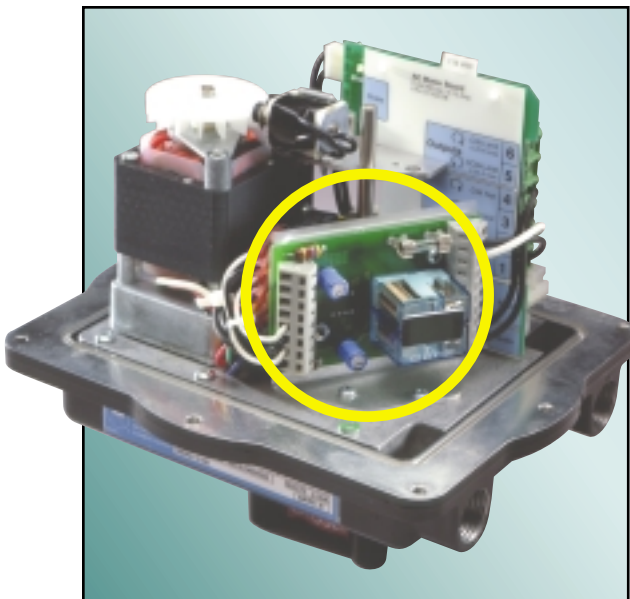
Why Bus Is Better

In conventional installations a bundle of power and signal wires is run from the PLC or control station to each actuator. For example, an electric actuator with just two auxiliary limit switches could have as many as 9 wires run to it. Multiply that by the number of actuated valves in the system and you can see how complex it can get. And the more features the actuator has the more wires that have to be connected to it. In multiple automated valve applications the number of wires can run into the hundreds.

Here's where Hayward's Bus Control System can make for a better, more cost efficient installation. With Bus Technology a single pair of wires is used to control all of the actuators in the system. All the actuators in the systems are daisy chained on the same pair of wires. Each actuator is assigned a unique address which identifies it to the PLC. Only the designated actuator has the ability to read and act on the control instructions intended for it.

Real Cost Savings

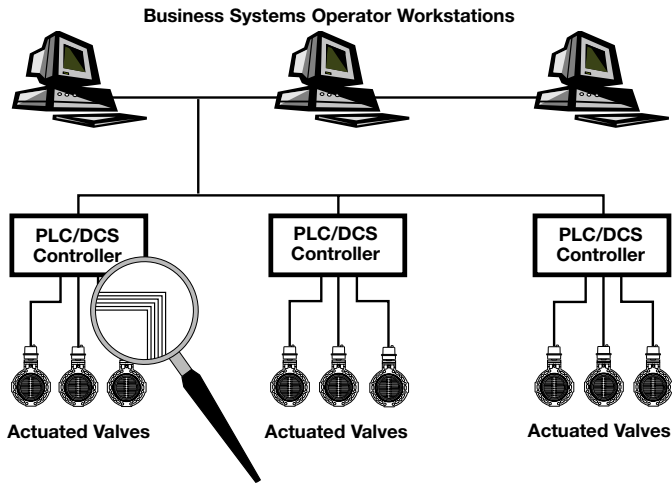
The industry standard cost for discreet wiring (design, conduit, wire, installation, etc.) is \$8.00 per foot – versus \$2.00 per foot with Bus Technology. In a system with 20 actuators installed an average of 200 feet from the PLC, the installation cost savings would be \$24,000 for a system using Hayward's Bus Technology. And remember that this is just the savings on the installation cost alone. Think of what it will cost to maintain and troubleshoot a maze of hundreds of individual wires....a cost that would not exist with Hayward's BUS control system.



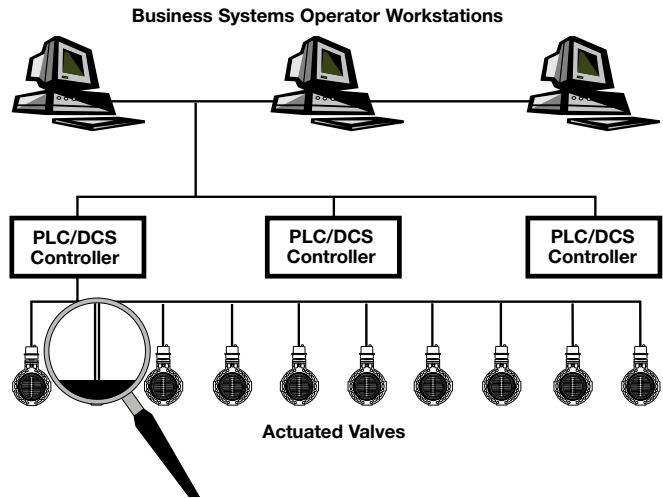
Electric Bus Module (highlighted by yellow circle)

Additional Technical Information

Conventional I/O Architecture



Fieldbus I/O Architecture



Application Flexibility

Applications that are well along in the design stage can still take advantage of Hayward's Bus Control System. In both a conventional and BUS system installation, the computer interfaces with a PLC. The PLC simply sequences the operation of valves and is already commonplace in most multiple valve systems. Therefore, there are no significant changes required to the main control station to take advantage of Hayward's Bus Technology.

Hayward Bus Technology also takes into account the different communications protocols required by PLC's from different manufacturers. In basic on/off applications the Hayward Bus Control System "understands" all PLC's no matter what communications protocols the PLC uses: PROFIBUS, Modbus, Field Bus or others. And for modulating applications, Hayward can modify the Bus Control System for the specific communication protocol required by the PLC.

Electric or Pneumatic Automation

Hayward Bus Control Systems work with Hayward EVS Series Electric Actuators and Hayward Series PH or PK Pneumatic Actuators. The Bus Control Module for the electric actuator fits inside the actuator housing. The one for the pneumatic actuators is contained in a small housing that mounts directly to the actuator and provides power as well as signal to the actuators.

Pneumatic Bus Module Features

The pneumatic module is housed in a transparent, screw-on Lexan® housing that is rated NEMA 4, 4X, and IP67. The large color-coded

visual indicator clearly displays the percentage that the valve is open or closed. Solid state inductive sensors located inside the enclosure provide reliable and accurate position sensing. This reduces wear on the mechanical switches and helps prolong their service life.

The module features an integral solenoid valve and is available in brass or stainless steel construction. This special solenoid is a high flow, low power consumption unit with the pilot solenoid protected within the module enclosure. Solenoid power is provided directly from the AS-I or DeviceNet twisted pair, simplifying electrical connections. The module is available with a choice of either 120 VAC or 24 VDC operation – and a manual override is standard on both. Auxiliary power must be provided to the solenoid for Foundation Fieldbus applications. The pneumatic Bus module works with Hayward Model PH or PK Pneumatic Actuators.

“ Fieldbus: A communication network designed to allow control of various field devices via a single pair of wires. ”

Electrical Bus Module Features

The electrical Bus Module is a plug-in type protocol module that allows for maximum flexibility. It mounts directly into the actuator housing and is completely contained within the housing. This eliminates the need for external additions to the actuator or any additional brackets. Several different protocol modules are available to handle all applications parameter requirements.



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