

MAY 2022



Real-Time Data



**Distributed
Control for Modern
Asset Management**

Unified Environment Delivers IT/OT Data Harmonization and Mobility

First-in-Show FDT (3.0) UE Demo Happening at Hannover Messe 2022

Author: Lee Lane, Chairman of the FDT Board of Directors



Lee Lane
Chairman of the
FDT Board of Directors

Manufacturing continues to headline daily in my newsfeed as the world remains unresolved as supply chain and energy continue to be the global focus. The world's critical infrastructure needs automation modernization to keep pace with the fast-moving world and pivot with demands.

For decades the manufacturing space has turned towards digital expansion at the field management level, exploring the inner workings of process inefficiencies with a keen eye on OT data diagnostics to improve reliability solutions for operations and production. Today, the digital push has climbed to higher-level use cases pushing OT data to the IT/enterprise and cloud to expand the benefits of data analytics from the converged data worlds.

Data harmonization is the force behind manufacturing modernization, but what the industry lacks is the unified environment inherent at the core of the architecture with distributed control allowing the application to connect and communicate for modern asset management.

FDT's strength has always been tied to the digital world by enabling data interoperability and visualization, with millions of device DTMs, delivering field-level diagnostics to FDT hosting (DCS, IAMS, PLC) environments in a single project view, no matter the network topology. The new FDT UE solution delivers modernized ways of accessing device intelligence, including OPC UA client access and browser access via phones and tablets. FDT UE-based applications unlock smart manufacturing, allowing users to securely connect and communicate — delivering comprehensive control, configuration, monitoring, and mobility independent of network, device, or industry!

FDT 3.0 is real and here! I am excited to announce that the first group of member companies will showcase their FDT 3.0 DTM prototypes and host (server and desktop) applications at [Hannover Messe](#), 30 May – 2 June 2022. FDT Group will have a prime corner location in the OPC Foundation booth in Hall 8, Stand F07. Special thanks to Thomas Hadlich, FDT's Architecture and Specification Chairman, for leading the first FDT UE demo mission. Come by our booth and test-drive the new FDT Server running process and factory applications on popular communication protocols, including IO-Link and HART. I am impressed by all the member companies who contributed FDT 3.0 and 2.0 device and communication DTMs, and desktop hosting environments. Congrats to Flowserve, Krohne, Omron, Magnetrol, Thorsis, CodeWrights, VEGA, Rockwell Automation, Turck, PACTware and M&M Software for being our front runners.



In addition to Hannover, the **FDT Group Annual General Assembly** will take place virtually on 1 June 2022. This will be the first year the General Assembly is open to the entire automation community. We have an excellent lineup of FDT subject matter experts and Officers covering our traditional business, and technical updates. I'm delighted with our special keynote speaker, Paul R. Maurath, Ph.D., Technical Director — Process Automation, The Procter & Gamble Company, with a presentation highlighting the industry stresses of intelligent device management. New to FDT or not, this is a great event to gain insight. Plan to attend!

FDT teams have worked endlessly behind the scenes to make FDT UE and the developer tools a reality at such a critical time in manufacturing. The time is right — act now by specifying FDT 3.0 for your next application focused on intelligent device management and experience the Unified Environment unlocking data transparency needed for scaling smart manufacturing applications. FDT 3.0 Common Component tool kits for the vendor community are available to jump-start development or migrate current offerings. Visit the **FDT Resource** area of the website to download the latest FDT 3.0 brochures, white papers, specifications, information model, and communication annexes.

If you are interested in learning more about FDT or the new FDT (3.0) UE solution, please reach out to the FDT Business Office at inquiry@fdtgroup.org.



FDT Unified Environment (UE) Migration Empowers Data-Centric Business Models

Newest standard helps forward-thinking end users, system and device suppliers make actionable data accessible across the enterprise

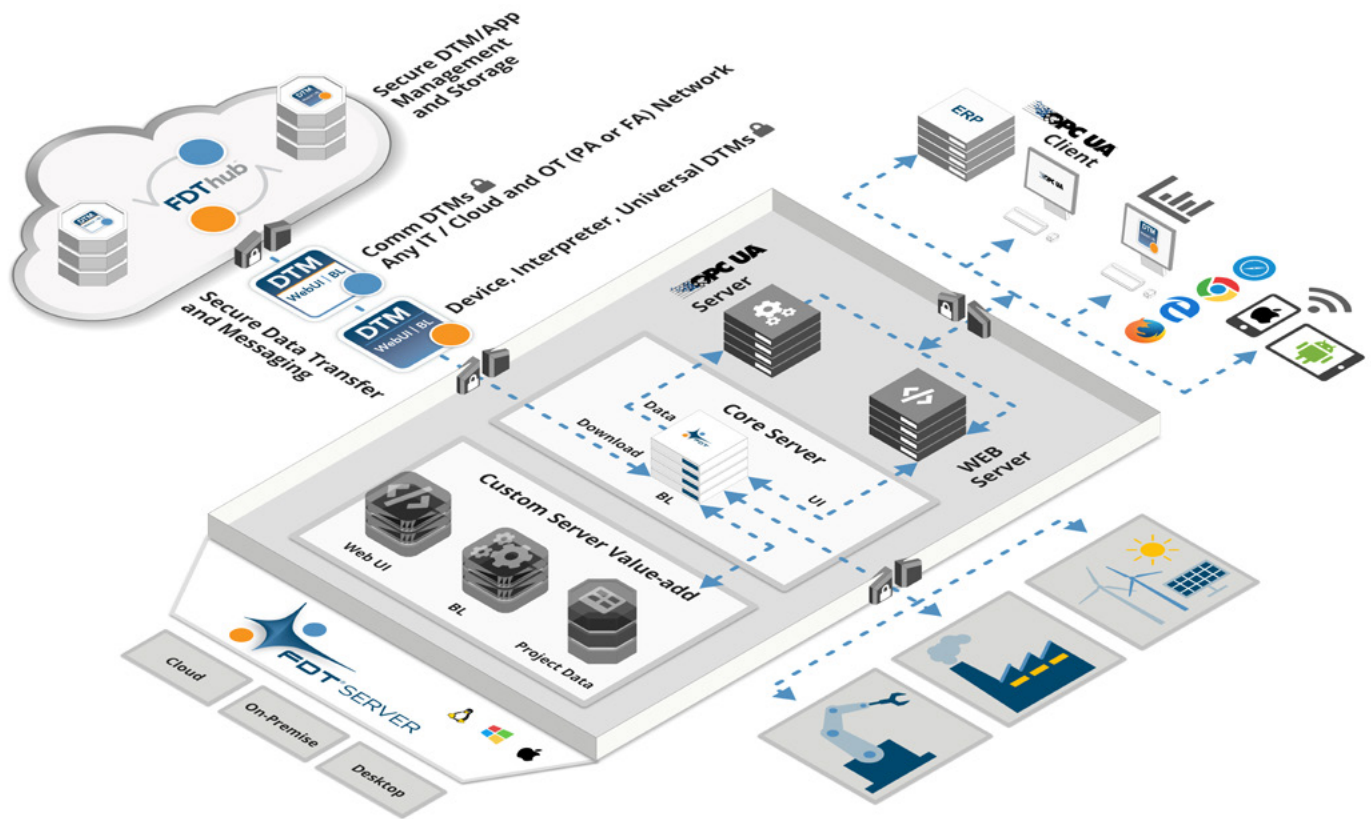
Author: Dr. Vivek Hajarnavis – Technical Marketing FDT Group

Industrial Internet of Things (IIoT) strategies offer endless productivity improvements through smart devices and systems that link machines through open platforms and enable them to think, learn and react in real-time.

That's great news for end users, system and device suppliers looking for ways to increase productivity, more easily and quickly innovate, and unlock new opportunities for revenue.

As bigger data sets are aggregated, the challenge for many is contextualizing the data to make it actionable and accessible to all parts of the organization, maximizing efficiency and creating value.

To help companies reap the rewards of smart manufacturing, FDT Group has introduced the FDT Unified Environment (UE), also known as FDT 3.0, enabling a platform independent and data-centric Information Technology (IT) and Operational Technology (OT) integration solution with a secure gateway to network/device data and health information. This embedded system and device software solution delivers a single user interface (UI) supporting field/skid to cloud integration, configuration and monitoring.



FDT UE server-based distributed architecture for data-centric smart manufacturing applications

For end-users, system, and device suppliers, FDT 3.0 is the data interoperability standard for the secure information exchange while providing reliable configuration and visualization in industrial automation devices and systems independent of communication protocol, vendor, device/device type/representation, or information model, supporting all aspects of a control system lifecycle.

Standard Designed For Modern Industrial Markets

The key driver of FDT's smart manufacturing functionality starts with its core technology component — Device Type Managers™ (DTMs™) running the new FDT 3.0 standard.

Globally adopted and internationally recognized by ISA 103, GB-T 29618-2017 and IEC 62453 organizations, tens of millions of DTM-enabled devices world-wide are serviced by FDT hosting environments, and all major control system and device vendors support FDT technology.

The FDT standard incorporates specific DTM types that empower a standardized way of communicating, automatically making device data and health information

available via an OPC UA Server or Web Server embedded on the FDT Server used in the FDT 3.0 architecture.

Intended for use with both simple and complex devices, the FDT DTM contains the application software that defines the parameters and capabilities included in each instrument. The DTM encapsulates all device-specific data, functions, and business rules such as the device structure, its communication capabilities, internal dependencies, and its human-machine interface (HMI) structure.

Use Cases Driving FDT UE Migration

While FDT standards 1.2 and 2 continue to be the de-facto industry standard for industrial device integration, DTMs delivering data to host systems via older standards can now take advantage of the Unified Environment of FDT 3.0 to address the challenges of IIoT and take advantage of:

- Open Interoperable IIoT Architectures — Enabling a future-proof FDT Server-based distributed architecture that is operating system, network, device/representation (DTM, DD, IODD, GSD, EDD, FDI, etc.), and vendor-independent

- **Secure, Scalable, and Adaptable Platforms** — Providing embedded end-to-end trusted interoperability supporting cloud, edge, on-premises, or enterprise-wide agile architectures
- **Comprehensive Control and Configuration** — Empowering a natively integrated OPC UA server for IT/OT data harmonization and IT/enterprise access along with a web server empowering OT/operations, mobility, and web-browser-based access supporting modern asset manufacturing practices
- **Standardized Universal Device Integration** — Delivering a unified collaborative engineering platform and ecosystem for Design, Operation, and Maintenance, of Process Automation (PA) and Factory Automation (FA) systems

create UIs that are completely responsive per the needs of different devices and screen sizes.

- **Securing all layers of the architecture.** FDT deploys a secure by design approach, including robust security at all points of ingress or egress in the architecture — from the DTM to the network/communication layer (if applicable) and across all related components.
- **Repository eliminates device management headaches.** When implementing an automation project, end-users won't have to go searching for FDT/DTMs for their field devices. All of certified DTMs will be located in the *FDThub™* DTM repository and made available for automatic download and installation.

Backwards Compatibility and Phased Migration

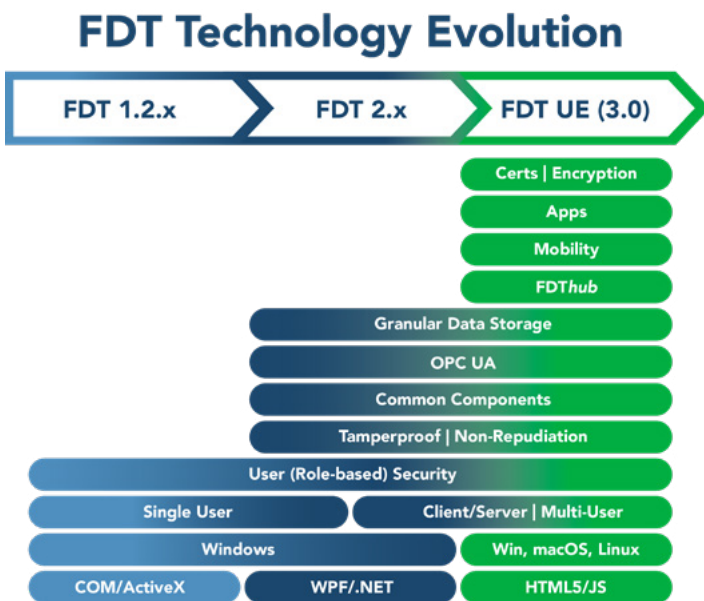
Suppliers new to FDT or upgrading an existing product line will benefit from advancements that empower next-generation FDT UE solutions. This includes an open, secure, fully standardized, and data-centric integration ecosystem connecting legacy investments with cloud, on-premise, edge, and enterprise access.

The millions of DTMs using FDT 1.2 and FDT 2.0 have backwards compatibility so users can take advantage of new capabilities without changing devices. FDT 3.0 supports phased migration so users can migrate field devices when they are ready either through greenfield (new) or brownfield (migration of existing assets) specifications.

From a single-user desktop application for device integration, configuration, and monitoring to a multi-user distributed server application architecture, FDT UE enables modern remote operational lifecycle management and allows:

Device Vendors to offer predictive analysis and preventive maintenance, sell upfront analytics as a service, and be more proactive with a clear view of what's happening in the operation.

End users to deliver a better overall maintenance strategy and take advantage of mobility and standardized UI to configure all devices across any network, device or industry.



Customer Driven Use Cases: Mobility, Security, DTM Repository

The flexible FDT Server architecture and robust FDT Desktop environment bridges the FDT install base with next-generation technology, creating an excellent starting point for new applications. Enhancements focus on:

- **Enabling mobility strategies.** Developers can write a DTM and then provide the same UI on a laptop, tablet, desktop, or phone—no matter the operating system. Since DTM UIs are portable and can also be displayed in browsers on phones and tablet devices, developers can

System Manufacturers looking for IT/OT convergence to benefit from a secure, scalable, and adaptable platform.

With FDT 3.0's data-centric unified environment, every device vendor or service provider can utilize an edge gateway or cloud instance to push data from multiple facilities to a centralized location for enterprise monitoring and asset management.

System Side: The new FDT Server transforms asset management practices and business system integration for both the automation supplier and end-user communities in the process, hybrid and discrete manufacturing markets.

Device Side: Device suppliers can avoid the coding challenges associated with the co-mingled BL and GUIs in the earlier standard. Developers utilizing the latest DTMs simply need to integrate the new web UI with HTML 5 and Javascript.

Common Components Toolkits. The vendor community can jump-start FDT development with a modernized Integrated Development Environment (IDE) to create next-generation, data-centric solutions, including compliant FDT Server, FDT Desktop, and FDT DTM common components.

Companies that use Common Components will see reduced cost and effort for DTM development and certification. Common Components include thousands of lines of prewritten and tested code that ensure DTM base code complies with the FDT standard. This robust toolkit frees DTM developers from writing and debugging their code to focus on enhancing their products with advanced features. Common Components Help Files provide step-by-step instructions for optimizing DTM development activities.

Scalability Benefits End Users, System and Device Suppliers

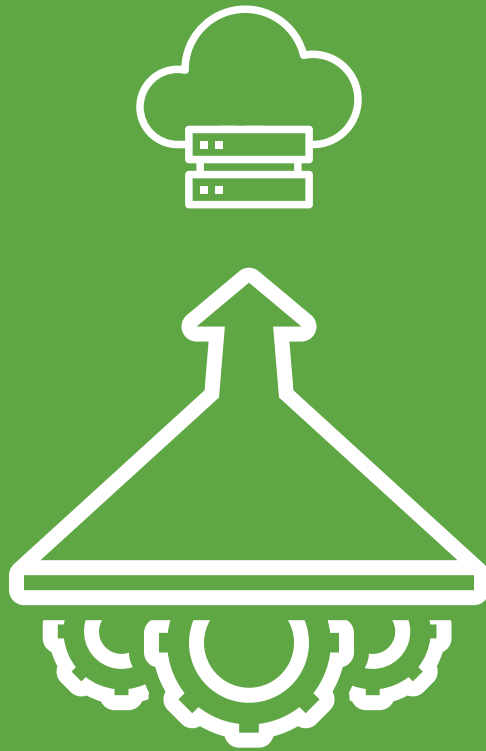
The FDT scalable solution allows users to take control of critical operational data and obtain the information needed from different networks and devices — regardless of protocol.

The new FDT Server provides end-users with flexible options on how to distribute their data within the enterprise with pre-wired OPC UA and the embedded Universal Information Model and Web servers. The FDT Server environment can scale from a small, low-cost Linux box running a remote OEM skid asset management environment, up to a multi-facility, enterprise-wide, cloud-based installation.

Interested in next-generation smart manufacturing and mobility? A universal device management solution for line extensions, retrofits or new projects is as easy as indicating FDT 3.0 in the design specification.



All FDT toolkits are available now:
fdtgroup.org/development/



Open Standard for Sensor-to-Cloud Integration



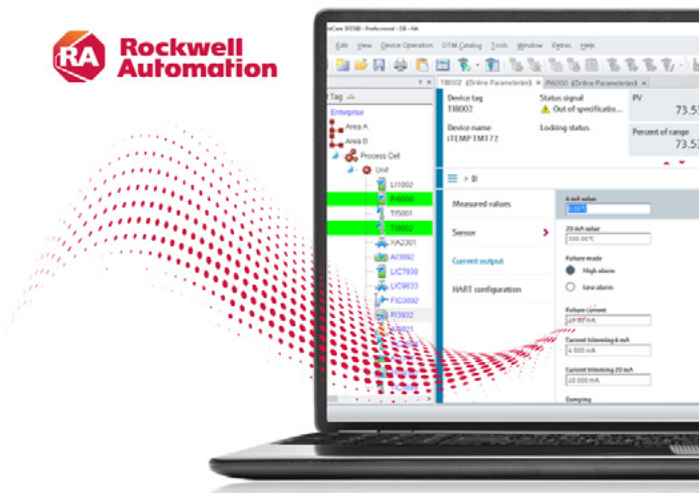
Did you know that all networked devices can be FDT-enabled? It's true. There are millions of them in service around the world. FDT offers secure, seamless, standardized integration and information exchange for the intelligent enterprise.

Now, with the FDT (3.0) Unified Environment (UE), all that device data is available in a single FDT Server solution. Imagine an integrated web server mobilizing field device management and a prewired OPC UA Server for enterprise real-time device data access.

fdtgroup.org/innovation



Efficient Device Setup with Network Scanning and Remote Access to Device Intelligence



AVAILABLE FROM ROCKWELL AUTOMATION IN THEIR COMPLETE PORTFOLIO OF DTM ENHANCED HART I/O MODULES

Today's operators in large and small industrial processing facilities remain challenged to make informative decisions due to a lack of access to data consistency. Uptime is money, and as we work to improve efficiencies in an already fast-paced environment, access to device diagnostics in a snapshot to make timely decisions is mandatory.

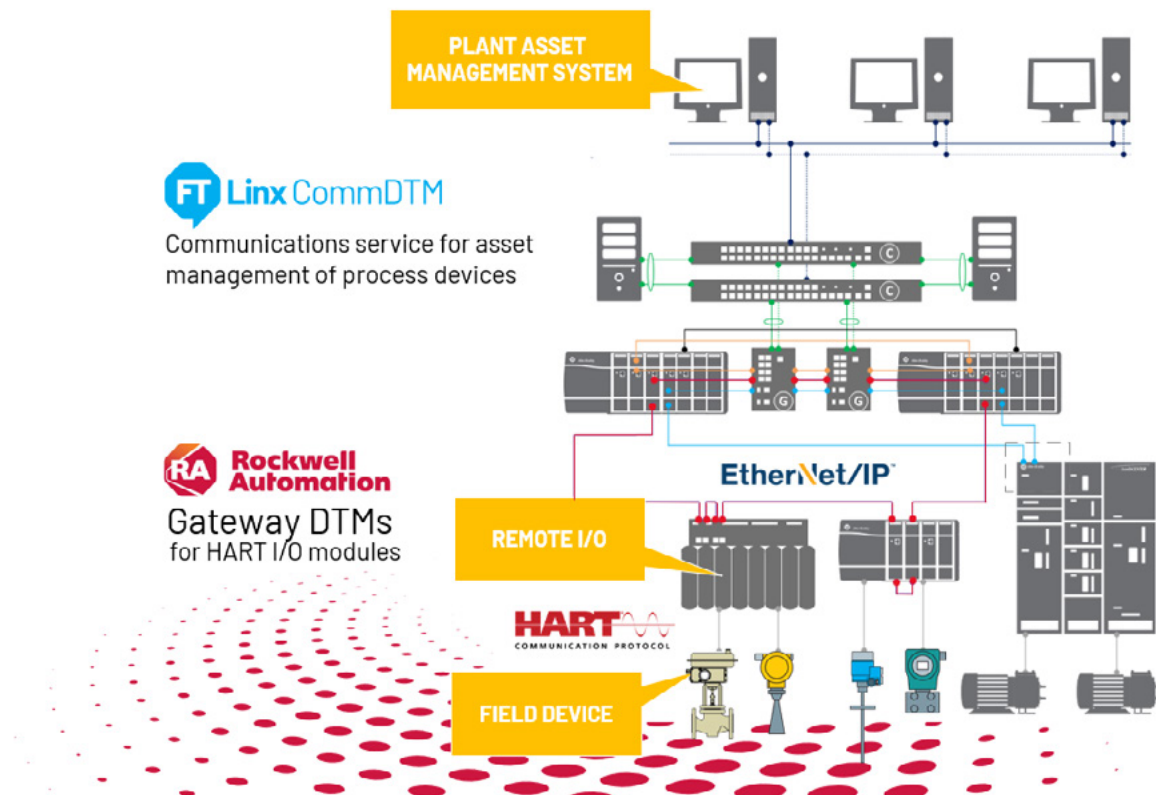
Achieving access to available device data is critical to maintaining plant health and overall performance. To accomplish standardized visualization of device/process health, a complete portfolio of DTM enhanced HART I/O modules are available. Rockwell

Automation®, a leading provider of I/O solutions for smart devices, provides the ability to scale control and I/O solutions to match your application requirements and level of device intelligence.

Rockwell Automation is committed to providing DTMs for our I/O platforms including 1756, 1794, FLEX 5000, and AADvance®. Device DTMs unlock a universal approach to intelligent device management and streamline monitoring of all connected devices in the industrial space with centralized instrument and asset management systems. Utilizing DTMs, users can gain better visibility into I/O platform performance, enable remote connectivity to data-centric field devices, manage configuration, and monitor device diagnostics according to the NE 107 recommendation.

HART-enabled I/O platforms deliver access to information originating on the plant floor via real-time control systems and information-rich business and analytical systems. With device health and data consistency funneled transparently through different communication channels, it streamlines the workflow allowing operations and business management teams to make informed decisions based on historical performance and performance trends.

Rockwell Automation HART I/O DTMs provide device intelligence and efficiency when configuring your



plant network. System engineers can now scan the field device network for I/O adapters, I/O modules, and connected field devices. Automatic scans simplify the workflow with a fast connection eliminating the need for data entry and possible entry mistakes that consume precious time to troubleshoot and fix. Additionally, automated field network scans improve design setup efficiency including integrating skids from varying manufacturers or adding a skid to the system configuration once the control network is connected to the I/O platform on-site. The scan can identify all field devices connected to the I/O prior to shipment of the skid without on-site personnel needing to configure the devices individually.

The advantages of using multiple I/O platforms for your varying application requirements like mounting locations, I/O density, and safety ratings can be used within the same project using the Rockwell Automation FactoryTalk® Linx CommDTM. The CommDTM provides easy and fast connectivity to a wide variety of I/O platform adapters. This enables the existing plant infrastructure local or remote access to the plant floor alleviating the need for maintenance technicians to have specialized cables to connect field devices. DTMs keep workers safe and limit the number of trips to the field by enabling remote access to the device configuration and diagnostic data.



Learn more about Industrial Communication at Rockwell Automation



Visit our Product Compatibility and Download Center (PCDC). To download the FactoryTalk® Linx Comm DTM or other device DTMs for our I/O families, click "Downloads" and search for "DTM".

A digital transformation strategy that includes upgrading to a modern DCS can help producers be more productive, profitable and reduce risk

How can a process industry producer or manufacturer move beyond the status quo to keep up with industry and technological trends?

A one-size-fits-all solution just won't cut it anymore. It's time to get surgical about solutions.

Enter: Digital transformation as enabled by the modern distributed control system (DCS).

LEARN HOW



EcoStruxure™
Innovation At Every Level

Machine builders design

SMART

machines for efficiency and scalability.

EcoStruxure™ Machine connects and controls operations.

- Easily integrate into any environment.
- Enhance cybersecurity with embedded IIoT protocols and encryption.
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Sign up for M262 starter pack and avail 50% discount.

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Oprex™ Vortex Flowmeter VY Series and DTM Improves Reliability with Self-Diagnostics

Introduction

Yokogawa Electric Corporation provides the Oprex™ Vortex Flowmeter VY Series with enhanced self-diagnosis and condition-based maintenance. Compare with other flowmeter types, vortex flowmeters can handle a wider range of fluid types, temperatures, and pressures. Yokogawa developed the world's first vortex flowmeter in 1969 and introduced the YEWFLO series of general-purpose flowmeters to the market in 1979. It has so far sold more than half a million units around the world.

Digitalization and Inheritance

This new series has been developed with the aim of supporting the implementation of digital transformation (DX) in large plants in the form of efficient and planned condition-based maintenance using FDT technology.

The sensing mechanism are fully compatible with previously released YEWFLO Series products. The vortex shedder bar has a robust and integrated design and is the only device in the industry to feature dual built-in flow sensors and a built-in temperature sensor. The integrated unit can be partially removed and reinstalled, making it easy to maintain or replace when necessary.



Oprex™ Vortex Flowmeter VY Series

VY Series DTM maximizes the digital performance

Utilizing readings from a built-in temperature sensor and data from pressure gauges and other external instruments, the Vortex Flowmeters VY Series can perform precise temperature and pressure-compensated calculations and energy calculations, eliminating the need for external calculation devices.

On the other hand, to use the instrument effectively, sophisticated settings are required for many parameters, which are generally difficult to handle on handheld terminals with limited information. VY series DTM using FDT technology can be operated on a PC screen, and parameters are arranged and displayed in a menu configuration with related parameters, providing an intuitive user experience, thereby maximizing the instrument's performance.

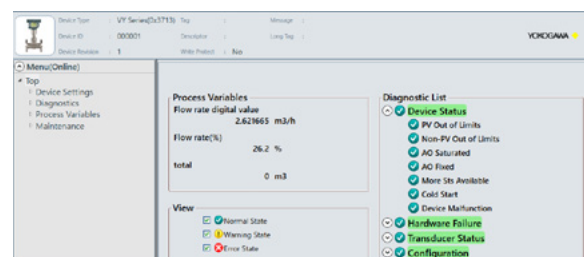


Fig.1 Screen of device status for VY Series DTM

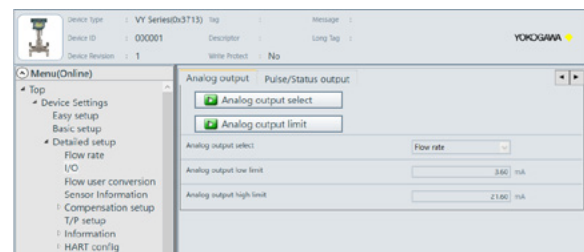


Fig.2 Screen of parameter setting for VY Series DTM

FSA130 Verification Tool based on FDT technology provides DX

The digitalization of internal signals is taken further in the VY Series, enabling self-diagnostics to cover all components, including the vortex shedder bar and sensor element. This improves reliability and qualifies these flowmeters for use in safety instrumented loops (compliant with SIL2). With the VY Series, it is also possible to track device integrity parameters and use this data to indicate when sensor capability is expected to deteriorate. Utilizing 'FSA130 Magnetic Flowmeter / Vortex Flowmeter Verification Tool' and 'FieldMate Versatile Device Management Wizard*', the integrity of VY Series flowmeters can be easily checked from a PC in a remote location such as an instrumentation room, eliminating the need to go on site to perform maintenance checks.

* PC based configuration tool that performs numerous tasks, including initial setup, daily maintenance, troubleshooting, and configuration backup for device replacement

Fig. 3 shows the results of the device verification execution. The Verification Tool helps users to perform device verification in a wizard format without being aware of complicated parameter settings and displays a summary of the results. The tool also supports report (PDF file format) output, helping to improve the efficiency of daily maintenance operations.

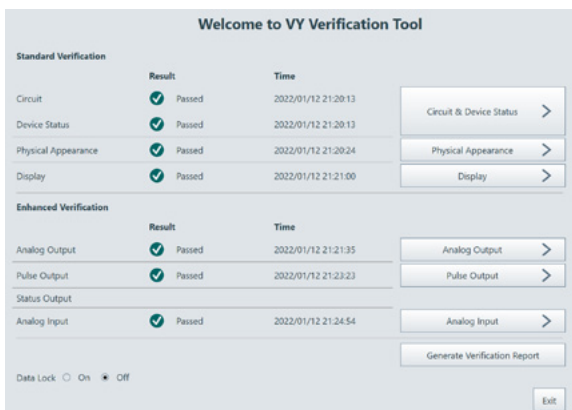


Fig.3 FSA130 verification results screen for all function blocks for VY Series

Fig. 4 shows the waveform monitoring screen, a function of the FSA130. It displays the flow sensor signal waveform used to calculate the flow rate of the device (Upper waveform [Blue line]: Vortex signal after device computing, Lower waveform [Red line]: Pulsed signal waveform of vortex signal). The stability of the device output can be visually confirmed.

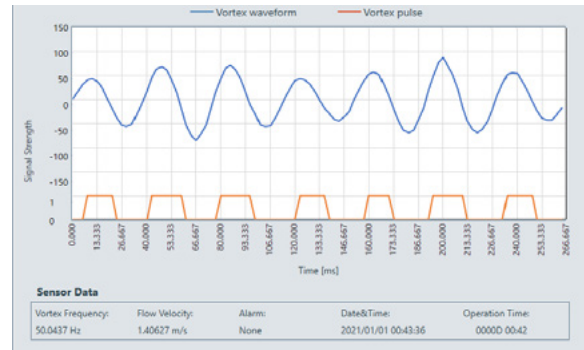


Fig.4 Screen of waveform monitoring for FSA130

Fig. 5 shows the vortex sensor prediction screen results. During long-term operation of a vortex flowmeter, the characteristics change due to the aging of the sensor element and the effects of fluid deposits on the shedder bar. These changes are accumulated within the instrument and graphically displayed as predicted future values. This function helps the user to know when it is time to maintain the vortex flowmeter or perform other maintenance, thus supporting condition-based maintenance activities.

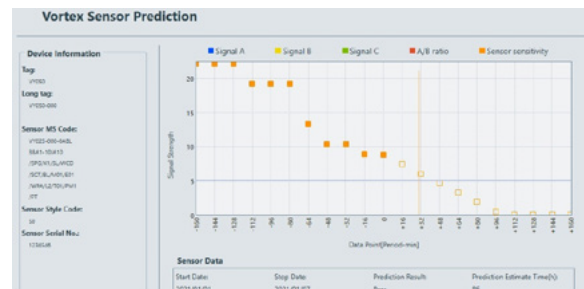


Fig.5 Screen of Vortex Sensor Prediction for FSA130

System configuration

Figure. 6 shows an example of the system configuration. VY Series FDT 2.0 DTM is included in the Device Files that are bundled with the FieldMate software installed on PC. FSA130 Verification Tool runs on the VY Series FDT2.0 DTM. Other external measuring instruments can be used to check/record the health of the VY Series more accurately.

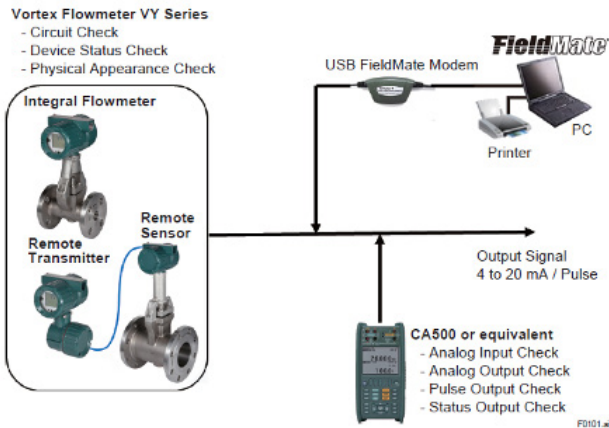


Fig. 6 System configuration

Conclusion

The VY series is based on Yokogawa's long-history of achievement incorporates the latest digital technologies such as condition monitoring and energy compensation functions, resulting in a highly reliable and easy-to-use product. Furthermore, FDT technology helps the VY series to maximize its capabilities for any customer. Together with these technologies, we will realize and develop the functions required by our customers.

The names of corporations, organizations, products and logos herein are either registered trademarks or trademarks of Yokogawa Electric Corporation and their respective holders.

OpreX™ Field Instruments

Vortex Flowmeter VY Series debut

YOKOGAWA ◆
Co-innovating tomorrow™

*As the inventor of the vortex flowmeter,
Yokogawa is bringing
the vortex technology to a new era*

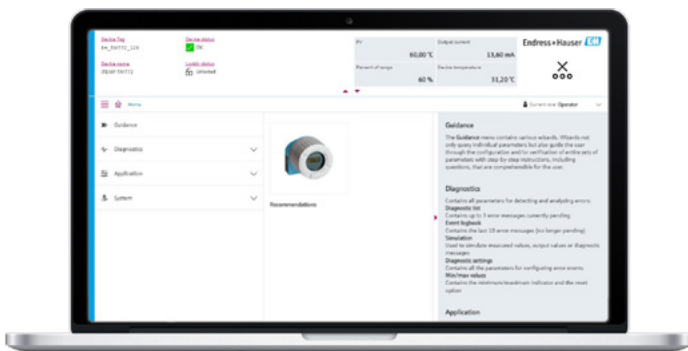
Visit our website





- Realization of condition based maintenance by remote maintenance and self diagnostic
- Inheriting the structure of the digital YEWFLOW Series and Yokogawa's long history of achievements

Benefit from the New DTM User Interface — It's More Than Just a Facelift



Device DTM's are embedded device drivers representing simple and complex smart instrumentation with specific parameters/functions and interfaces. DTMs allow all devices and device representations (DD, EDD, FDI, etc.) to connect and communicate with any FDT hosting environment (PC or device configuration tablet) independent of any network topology. They provide a unified environment empowering operators with a single user interface simplifying field-to-host interoperability and lifecycle management (device integration, configuration, monitoring, diagnostics, etc.).

With millions of DTMs in service around the globe, the user community is fond of the intuitive user interface that offers data consistency effective for asset management. DTMs are the perfect diagnostic assistant working 24/7, allowing operators a dashboard glance of asset health for predictive maintenance strategies. Endress + Hauser is committed to delivering a comprehensive device management environment based on your choice of FDT or FDI.

DTMs – The Hidden Heroes of Asset Management:

- DTMs enable smart devices — standardized integration, access, configuration, and monitoring of all field devices with any FDT hosting environment.
- Interactive DTM user interface — new design with modernized menus and features simplifies daily maintenance work.
- Improves plant lifecycle maintenance — commissioning field devices, and replacing obsolete assets.
- New wizards and DTM menus — streamline operations and improve accuracy along with worker safety while saving time and money.

Endress+Hauser has enhanced the DTM user interface based-on user-driven feedback with new features improving intelligent device management.

- Fast commissioning – Commissioning a new device can turn into hours if parametrization is not clear. The new DTM interface comes with an installation wizard guiding you through the installation and parameterization process.
- Easy operations – View and access device health status at a glance and gain real-time measured values from the top of your screen.
- Obtain the cause and remedy information for maintaining your asset with one click.
- Seamless documentation – The DTM gives you an easy option to document the device configuration paperlessly.
- Advanced usage – More functionalities added for specialists: e.g., you can switch on/off different diagnostics.

TeSys island – Full Tool Integration into EcoStruxure Control Expert Supporting M580 Controller

AUTHORS:
 Norbert Gehre - Marketing Offer Range Manager

Dominique Leduc - Device Life Cycle Marketing Manager

FDT DTMS MAKES IT EASY TO ENGINEER, MANAGE AND MAINTAIN ALL YOUR LOADS, REDUCING DOWNTIME

The TeSys island load management solution has extended its FDT DTM based tool with more functionalities and optimized integration into the Control Expert engineering suite of Schneider Electric!

TeSys island is the fully digital load management solution for Direct Online Loads (DOL) like asynchronous motors or any other AC electrical load up to 80 Amps. With the object-orientated approach of TeSys island all loads are managed as a digital twin, called TeSys avatars. This makes it easy to engineer, manage and maintain all your loads. With the availability of all relevant load data like diagnostic data, warnings, maintenance messages, load current, energy and power data, it is now possible for OEMs and end-users to monitor, optimize and maintain its application while reducing downtime. TeSys island support several fieldbuses like EtherNet/IP, Modbus TCP, PROFINET and PROFIBUS.

TeSys island configuration tools are built upon FDT DTM technology including controller specific function block libraries. The DTM based tool gives full control to the TeSys island configuration and is seamlessly integrated into the EcoStruxure Control Expert. The function block libraries are dedicated to the different functionalities and data available within TeSys island. This means that you have structured



function blocks for tasks like avatar (load) control, load and system diagnostics, power and energy monitoring, communication management and asset management. With the availability of these libraries the programming effort to control and monitor AC loads are simplified, and engineering efforts are minimized.

All files are available for free download without the need of registration and licensing.



TeSys island — EcoStruxure Control Expert Classic Quick Start Guide



EcoStruxure Control Expert 2021 — TeSys™ island Library



EcoStruxure Control Expert — TeSys island Library Control User Guide



TeSys island DTM Library (Version 2.2.2)

We understand the challenge of finding the right balance between plant efficiency and compliance with industry standards and legal requirements.

OBSERVE + CONSERVE

You meet your efficiency goals and reduce costs without compromising on water quality.



Proline Promag W 0 x DN full bore – The world's first electromagnetic flowmeter for unrestricted measurements



- Measure reliably – independent of flow profile and mounting location
- The first and only electromagnetic flowmeter with no inlet and outlet runs (0 x DN) as well as no pipe restriction (full-bore design) and thus no pressure loss
- Installation directly after bends, perfect for space-restricted areas and on skids

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