AMS™ Suite: Intelligent Device Manager
ValveLink® SNAP-ON™ Application

- Communicate with both HART® and FOUNDATION™ fieldbus FIELDVUE® Digital Valve Controllers in real time
- Online, in-service Performance Diagnostics identify faults, list possible causes and recommend corrective actions
- Schedule automatic valve tests and generate detailed diagnostic reports
- Reduce time to complete commissioning and turn arounds

AMS ValveLink Software is a core component of the proven PlantWeb digital plant architecture. AMS ValveLink software powers PlantWeb through predictive and proactive control valve maintenance using intelligent digital valve controllers to improve availability and performance.

FIGURE 1. In-service Performance Diagnostics go beyond just telling you about problems – they recommend actions to correct faults.
THE POWER OF DIAGNOSTICS

AMS™ Suite: Intelligent Device Manager allows easy access to powerful device diagnostics. The AMS ValveLink SNAP-ON application gives you the ability to work with HART and FOUNDATION™ fieldbus FIELDVUE Digital Valve Controllers. It provides an easy-to-use PC environment for configuring, calibrating, documenting and diagnosing the operating characteristics of DVC6000, DVC2000, DVC5000, DVC6000f, and DVC5000f series Digital Valve Controllers.

Using AMS ValveLink, an instrument engineer, maintenance technician or operations supervisor, can obtain the information needed to solve problems before they affect the process. AMS ValveLink’s diagnostic capabilities permit you to select only those control valves that need to be rebuilt during plant turnarounds to optimize use of your valuable maintenance resources.

Communicate with HART® and FOUNDATION™ fieldbus FIELDVUE Instruments in the Same Application

AMS ValveLink software remotely communicates with HART and FIELDVUE instruments (DVC2000, DVC5000 and DVC6000 Series) over the existing 4-20 mA signal wiring using the HART communication standard. The same application also remotely communicates with FOUNDATION fieldbus FIELDVUE instruments (DVC6000f and DVC5000f Series) over the fieldbus H1 segment. Information for all series of instruments is presented in a consistent, easy-to-interpret interface that provides:

- A Device Connection view of all connected instruments
- Monitoring of instrument operational parameters and alerts
- Review and comparison of diagnostic graphs
- Instrument setup and calibration
- Data import and export

FIGURE 2. Device Connection view provides easy access to all network and database instruments.
Performance Diagnostics

Predictive in-service diagnostics monitor the health of the valve assembly and provide customized diagnostics for advanced troubleshooting.

The predictive in-service diagnostics may be used to help detect problems with air leakage, valve assembly friction and deadband, instrument air quality, loose connections, supply pressure restriction, and valve assembly calibration. When a problem is identified, the diagnostic provides a description and severity of the problem, a probable cause, and recommended action.

In-service diagnostics for troubleshooting allow custom diagnostics to be set up to collect data at a high-frequency collection rate and present the data in a graphical format. When an issue is so complex that external expertise is required, the data may be exported from the custom diagnostic and sent to an expert for evaluation, thereby minimizing the need for an on-site visit.
FIGURE 4. Performance Diagnostics provide on-line/in-service predictive diagnostics to identify faults and list possible causes and recommended corrective actions for each fault.

**Provide Real-Time Notification of Current and Potential Valve and Instrument Problems**

Performance Diagnostics enables the use of diagnostics while the valve is in-service and operating. Tests can be performed to identify problems with the entire control valve assembly, such as:

- Red/Yellow/Green condition indicator, including:
  - I/P and Relay Integrity
  - Supply Pressure
  - Relay Adjustment
  - Air Mass Flow
  - Travel deviation
  - 1-Button Sweep

Performance Diagnostics are available upon user request or may be scheduled to automatically run on a daily, weekly, or monthly basis.
FIELDVUE Advanced Diagnostics vary the digital valve controller set point and plot valve operation to provide insight into the dynamic performance of the valve/actuator assembly. Advanced Diagnostics include out-of-service diagnostics such as valve signature, dynamic error band, and step response that will assist in the identification of emerging valve problems quickly and accurately.

The Valve Signature Diagnostic is used to:
- Evaluate valve friction, deadband, and shutoff capability.
- Calculate actuator spring rate and bench set.
- Identify potential packing problems.
- Identify potential packing problems.
- Compare current condition to previous baseline condition.

The Dynamic Error Band diagnostic is used to analyze hysteresis, deadband, and dynamic error.

The Step Response diagnostic allows you to evaluate how well the valve tracks an input change. By minimizing dead time, deadband, and overshoot, process control is greatly enhanced. With the Step Response test you can:
- Validate tuning parameters.
- Obtain a numerical analysis for overshoot, hysteresis, dead time, t63, and t86.
- Define up to 11 steps.

A Performance step test provides a predefined sequence of 29 steps. This test allows the user to quickly evaluate valve and actuator response to signal change and determine maximum deadband.
FIGURE 6. Use this data to evaluate valve performance and determine if maintenance is required.

Set Up and Test FIELDVUE Instruments for SIS Applications

Use AMS ValveLink Software to set up and test the final control element in safety instrumented system applications. AMS ValveLink Software for SIS tiered digital valve controllers provides:

- A Setup Wizard that sets up the digital valve controller for use in a Safety Instrumented System.
- The capability to initiate a partial stroke test of the final control element without requiring a process shutdown. Without disturbing the process, you can run a partial stroke test to prove the valve will respond on demand. Store partial stroke test results for future comparison and study.
- Documentation for statutory authorities. Every event performed with AMS ValveLink Software is logged with a time and date stamp to document that tests were run and how the valve assembly responded.
- Diagnostic information to allow predictive maintenance of the final control element. No need to unnecessarily shut down the process to perform maintenance on the safety shutdown valve.

Schedule Performance Diagnostics and SIS Partial Stroke Diagnostics

With Scheduler, you can schedule Performance Diagnostics and SIS Partial Stroke diagnostics to run on a recurring daily, weekly, or monthly schedule that you specify. A summary of the outcome of scheduled tasks is available from within Scheduler and for complete details you may view the resulting diagnostic graphs and analyses. Using the AMS ValveLink SNAP-ON, any resulting alerts will be visible from within AMS Device Manager Audit Trail, AMS Device Manager Alert Monitor, and AMS Suite: Asset Portal®.
Automate Repetitive Actions by Setting Up Batches

With Batch Runner, you can set up AMS ValveLink to automatically run diagnostics tests, calibrate, or upload configuration data to multiple valves with a user specified routine. During a turnaround or production change, you can upload configurations, run the Performance Tuner to optimize tuning, or even reset the instrument clock without any interaction by personnel. Batch Runner reduces redundancy and increases consistency by allowing the user to set up a batch once, and repeatedly run that set of actions on different groups of valve assemblies.

Use Signature Series Tests to Benchmark Valve Performance

Current diagnostic tests can be overlaid with Signature Series tests performed by the factory when the valve was manufactured. ValveLink Signature Series tests are performed on Fisher control valves equipped with the FIELDVUE digital valve controller when specified as part of the original valve order. To order Signature Series testing, simply specify your Signature Series testing requirements on all Fisher control valve orders. By importing Signature Series data into AMS ValveLink, you can compare the as-shipped performance with the valve’s current operating condition.

Reports

Reports may be generated that contain many different elements, including the Performance Diagnostics and Advanced Diagnostics. These reports can be generated from various locations in AMS ValveLink.

- Quick Report
- Current Dataset Report
- Custom Report
- Batch Report (available in Batch Runner)
FIGURE 8. The Setup Wizard makes setting up your valves fast and easy.

Reduce Commissioning Time

Save time by using the configuration and calibration capabilities of AMS ValveLink to perform these commissioning tasks online:

- Automatically calibrate travel
- Verify dynamic response to input changes
- Setup Wizard walks you step-by-step through instrument set up and calibration.

Setup Wizard asks basic questions about the valve and actuator to simplify and speed commissioning. You can even customize the Setup Wizard so that:

- Instrument configurations are optimized for specific applications.
- Alert points, travel cutoffs, travel limits, and characterization are consistently applied.
- Manual entry is eliminated.

Automatically Optimize Valve Performance

The Performance Tuner lets you easily adjust a FIELDVUE digital valve controller for optimum performance. When mounting a FIELDVUE digital valve controller, to either a Fisher or a third party valve, the Performance Tuner can optimize valve performance for you.
### TABLE 1. AMS ValveLink Software Capability

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<th>100 Tag AW7070VL00100</th>
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<tr>
<td>HART Multiplexer</td>
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<td>Foundation fieldbus H1 PC Card</td>
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(1) DVC6000 only.

(2) Performance Diagnostics are available for DVC5000 and DVC6000 instruments through the AMS Device Manager HART multiplexer interface. Performance Diagnostics are available for DVC6000 instruments through the System Interface to PROVOX or Delta but not for DVC5000 instruments.

Performance Diagnostics are available for DVC5000 and DVC6000 instruments through the System Interface to a Westinghouse Ovation system.

(3) HART only.

■ Indicates capability available.