Reference Topology HIMA01

HIMA Paul Hildebrandt GmbH HIMax and HART for SIL applications in Chemical Industry

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1 Document Information

1.1 Purpose and Scope

This document specifies the Open Integration Reference Topology HIMA01. All content of this document is jointly developed, reviewed and approved by HIMA Paul Hildebrandt GmbH and Endress+Hauser as a common deliverable of Open Integration.

1.2 Document History

This is version 1.00.00 of this document. Version history:

Version	Released	Description
1.00.00	2016-05	Initial version

1.3 Related Documents

Please refer to related documents as listed below:

Document	Description
SD01680S/04/EN/01.16	Integration Tutorial HIMA01
SD01681S/04/EN/01.16	Integration Test Summary HIMA01
SD01682S/04/EN/01.16	List of Tested Devices and Versions HIMA01

2 Target Market

2.1 Industry Application

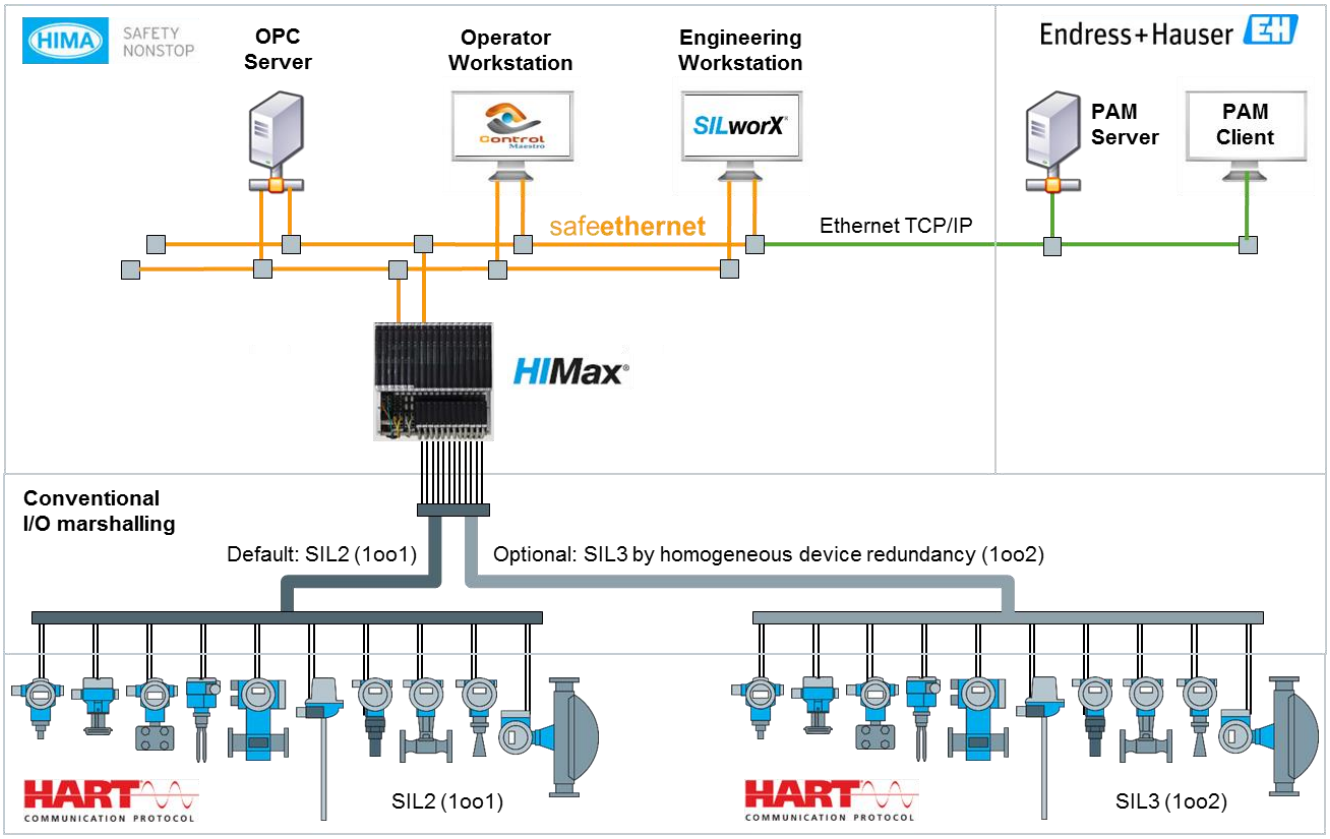
This reference topology is designed to serve SIL applications in chemical industry.

2.2 Fieldbus Technology

This reference topology is designed for instrumentation with HART.

3 Reference Topology

3.1 Overview



3.2 Process Control System

The process control system part top left in the overview is provided by HIMA:

The HIMax safety control unit allows connecting single or redundant field devices via 4...20 mA/HART. This unit is prepared for SIL3 even without redundancy; but available field devices as listed in chapter 3.5.1 are prepared for SIL2 only, if used as single device (1oo1). However, SIL3 may be achieved with all field devices listed, if applied with homogeneous redundancy (e.g. 1oo2).

Core element on top of a redundant safeethernet backbone is SILworX for safety control engineering, complemented with ControlMaestro SCADA for process visualization as example for an OPC client software package which may be applied in combination with the HIMA safety control system.

Reference hardware:

HIMA	Article	Description
HIMax 	X-BASE PLATE xx	Base plate with 10-18 slots
	X-FRONT COVER xx	Front cover for base plate with 10-18 slots
	X-FAN xx	Fans for base plate with 10-18 slots
	X-CPU 31	Processor module for small and mid-size applications,4x RJ-45
	or	
	X-CPU 01 +	Processor module for high performance applications, 4x RJ-45
	X-SB 01	System bus module for X-CPU 01
	X-COM 01 +	Communication module (e.g. for HART IP, OPC)
	X-CB 001 02	Connector board for X-COM 01
	X-AI 32 01 +	Analog input module, 32 channels, 4..20 mA, SIL 3
	X-CB 016 xx	Connector board for X-HART module, X-AI 32
	X-AO 16 01 +	Analog output module, 16 channels, 4..20 mA
	X-CB 017 xx	Connector board for X-HART module, X-AO 16
	X-HART 32 01	HART Interface module, 32 channels, SIL 3
	X-BLK 01	Blank module for I/O slots, as required

3.3 Asset Management System

The asset management part top right in the overview is provided by Endress+Hauser. FieldCare utilizes the HIMA CommDTMs to access underlying HART devices via the system backbone and hardware of the safety system. Additional hardware to bypass the control system is not considered in this topology.

3.4 Field Network Infrastructure

3.4.1 Conventional Wiring for 4-20 mA/HART

An adequate conventional wiring for 4-20 mA/HART is mandatory for this topology, with limited impact to integration tests. Specific hardware for this part is not defined; recommendable hardware may be listed here in future.

3.5 Field Devices

Open Integration reference topologies always have to be tested versus a selection of most relevant field devices for the target market defined in chapter 2.1. This serves to verify that the system under test is capable to handle a necessary variety of certified field devices. All field devices are fully compliant to standards, but may be implemented versus different version of standards and each field device typically implements only a subset of relevant compliant means.

This chapter defines only a basic set of mandatory field devices for verification of this reference topology, as agreed by HIMA Paul Hildebrandt and Endress+Hauser. For more details, please refer to latest list of tested devices and versions for this reference topology, referenced in chapter 1.3.

3.5.1 HART devices

Reference hardware:

Endress+Hauser People for Process Automation	Article	Description	HART ID
Cerabar S 	PMC71	Absolute and Gauge Pressure Transmitter SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 7	0x0018 0x1118
Omnigrad M 	TR10+TMT82	Temperature Transmitter SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 7	0x00CC 0x11CC
Levelflex 	FMP51	Guided Radar Level Transmitter SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 6	0x0022
Micropilot 	FMR51	Radar Level Transmitter SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 6	0x0028
Deltabar S 	PMD75	Differential Pressure Transmitter SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 7	0x0017 0x1117

Endress+Hauser People for Process Automation	Article	Description	HART ID
Prowirl 200 	7F2B	Vortex Flow Transmitter SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 7	0x0038 0x1138
Promass 80 	80I	Coriolis Flow Transmitter SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 5	0x0050
Deltapilot S 	FMB70	Hydrostatic Level Transmitter SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 7	0x001A 0x111A
Promass 83 	83F	Coriolis Flow Transmitter SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 7	0x0051 0x1151
Promag 200 	5P2B	Electromagnetic Flow Transmitter SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 7	0x0048 0x1148
Promass 200 	8F2B	Coriolis Flow Transmitter SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 7	0x0054 0x1154

auma Solutions for a world in motion	Article	Description	HART ID
AUMATIC 	AC SIL 01.2	Actuator Control SIL2 (1oo1) SIL3 (1oo2, 2oo3) HART 7	0xE1FD

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