

# SIS ProofCheck™ Application

- Fast, repeatable, and reliable testing of safety and process equipment
- Substantially reduce testing time
- Capture manual and visual verifications
- Automate setting and releasing of test conditions in SIS, BPCS, and other connected systems
- Produce off-the-shelf reports capturing manual and automated data
- Facilitate safe return to operations



## Introduction

SIS ProofCheck™ delivers a comprehensive out-of-the-box testing solution for safety instrumented systems (SIS). SIS ProofCheck incorporates all elements of proper SIS testing in a single solution, including field devices, wiring, signal conditioners, safety logic, BPCS logic, final control element response, and manually entered data. Test procedures are customizable and captured electronically in a database. Supporting documentation such as manuals, pictures, diagrams, and any other information needed for executing the tests is included in the test procedures. Test results are available via built-in reports.

## Product Description

### Intelligent Field Device Loop Testing

Validation and periodic proof testing may include sending a signal from the instrument, to verify not only the instrument, but also the wiring and signal conditioners in the path to the SIS. Sending technicians to the field with handheld

communicators to manually place smart devices in loop test mode is time-intensive, error-prone, and may expose the field technician to a variety of hazards, including heights, temperature extremes, and chemicals. With SIS ProofCheck, you can group, monitor, and fix the output of transmitters from a workstation or a tablet in the field. SIS ProofCheck allows for automated testing of your plant's SIS voting logic.

### Record System Response Automatically

While test procedures are executed, SIS ProofCheck records the response of HART field devices, OPC variable values, and manual inputs. The system response to the test procedures is automatically verified per the defined test criteria.

### Captures Manual and Visual Verification

Procedures for both proof testing and return to operation frequently include manual interactions and visual verifications. SIS ProofCheck captures any manual/visual verification the operator or technician needs to record/perform.

Manual verifications can capture items like:

- Did the valve stem move?
- Did the light/siren activate?
- Instruct an operator to press the reset button after a trip
- Set/reset a breaker
- Any manual action
- Operators can add notes/pictures to the record

### Execute Tests From Both Control Room and in the Field

SIS ProofCheck support execution on different platforms, including workstations in the control room or mobile devices in the field, including tablets and laptops. SIS ProofCheck supports IOS, Android, and UWP (Windows Store App). The test can be started on one location and finalize in a different location.

It is even possible to execute tests without connectivity to the central system. Manual actions can be recorded and synchronize once connectivity is restored.

## Safer Return to Operation (RTO)

Once validation and test procedures are completed, it is necessary to ensure the system is ready for return to operation. All bypasses, forces, and overrides must be removed; bypass valves should return to the proper position; alarms that were suppressed/shelved must be cleared; test material and tools removed. SIS ProofCheck can assist in verify the system's state and facilitate a safe return to operation.

## Compliance with Safety Standards

Most countries require companies to follow Recognized And Generally Accepted Good Engineering Practices (RAGAGEP). The IEC 61511 standard is recognized as RAGAGEP around the world. IEC 61511 includes provisions for proof testing; clause 16 calls for written proof-test procedures describing the correct operation of sensors and final elements, proper logic action, and correct alarms and indications. The 61511 standard also requires periodic visual inspections to ensure no unauthorized modifications and no observable deterioration in the system components. Adequate documentation of proof test and inspection is mandated in 61511. SIS ProofCheck facilitates compliance to safety management standards.

### Off-the-Shelf Reports

Proper documentation is essential for validation and proof test. Off-the-shelf reports provide all the information needed for auditing and quickly determine what needs to be fixed. Reports expedite safe and efficient return to operations.

### Management of Change

Proper management of change is vital thorough the entire safety lifecycle. SIS ProofCheck can utilize DeltaV SIS features to verify the safety logic has not changed. DeltaV SIS uses cyclic redundancy check (CRC) codes to identify changes through the SIS configuration, including application logic, I/O configuration, and logic solver properties. The logic solver generates these CRC codes directly without relying on applications running on a workstation, making them highly reliable. These CRC codes are accessible via OPC.

## Architecture

SIS ProofCheck uses a server (Mobius Server) located on the 2.5 network, which communicates with some services installed on the control network.

The Mobius server functions as a database server, web server, and communication server. The Mobius server communicates with AMS Device Manager via the OPC HART Service installed on the AMS Device Manager Server Plus.

The Mobius server interfaces with DeltaV via the OPC STD Service installed on an Application Station.

Mobile devices connect to the Mobius server directly on the L2.5 network. As illustrated in figure 1, all web interfaces connect to the Mobius server on the DMZ.

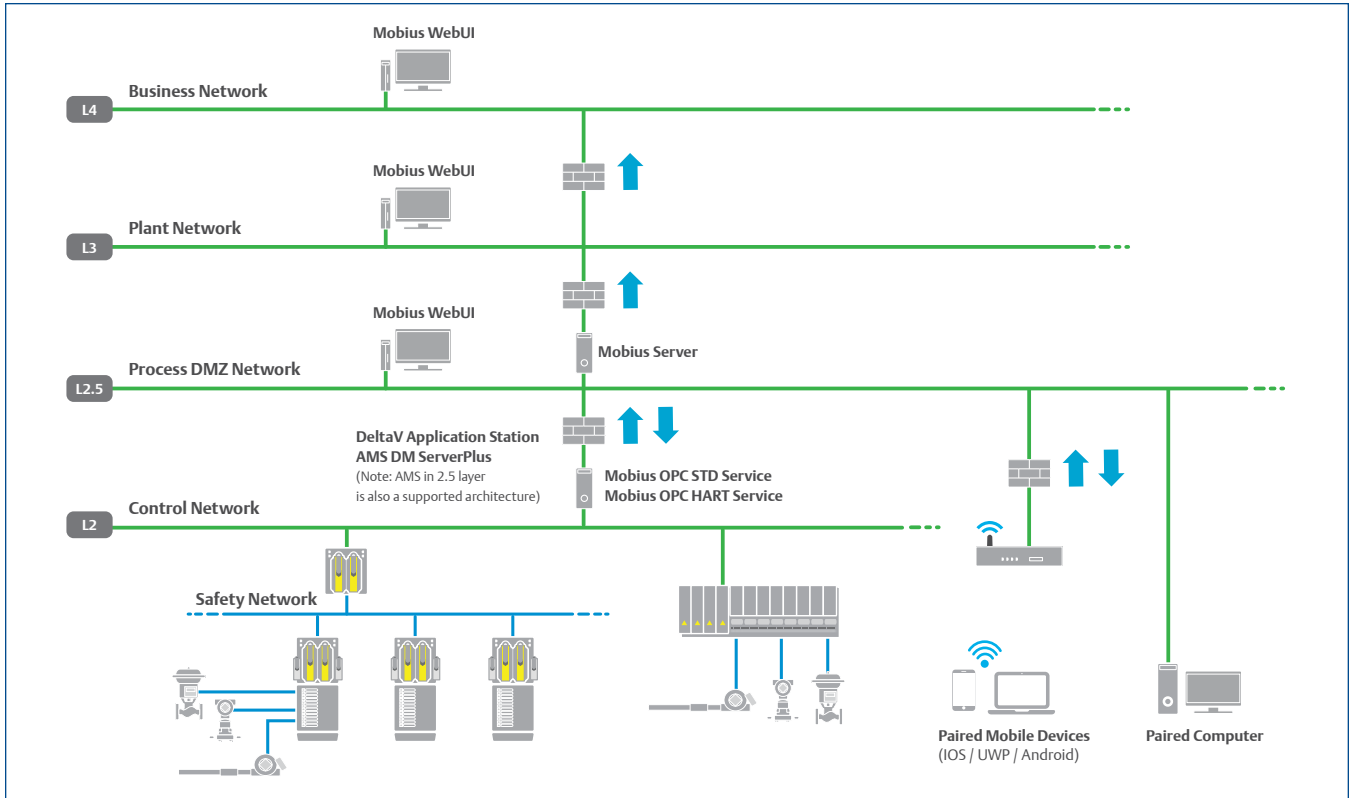


Figure 1. SIS ProofCheck Architecture.

## Ordering Information

Description	Model number
Enables SIS ProofCheck (Required on AMS Device Manager systems associated with SIS ProofCheck System IDs)	AW7077PC
SIS ProofCheck Application, XXXXX Parameter	AW7077PCXXXXX
SIS ProofCheck Scaleup, XXXXX Parameters	AW7077PCUPXXXXX
SIS ProofCheck Annual Maintenance, XXXXX Parameters	AW7077PCAMXXXXX

Where XXXXX represent the number of parameters (from 300 to 50,000 parameters).

## Requirements

### Software Requirements

- Windows Server 2016 Standard and Datacenter edition for Mobius Server
- IOS / UWP / Android for mobile device access

### Minimum and Recommended Hardware Requirements

- 8 GB minimum, 12 GB recommended for Mobius Server
- x64 Processor, 1.4 GHz, 4 Cores Minimum. x64 Processor 2.0 GHz, >4 cores recommended for Mobius Server
- 60 GB minimum hard drive space, 250 GB recommended

## Prerequisites

- AMS Device Manager v14.5 or later is required
- Enable SIS ProofCheck on all associated AMS Device Manager systems
- Sufficient OPC licenses in DeltaV are required for reading module information
- Valid Guardian Support

## Related Products

- AMS Device Manager reduces commissioning and maintenance expenses while improving reliability and product quality
- DeltaV SIS process safety system has a uniquely scalable modular architecture based on the CHARMs Smart Logic Solver (CSLS) and the flexibility and ease of use of Emerson Electronic Marshalling solution
- Plantweb Optics connects, collects, and contextualizes operations data
- AgileOps SIF tracker monitors the performance and health of a safety system

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