

Integration Test Summary HON02

Honeywell Experion[®]PKS and PROFIBUS for
Chemical Industry

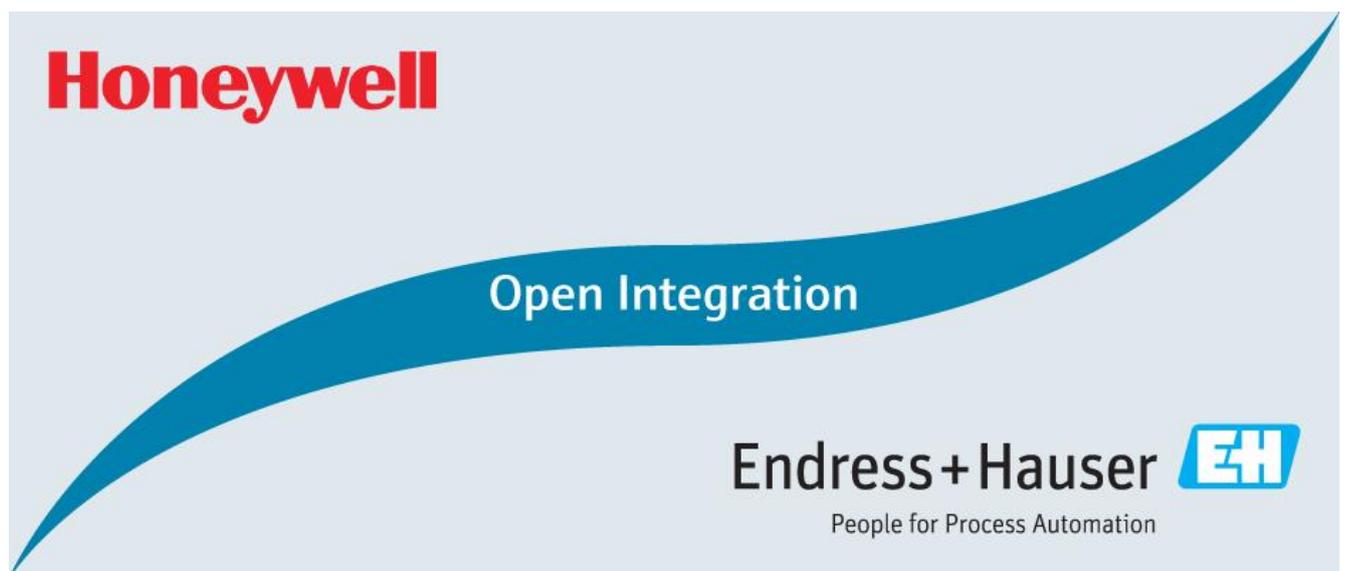


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1 Document Information

1.1 Purpose and Scope

This document provides a brief summary of Open Integration tests for Reference Topology HON02. All content of this document is jointly developed, reviewed and approved by Honeywell 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	2017-12	Initial version

1.3 Related Documents

Please refer to related documents as listed below:

Document	Description
SD02062S/04/EN/01.17	Reference Topology HON02
SD02063S/04/EN/01.17	Integration Tutorial HON02
SD02065S/04/EN/01.17	List of Tested Devices and Versions HON02

2 Preface

Open Integration focuses on complementary system tests to verify integration and interoperability using practical test conditions. This is done by testing the system versus a reference test network with a relevant variety of components and field devices for defined target applications, and asking questions like this:

- Is the system prepared to handle a necessary variety of compliant device implementations?
- How does it deal with multiple device revisions and device replacements?
- Does it apply reasonable bus settings to share access with other masters?
- How can field devices be accessed for configuration or asset health monitoring?
- Is this path stable and performing? ...

Open Integration does not test field devices, field network components or systems as such. All parts of a reference topology under test are released and have passed mandatory integration and interoperability tests as defined by technology foundations upfront.

3 General Introduction

This chapter provides a short introduction to Open Integration testing in general:

3.1 Reference Test Network

Open Integration verifies systems versus a reference test network: Figure 1 shows the principle as applied for FOUNDATION Fieldbus:

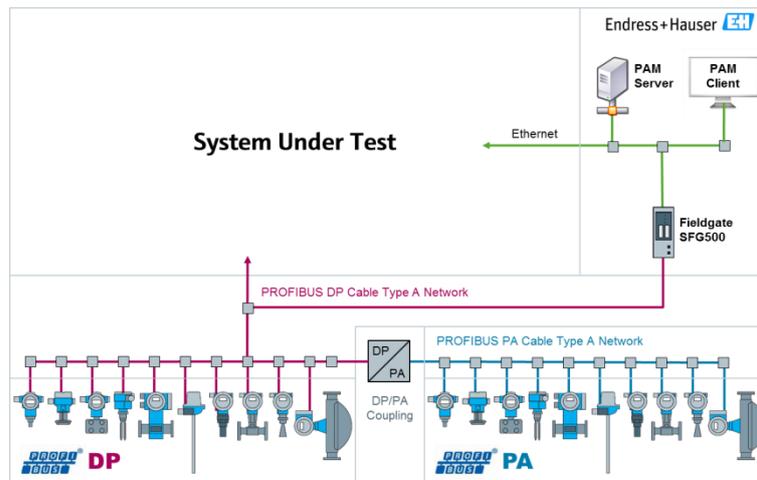


Figure 1: Open Integration Reference Test Network for FOUNDATION Fieldbus

3.2 Integration Test Scenarios

Open Integration verifies supported means for integration into the system and interoperability with other tools. Figure 2 shows the main test scenarios as considered:

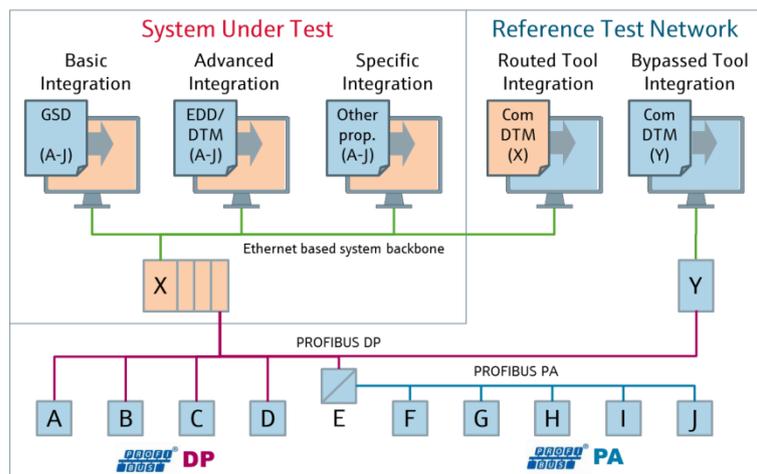


Figure 2: Open Integration Test Scenarios

3.2.1 Basic Integration

This scenario deals with integration of field devices for commissioning of the PROFIBUS network and cyclic communication of process values by means of GSD. As a result, process values with status information are available for further processing within the control strategy of the system. Test cases related to this scenario are mandatory.

3.2.2 Advanced Integration

This scenario deals with device type specific integration of field devices by means of EDD, FDT/DTM or FDI. As a result, the system is enabled to access additional information from field devices, e.g. for an integrated asset management solution. Test cases related to this scenario are mandatory, if the system under test supports such means.

3.2.3 Specific Integration

This scenario considers proprietary means for integration which may be supported by a specific system, e.g. to simplify commissioning or to provide preconfigured elements for visualization. This is optional and not supported by standard test cases. If relevant, a specific set of additional test cases may be defined.

3.2.4 Routed Tool Integration

Vice versa, this scenario deals with integration of system components under test as access path for plant asset management software provided by Endress+Hauser. Test cases related to this scenario are mandatory, if the system under test supports such means.

3.2.5 Bypassed Tool Integration

This scenario focuses on interoperability with other masters connected to the PROFIBUS network to access field devices independently from routing support provided by the system under test. Test cases related to this scenario are mandatory. Test results may serve to complement a missing routing support, or as performance reference for routing support provided by a system under test.

4 Relevant Test Scenarios

We consider using Honeywell Experion®PKS in combination with Honeywell Field Device Manager (FDM):

Honeywell Experion®PKS requires Basic Integration of field devices by means of GSDs for PROFIBUS.

Honeywell FDM supports Advanced Integration of field devices by means of DTMs and EDDs. This has to be tested.

Honeywell Experion®PKS shall also be tested whether to share access with other PROFIBUS master devices for Bypassed Tool Integration.

Routed Tool Integration is not supported by Honeywell Experion®PKS. Specific Integration is not required.

5 Summary of Test Results

5.1 Basic Integration

Device Type Library

- PROFIBUS Network configuration in Control Builder is managed by SYCON.net.
- There is no function to import GSDs directly from the SYCON.net tool. GSD files must be copied into the windows path "C:\ProgramData\SYCONnet\Profibus\GSD" and then reloaded into the catalog.
- Following this procedure, all required GSD files have been successfully imported into the catalog.
- In the catalog, GSD drivers are not sorted according to their slave family structure as defined in the GSD, but by vendor name only.
- The vendor name as written in the GSD determines the catalog folder in which the imported device type is listed. Endress+Hauser field devices may be found in "Endress+Hauser" or "Endress + Hauser".
- Multiple GSD versions can be handled in the SYCON.net catalog. However, the device is displayed with the same model name.

Baud rates

- The basic integration workflow for integration of PROFIBUS devices by means of GSD with Honeywell Experion®PKS has been tested for a variety of devices at different baud rates. Honeywell recommends using either 500 kBaud or 1.5 MBaud:

PROFIBUS devices		PROFIBUS ID	Baud Rate (Baud)										
			9.6k	19.2k	31.25k	45.45k	93.75k	187.5k	500k	1.5M	3M	6M	12M
Master	PGM		✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗
PA Slave	Cerabar S	0x1541	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
PA Slave	Cerabar M	0x1553	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
PA Slave	Liquiphant	0x152B	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
PA Slave	Deltabar S	0x1542	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
PA Slave	Levelflex	0x1558	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PA Slave	Micropilot	0x1559	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PA Slave	TMT84	0x1551	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
PA Slave	Liquiline M	0x1543	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
PA Slave	Prowirl 200	0x1564	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
DP Slave	Promag 53	0x1526	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
DP Slave	Promass 83	0x1529	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓

Legend: baud rate ✓ = supported, ✗ = not supported or recommended, greyed = not applicable

Field Network Configuration

- In order to use the field network configuration (Sycon.net), it must be installed on the station. This could be done during initial station installation or as a post install.
- Rule files are required for supporting the correct configuration of the block model for the access of the PROFIBUS devices in Honeywell Experion®PKS. These Rule files are provided by Honeywell and must be copied in the windows path "C:\ProgramData\Honeywell\Experion PKS\PBRuleFiles".
- GSD and Rule files need to be copied on each Computer station from which the PROFIBUS Network configuration is operated (Server, Flex Station ...).
- Inserting a new slave device into the PROFIBUS network does not configure automatically all slots if the corresponding device Rule does not exist.
- Configured device input and output slots must be grouped into virtual modules. A maximum of eight virtual modules can be created for a slave.
- Bus parameter settings are updated automatically according to the configured baud rate.
- The Bus Monitoring parameters as Watchdog Control Time and Data Control Time are depending on the baud rate. These parameters must be configured according to Honeywell recommended values.
- The DPV1 support option is selected by default, but without further use.
- SYCON.net allows downloading a baud rate configuration, which is not supported by a device.
- The configured Bus parameters allowed access also with a secondary master.
- A Network Scan function is available in the PROFIBUS Master Gateway for adding automatically all devices in the Field Network Configuration window. However, this function is not recommended to use due to a SYCON.net bug, which assigns wrong slaves addresses. This issue is reported and will be fixed in the next Experion®PKS release.
- The PGM does not accept PROFIBUS connectors with diagnostic LEDs. Honeywell recommends using any without LEDs.

Online Monitoring and Control Strategy

- The Control Builder library PGM_IF provides four PROFIBUS Function blocks for reading and writing analog and digital signals.
- These function blocks can be optimized by adding values statuses or simulation values fields.
- Function blocks statuses are displayed as an enumeration format as text: Normal, Uncertain and Bad.
- Process values and statuses are available in the PDC menu too. The user has to select the configured Virtual Modules for displaying the desired process values and statuses.
- Network Diagnostics and Slaves Status are available in the Online Monitoring view.

5.2 Advanced Integration

- PROFIBUS EDDs cannot be imported in Field Device Manager. Advance Integration has only be tested with DTMs.
- All deviceDTMs of the topology have been successfully imported in FDM. However, the installation of the Classic DTM setup components was not successful despite 1.2GB free space on the hard disk. Ensure having enough free space before starting the installation (>5GB free space). This issue has been reported.
- All devices have been successfully connected and operated.
- DTMs don't get automatically reconnected after communication problems (either network or electrical issues). The only way to re-establish the connection is to close and open the DTM.
- Maximum five device online parameter windows can be opened simultaneously.
- Issues occur during longtime DTMs connection. DTMs are not connected anymore (Timeout messages) and FDM Frame is blocked. In this case, the Experion®PKS server and the station from which is operated FDM must be restarted.

5.3 Bypassed Tool Integration

- The same Bus timing parameters as calculated in SYCON.net must be configured as well in Fieldgate SFG500 for successful communication.
- The FieldCare Scanning option "Recursive scan" must be disabled for successful scanning of the Pepperl+Fuchs commDTM HD2-GTR-4PA. This issue has been reported to development and shall be fixed in next FieldCare release.
- The "Create Network" function successfully scans the topology DTMs except the Pepperl+Fuchs Diagnostic DTM HD2-DM-A. This deviceDTM must be added manually.
- Errors may occur if the FMPFrame.exe*32 process exceeds the memory consumption of 1.2 GB. This may happen by using many deviceDTMs simultaneously or by trying to scan bigger PROFIBUS Networks. This is not a FieldCare issue but a limitation of the 32 bit operating system memory. If this issue occurs, the total network may be split in FieldCare into several address range.
- After successful scanning of a network or address range, it is recommended to save and close the FieldCare project and then to re-open it in order to optimize the FMPFrame.exe*32 memory consumption.
- Project specific solutions for big networks are provided by Endress+Hauser Application Engineering. Please contact your local Endress+Hauser partners for details.
- Network Tag names of CerabarS and DeltabarS are not read correctly from the device by executing the function "Read from Device". This issue is reported.
- The Experion®PKS and Fieldgate SFG500 showed no issues in sharing access to the same PROFIBUS network.

6 Open Integration Result

Reference Topology HON02	Recommended	Not Recommended	Not Applicable
Basic Integration	X		
Advanced Integration with DTMs (temporary device configuration)	X		
Advanced Integration with DTMs (permanent device status monitoring)		X	
Specific Integration			X
Routed Tool Integration			X
Bypassed Tool Integration	X		

www.endress.com/open-integration
