Honeywell’s Field Device Manager (FDM) provides a comprehensive solution for managing smart field devices. Field Device Manager is the essential tool to help operations be more proactive about maintenance and avoid costly failures by harmonizing device diagnostic statuses as per NAMUR NE-107 recommendations. Not only third-party (i.e., non-Honeywell) PLCs/RTUs, and third-party HART-IP clients (i.e., non-Honeywell AMSs), for the first time in asset management landscape, FDM is more flexible and open by integrating with Profinet Ethernet APL based devices using FDI packages.

The emergence of the Industrial Internet of Things (IIoT) - sometimes used interchangeably with other terms such as Smart Manufacturing, Industry 4.0, Digitization, and Connected Enterprise - represents a digital transformation of manufacturing that shifts the source of competitive advantage away from physical machinery and towards information. By delivering meaningful information where and when it is needed most across the enterprise, IIoT opens new possibilities for safety, productivity, organizational responsiveness, and profitability.

One of the key elements of this digital transformation is extensive access to the wealth of information available in field devices. These field devices and equipment with supporting digital technologies have become widely adopted in the process industries and have proven to provide significant benefits to customers. Digital devices and equipment provide a great deal of data about the health of the device and its operating environment. This data can lead to several useful applications that prevent losses or disruptions, enhance quality and reliability, and reduce maintenance costs.

**FEATURES & BENEFITS**

- ** Tight Integration**
  - Experion PKS, EHPM and TPS networks
  - Experion LX and Plant Cease controllers
  - Uniformance Asset Sentinel
  - EPKS redundancy
  - Safety Manager and Safety Manager SC controllers
  - CN100, ControlEdge UOC, RTU, PLC and HCS00 controllers
  - OneWireless Networks
  - HART Multipliers (non-HART I/Os)
  - HART IP Gateways
  - 3rd Party Gateways
  - 3rd Party PLCs/RTUs (HART-IP)
  - 3rd Party AMSs (HART-IP Clients)
  - 3rd Party APL Switches

- **Open Protocol Support**
  - HART Protocol redundant-first protocol to pass
  - Foundation Fieldbus
  - Profibus DP and PA
  - Profinet
  - Profinet Ethernet APL (via EBM)
  - ISA100 Wireless
  - Wireless HART
  - Honeywell DE protocol
  - EDDL, FDT, FDI and DTM support
  - Device Library
  - HART-IP downlink (to 3rd party PLCs)
  - HART-IP Server with EPKS and SM redundancy support (for 3rd party HART-IP Clients/AMSs)

- **Data Management**
  - Device Configuration, online and offline, templating
  - Instrument Database
  - History and Audit Trail
  - Auto Export and Merge of Audit Trail data
  - Auto Network Build
  - Compare Devices
  - Build Operations
  - Device Documentation
  - Import/Export/Print
  - Migration Tool
  - Compare device configuration (history, offline and live)
  - NAMUR NE-107 compliant
  - Configuration Change Reporting

- **Security and Access**
  - Role-based User Management
  - Device Access Control (device lock)
  - Single Sign On
  - Diagnostics
  - Backup and Restore
  - PVST Planner
  - Virtualization

- **Search and Views**
  - Advanced Search
  - Quick Search
  - Health Scan
  - Dashboard
  - Plant Area View
  - Station
  - Maintenance View
  - Display Folders
  - Quick View
  - Online vs Offline
What is new in FDM Release 530.1?
The following features are now supported with FDM R530.1:

- NAMUR NE-107 based instrument alert configuration & associated Plant Area Views (PAV)
- Instrument configuration change management & reporting

**FDM Simplifies Maintenance Tasks**

FDM simplifies maintenance tasks by providing an intuitive user interface optimized for use by instrumentation engineers and technicians. The user interface and its supported functions are consistent regardless of the device connection to Experion HART and Foundation Fieldbus I/O, Experion CN100 I/O, Safety Manager Universal Safety I/O, HART hardware multiplexers, HART modems, Honeywell ControlEdge UOC, PLC and RTU HART I/O, OneWireless/ISA100 Wireless, Wireless HART, Honeywell DE (Digitally Enhanced) Protocol devices, PROFIBUS and PROFINET networks. And now, third party PLCs/RTUs can also be maintained seamlessly.

FDM automatically highlights instruments that have faults or need diagnosis in a separate menu. Faults are identified automatically, without the need for special setup.

**FDM saves Time**

FDM saves time in the field and in configuration. FDM provides the ability to perform common tasks on instruments remotely, thereby saving costly and time-consuming field trips that would otherwise be required.

FDM also simplifies and reduces effort normally involved in plant debugging processes by providing clear and accurate status of devices within the control room/maintenance shop.

The Offline Configuration feature allows you to complete the device configuration offline without the device being physically present and lets you easily download the configuration.

With FDM, no database building is required. Simply configure the communication networks, and FDM automatically:

- Detects and adds smart devices to the database
- Uses information accessed from the connected HART, FF, PROFIBUS, PROFINET or Wireless device to establish the database record and automatically assign the correct pre-defined device template
- Historizes data, allowing maintenance personnel to compare:
  - Configuration of one device with another device, or
  - Historical configuration of the same device or another device.
  - History Vs history, history Vs live, live Vs live
  - Offline Vs history, offline Vs live
- Allows users to know more about hardware MUXes:
  - Configuration, comparison, health

Features such as document linking and device diagnostic detail provide additional aid to maintenance.
Tight Integration with Experion, ControlEdge

FDM tightly integrates with Experion, Experion LX, Plant Cruise, EHPM and ControlEdge UOC, PLC, RTU and HC900 HART-enabled I/O modules, Foundation Fieldbus Interface Modules (FIMs), Profibus Gateway Modules (PGM), and Ethernet Interface Modules (for Profinet) conveniently connecting to the Experion server over the network. It likewise connects with Safety Manager and Safety Manager SC Universal Safety I/O or Universal Safety Logic Solver modules. No special termination panels, hardware multiplexers, or wiring are needed. Full support is provided for system redundancy. FDM Station Maintenance View features detailed device views of HART and Foundation Fieldbus devices from within an Experion Flex Station. This provides seamless integration of information throughout the enterprise. Changes made to FF device parameters from FDM through vendor provided DTM's are logged in the Experion journal.

Field Device Manager provides plant instrument engineers, technicians and maintenance personnel with an optimized environment that simplifies tasks and enables remote management of smart instruments.

With complete command and control of all your field instruments throughout the plant, FDM saves time and helps improve overall asset effectiveness.

Tight Integration with Unformance Asset Sentinel

FDM dramatically reduces the cost to integrate FDM with Unformance Asset Sentinel (UAS) to provide a complete Instrument Asset Management System (IAMS), with both FDM and Asset Sentinel in the same domain. FDM templates can be used to build the Asset Sentinel database.

The integrated package now allows the user to prioritize and view alarms and alerts according to the NE107 standard by using the four categories of alarms established by that standard and included in the Device Descriptions (DDs).

Open and Standards-Based

FDM supports Electronic Device Description Language (EDDL) and Field Device Tool/Device Type Manager (FDT/DTM) technologies, two open industry standards for device integration. It also supports FDI packages for PROFIBUS and PROFINET. Third-party Ethernet APL switches are also supported for Profinet via Experion PKS EIM. It provides a solution that works with registered HART, Foundation Fieldbus, PROFIBUS and PROFINET devices available worldwide.

EDDL files provide a standard device integration technology supported by the FieldComm Group (FCG) and the ISA100 Wireless Compliance Institute. They are created by and available from the device vendors. They describe all device functions and diagnostics, thereby providing full access to the smart device intelligence. For HART, FDM supports HART 5, 6 and 7 as well as the latest HART EDDL enhancements, including advanced graphical features, data storage and manipulation features and advanced window and data organization constructs. FDM's HART host capabilities are based on the HART Communication Foundation's (HCF) reference host, SDC 625 standard, so any device registered with HCF works with FDM.

FDM also comes preloaded with all the latest EDDL files available, and it can be brought up-to-date easily with newly available devices. FDM provides access to all common features. For HART devices, it can work when a DD file is not available.

FDM's FDT/DTM (Field Device Tool/Device Type Manager) support enables the use of manufacturer-created specialized software (DTMs) for HART, Foundation Fieldbus and PROFIBUS devices as well as gateways. DTMs are created for complex devices, such as valves, to provide advanced functionality which might not be as easily managed via EDDL files. The FDT standard specifies the interface between the host software, like FDM, and the vendor specific DTMs. A DTM can provide a rich graphical interface and simplify complex operations like valve diagnostics and flow meter curves. FDM provides the full benefit of this advanced vendor created software in the familiar FDM environment.

FDM supports easy addition of both EDDLs and DTMs into its library, eliminating the wait for a new software release when a new device or version is used. By supporting both EDDL and FDT/DTM standards, FDM eliminates the need for multiple software tools.
FDM simplifies startup by providing an easy-to-use interface for common tasks. Wizard-like menu-driven methods guide you through common tasks like loop tests, calibration procedures and range updates. FDM supports powerful and complex features like valve stroke tests of control valves, flow diagnostics, or drift analysis with the same ease as common tasks like loop tests or calibration procedures.

Partial Valve Stroke Test (PVST) Planner

Partial Valve Stroke Testing, or PVST, increases confidence in safety instrumented systems by periodically testing safety shutdown valves, also known as emergency shutdown (ESD) valves. The valves are automatically tested to detect failure modes related to valve sticking and valve response time, thus ensuring safety and control valves will operate properly when needed. FDM’s optionally licensed PVST Planner feature allows the user to schedule testing to be done automatically, semi-automatically, or manually, on qualified HART devices with test results stored for documentation purposes.

Plant Area View for High Level Navigation

Plant Area View enables you to view and monitor smart devices based on geographical location or any logical grouping category. It is versatile and timesaving, with up to four hierarchical levels, and can represent virtual grouping within a plant, instrument types, or individual technician job assignment preferences. You can create as many customized “views” as you want. With Plant Area View, you can:

- View devices mapped to a particular group
- View a summary of health and connection status using handy pie charts at various levels
- Filter devices by their health or connection status
- Quickly locate a device in the FDM Client View from the plant area view
- Easily move one tag from one group to another
- Export/import PAV structure for each backup

A Flexible, Secure Environment

FDM provides a secure environment with password- and login- protection. FDM’s flexible role-based security environment allows system administrators to define user roles and privileges according to each plant’s specific procedures. FDM supports single sign-on based on the Windows login ID of the user. To prevent disruptions caused by unauthorized access or human error, FDM provides a unique Device Access Control feature whereby write access to any device, set of devices, or entire network can be managed under password protection. This is especially critical for safety-connected devices. When used with Experion PKS, FDM can prevent changes from being made to devices that are on-process. Similarly, when used with Safety Manager Universal Safety I/O, FDM prevents changes from being made to devices that are under Safety Lock.

FDM’s powerful audit trail capability logs all device changes with the date and time, the identification of the person who made the change and the reason for the change.
FDM Station Maintenance View is integrated with Experion Station and provides convenient device access from the Operator console.

Flexible Third-Party Integration

FDM can integrate with HART devices connected to any control or safety system through HART hardware multiplexers (MUXs). It provides the same functions and features as devices connected to Experion-connected HART-enabled I/O. The HART data and alarms from devices connected to these systems can be integrated into Experion from FDM. This allows the Experion operator to be aware of device problems. Additionally, FDM’s powerful export-import capabilities make migration of existing databases simple and less intensive.

From FDM R520.1 onwards, third party PLCs/RTUs can also be seamlessly integrated with FDM via 3rd party HART-IP gateways.

As a first in the field asset management system landscape, from FDM R520.2 onwards third party AMSs can also be seamlessly integrated with FDM via the open standard of HART-IP. Third party AMSs can now access HART devices connected in Experion PKS and perform device configuration, diagnostics, maintenance, and continuous monitoring operations. This is now possible via the new HART-IP server feature enhancement in FDM. From FDM R521 onwards, EPKS and SM redundancy are also supported.

From FDM R521 onwards, Profinet Ethernet Advanced Physical Layer (APL) based devices (using FDI packages) can now be integrated via Experion PKS Ethernet Interface Module (EIM).
Device Status Standardization (NAMUR NE-107)

Intelligent devices can fail or degrade in many ways, resulting in a plethora of different diagnostic error codes and messages in FDM. These errors, if displayed as-is to plant operations, maintenance, and reliability teams, may inundate and distract them. The consequence could be that the plant teams lose focus and oversight of the plant, or do not take the necessary action, both of which can prove detrimental to the plant’s overall objectives. The other extreme is a simplistic way of categorizing all the device error codes and messages by distinguishing them as being either “healthy” or “unhealthy”, along with their “disconnected” status. The maintenance team are then left with an onerous task of smartly prioritizing their works based on other valuable information. As part of this, it is a normal practice employed by maintenance teams to carry out additional diagnosis on each of the distinct error codes and messages, which often results in varying degrees of severity to the plant’s operations. Such additional insights enable the maintenance team in taking a better approach to execute their maintenance strategy.

All of this outlines the need to convey the error codes and messages to concerned plant personnel in a structured manner via a better and standardized categorization. And to facilitate such additional diagnosis, NAMUR Working Groups have provided recommendations in the form of NE 107 (https://www.namur.net/). NAMUR NE-107 recommendations state that such device error codes and messages be grouped under 4 categories as per their prioritization shown below.

<table>
<thead>
<tr>
<th>Labeling</th>
<th>Prioritisation</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>failure</td>
<td>1</td>
<td>F</td>
</tr>
<tr>
<td>function check</td>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td>out of specification</td>
<td>4</td>
<td>S</td>
</tr>
<tr>
<td>maintenance request</td>
<td>3</td>
<td>M</td>
</tr>
</tbody>
</table>

Device Diagnostic Status Categorization & Prioritization as per NAMUR NE-107

Starting R530, FDM shall allow users to customize and harmonize device diagnostic statuses as per NAMUR NE-107 recommendations. Plant Area Views (PAV) shall also be aligned as per NAMUR NE-107. Customization shall be allowed for protocol versions HART-5, HART-6 and non-FF-912 specifications.

Device Configuration Change Management & Reporting

A smart device’s configuration can be changed by a user during various phases of a plant’s life cycle to achieve the plant’s objectives. After inception, it may happen at OEM factory (during ordering), contractor offices (during design), system vendor offices (during Factory Acceptance Testing), contractor/end-user yard (during LEAP), end-user site (during pre-commissioning), commissioning, handover, and during regular maintenance until its end-of-life.

A plant’s operational phase is usually much longer than its design & installation phase. Hence, an easy-to-use device configuration change management is required during a plant’s operational life cycle which can be anywhere from 20 to 30 years. Requirements for this are typically to quickly compare device configuration changes & visualize, generate custom reports with granularity & on the go, save pre-defined report templates & use at any time.

From R530 onwards, FDM shall allow users to do all the above using configuration verification license (optional). Users shall be able to create new or re-use saved reports, filter on manufacturer, device model, device revision (multi-select), tag name (multi-select), parameter type (multi-select). In addition, users shall also be able to get alerts on approximate time for report generation, abort report generation, download reports in PDF/CSV, select date/period to access past saved reports, get insights via intuitive dashboards, do tagwise comparison (with mismatches highlighted in color), and save reports as favorites.
Maximize the Benefits of Smart Instrumentation

FDM offers businesses these key benefits:

- Versatility — Supports all parameters and methods supported by smart instruments, contributing to better efficiency, higher productivity, and simpler troubleshooting.
- Accessibility — Provides full access to device parameters, configuration, and diagnosis procedures. Effective diagnostic information helps improve maintenance prioritization and plant reliability.
- Predictability — FDM helps predict problems early by unlocking the power of smart instrumentation and making it available to plant personnel. It mitigates plant incidents and trips by preventing unplanned instrument failures.

FDM Support Services

This product comes with worldwide, premium support services through our Benefits Guardianship Program (BGP). BGP is designed to help our customers improve and extend the usage of their applications and the benefits they deliver, maintaining and safeguarding their advanced applications.

Honeywell provides a complete portfolio of service offerings to extend the life of your plant and provide a cost-effective path forward to the latest application technology. Honeywell services include:

- Software installation services
- On-site engineering services
- Migration services
- Scope expansion services
- Assessment services
- Performance baseline and tuning services
- Customized training

For More Information

To learn more about Honeywell’s Field Device Manager, contact your Honeywell Account Manager.

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