Process Device Profiles Come to Life

Michaël Voegel
Endress + Hauser
Process application

- Oil & Gas
- Food & Beverage
- Water and Wastewater
- Chemical
- Life Sciences
Personas

Isabelle
Instrument Technician

Cassie
Control Systems Engineer

Sam
Security Architect

Edward
Instrument Engineer

Ned
Network Engineer
Process Industry needs

- Safety
  - Hazardous area
- 24/7 Uptime
- Secure remote access
- Process improvement
- Configuration
A scenario in a process plant – Device Interchangeability

With the Process Device Profile

Isabelle

Edward

A

B

© 2023 ODVA, Inc.
All rights reserved.

www.odva.org
Why Process Device Profiles?

- Reduces Maintenance & Commissioning Time
- Can Compare/Analyze Data From Plant to Plant
- Data Access Standardization
Why Process Device Profiles?

- Reducing Maintenance & Commissioning Time
- Self-Monitoring and Diagnosis of Field Devices
  - NE107
- Field devices for standard applications
  - NE131
- Open Architecture (NOA)
  - PA-DIM
- Process Device Profile
- Integration into PLC/DCS
- Interchangeability
- Cloud computing
  - Asset monitoring

Compare/Analyze Data from Plant to Plant
From the concept to the reality

What specification enhancements were made?
What is Inside the Process Device Profiles?

**Volume 1, Chapter 6**

**New Objects**
- Process Measurement Value Object
- Process Totalized Value Object
- Assembly Object
- Message Router
- I/O
- Explicit *Msg.
- Network Specific Link Objects
- Connection Manager or Connection Object
- CIP Network

**Enhance Object**
- Identity Object
- File Object

**Conform with PA-DIM**
- Profile EDS
- Vendor EDS with Profile

**New Objects**
- Process Device Diagnostics Object

*Msg.: Message*
What is Inside the Process Device Profiles?

• Five new Device Types:
  – Standard Pressure, Scaled Pressure
  – Coriolis Flow, Electromagnetic Flow and Vortex Flow

• Added concept of Device Type Revision
  – New Identity Object attribute: Supported Device Type Revisions

• New Profile Vendor ID (0xFFFFB)
• Standardized NE 107 diagnostic
• PA-DIM alignment:
  – New Identity Object attributes
  – Attributes added in the new process objects
New Object - Process Measurement Value Object

- Process Measurement Value Object (class code 0x112)
  - Attributes include:
    - Name string
    - Value, Status, Engineering Units
    - Damping, Zero Point, Low Cutoff, etc
  - Supports Simulation of Value and Status
  - One instance’s value can be derived from that of another instance
    - Example: “pressure” instance can be used to derive a “level” measurement
New Object - Process Totalized Value Object

- Process Totalized Value Object (class code 0x113)
  - Totalizer: Total volume that passed through a flow meter over a period of time
  - Attributes include:
    - Process Measurement Value Path (link to Process Measurement Value instance)
    - Double Value (in addition to REAL value), Status, Engineering Units
    - Totalizer Control, Totalizer Reset
  - Supports Simulation through the Process Measurement Value Object
Enhanced Object - Process Device Diagnostics Object

- Process Device Diagnostics Object (class code 0x108)
  - NAMUR NE 107 based representations of diagnostic information
  - Object supports simulation of reported diagnostics conditions
ODVA will create and maintain EDS files using the Profile Vendor ID that strictly follow the documented Process Device Profiles.

Vendors will create a vendor-specific EDS file to include vendor-specific and profile features.

At application design time, users opt for cross-vendor interchangeability by selecting a Device that employs the Profile Vendor ID (0xFFFFB).
What should end users keep in mind

- Cross-Vendor Interchangeability
- Includes PA-DIM support

- No Cross-Vendor Interchangeability
- Includes PA-DIM support
- Additionally supports Vendor specific features
Process Device Profiles Come to Life

The Demonstration