Reference Topology HON03
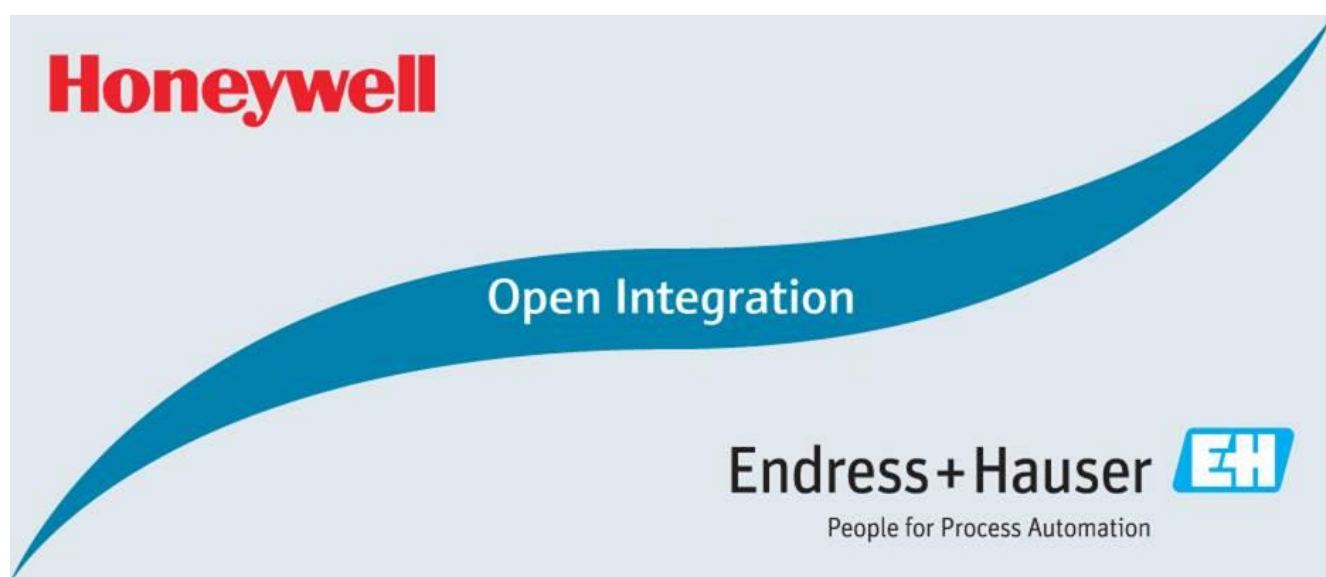
Honeywell ControlEdge^{TM} Unit Operations Controller and
EtherNet/IP plus HART for Life Science

Supported by:

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1　Document Information

1.1　Purpose and Scope

This document specifies the Open Integration Reference Topology HON03. All content of this document is jointly developed, reviewed and released by Honeywell Process Solutions 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	2020-11	Initial version

1.3　Related Documents

Please refer to related documents as listed below:

Document	Description
SD02649S/04/EN/1.20	Integration Tutorial HON03
SD02650S/04/EN/1.20	Integration Test Summary HON03
SD02651S/04/EN/1.20	List of Tested Devices and Versions HON03

2　Target Market
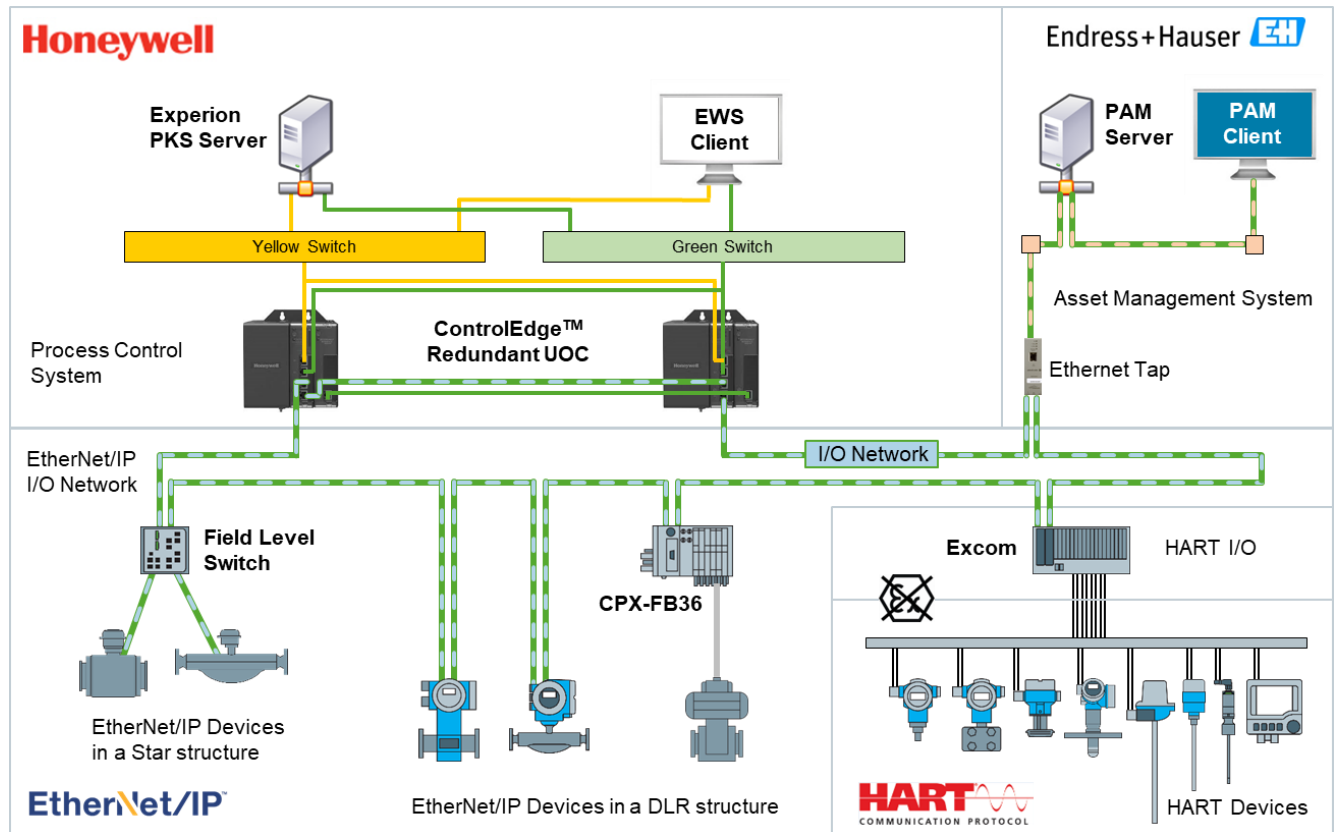
2.1　Industry Application

This reference topology is designed to serve applications in Life Science.

2.2　Fieldbus Technology

This reference topology is designed for instrumentation with EtherNet/IP and 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 Honeywell Process Solutions:

The yellow and green switches establish a redundant Ethernet backbone for all Honeywell Experion® PKS servers, workstations and ControlEdge^TM Unit Operation Controllers. Redundant UOC controllers serve to connect to underlying EtherNet/IP IO network. Core element on top of the system backbone is the Experion® PKS Configuration Studio software for control engineering and commissioning of the overall system.

Reference hardware:

Honeywell	Article	Description
UOC	900CP1	ControlEdge™ Unit Operations Controller (UOC)

3.3 Asset Management System

The asset management system part top right in the overview is provided by Endress+Hauser:

A FieldCare PAM server is directly connected to the I/O Network, e.g. via an Ethernet Tap or any free switch port within the network. This allows to access all connected EtherNet/IP devices as well as HART devices connected via TURCK Excom Remote I/O. Nested communication of HART via EtherNet/IP is managed by TURCK CommDTMs running in the FieldCare PAM Server.

One or multiple FieldCare PAM clients may be connected to the FieldCare PAM server, both wired or via WLAN for mobile use, e.g. with Field Xpert.

3.4 Field Network Infrastructure

3.4.1 EtherNet/IP I/O Network

The EtherNet/IP I/O Network is mandatory for this reference topology, with relevant impact to integration tests. It may be built in a Star, Device Level Ring or Linear Bus Topology, as well as any combination of those. Honeywell and Endress+Hauser recommend using the components as listed below:

Reference hardware:

Rockwell Automation	Article	Description
ETAP	1783-ETAP	EtherNet/IP Tap with 3 copper ports. Enables single port device to connect to a device level ring network.
Stratix 5400	1783-HMS8TG8EG4CGN	Managed Industrial Ethernet Switch with Static and InterVLAN Routing. 8x Gigabit Ethernet Copper Ports, 8x PoE Gigabit Ethernet Copper Ports, 4x Gigabit Ethernet Combo Ports.

3.4.2 HART I/O

HART I/O is necessary to connect complementary HART devices, as required if EtherNet/IP options are not available or not reasonable to be used. This topology considers the HART I/O system provided by TURCK:

3.4.2.1 Remote I/O Excom

Reference hardware:

TURCK	Article	Description
Excom	MT24-N	Module rack, non-Ex for 24 modules
	PSM24-N	19.2 - 32V DC Power Supply, non-Ex
	GEN-N	EtherNet/IP Gateway
	AIH401-N	HART Analog Input Module, 4-Channel, 2 or 4-wire Transmitters
	AOH401-N	HART Analog Output Module, 4-Channel
	BM-N	Dummy module for unused slots

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 Honeywell Process Solutions 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 EtherNet/IP devices

Endress+Hauser	Article	Description	Device Type
Promag H 500	5H5B02	Electromagnetic Flow Transmitter	0x103C
Promass P 300	8E3B08	Coriolis Flow Transmitter	0x103B

FESTO	Article	Description	Device Type
Valve Terminal	MPA-S	Valve Terminals type 32 MPA	0x000C

3.5.2 HART devices

Reference hardware:

Endress+Hauser	Article	Description	Device Type
Cerabar M	PMC51	Absolute and Gauge Pressure Transmitter	0x0019
Cerabar S	PMP71	Absolute and Gauge Pressure Transmitter	0x1118 0x0018
Deltabar S	FMD78	Differential Pressure Transmitter	0x1117 0x0017
Deltapilot M	FMB52	Hydrostatic Level Transmitter	0x0023
Liquicap M	FMI51	Capacitance Level Transmitter	0x001D
Levelflex	FMP53	Guided Radar Level Transmitter	0x1122 0x0022
Micropilot	FMR62	Radar Level Transmitter	0x112B 0x002B

Endress+Hauser	Article	Description	Device Type
iTHERM TrustSens	TM371	Compact thermometer with self-calibration	0x11CF 0x00CF
Liquiline M	CM42	Liquid Analyzer Transmitter	0x11A0 0x00A0
	CPS11D	Memosens Digital pH Sensor	
	CYK10	Memosens Digital Data Cable	

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