

A close-up, low-angle shot of a gold USB connector. The connector is the focus, with the letters 'EDDL' engraved in a stylized font on its side. The background is a soft, out-of-focus gradient of blue and white. A dark grey rectangular box is positioned in the upper left, containing the text 'EDDL™'. Below it, a white rectangular box contains the text 'The key to interoperability'.

EDDL™

The key to interoperability



Welcome

Rich Timoney, Fieldbus Foundation



Our goal in the EDDL cooperation team is to protect the investment that has been made by our manufacturing members and our automation users. We can only do that by communicating with the end users, understanding their needs and requirements, and agreeing amongst ourselves on a single approach and common solution.

Edgar Küster, PNO



EDDL is a proven technology and is supported by leading product and system suppliers and is part of the technology supported by Profibus Nutzer Organisation (PNO). Suppliers and users are well experienced in handling EDDs. The PNO has joined the EDDL cooperation team to improve EDDL for the requirements of the future.

free your operating processes use the key to interoperability

Ron Helson, HCF



The Phase 1 EDDL enhancements establish a new standard for integrating the advanced capabilities of modern intelligent devices with control, safety and asset management systems.

The immense benefits of this new standard will become evident as device manufacturers, system suppliers and users fully embrace and support EDDL technology around the globe.

Thomas Burke, OPC



All four organizations are committed to standards-based technology and interoperability. EDD provides excellent vertical interoperability and adding OPC UA will insure that the enterprise layer will have rich horizontal interoperability in a standard-based, open environment

that is platform and operating system independent.

A person's hand is shown using a mouse on a computer workstation. The workstation features three large monitors displaying complex industrial control software. The software includes various diagrams, data readouts, and control panels. The background is a blurred office environment.

A Clear Trend: Decentralization & Interoperability

In today's modern, automated Distributed Process Control Systems, more and more technical functions are moving from the controller to the field. Remote input/output stations, connected to a fieldbus, allow direct access to linked field devices. Alternatively, field devices, like transmitters, actuators or drives, are connected directly to fieldbus systems. Automation components are becoming smarter with sensor systems managing their own set-up, and performing self-calibration and self-diagnosis.

In this environment, the need for a universal, standardized and interoperable technique to comprehensively describe automation components is more important than ever. It is vital for everyday tasks like device configuration, device replacement, diagnostics or audit trails — all essential building blocks in a modern field device management system. Without it, the true potential of decentralization, transparency, integration and a central view of all data and functions cannot be fully realized.



one size fits all

use the key to interoperability

EDDL: How Does It Work?

EDDL is a text-based description of the variables that are contained in the device, such as flow, pressure, drive speed, ambient temperature, high and low limits, calibration settings, and so on. The description defines each variable, and describes how to access it.

The concept of EDDL

Electronic Device Description Language (EDDL) is a universal, proven and state-of-the-art method for accessing diagnostic, real-time and asset management information contained in more than 20 million field instruments from a host of manufacturers, and providing optimum data and device interoperability. With EDDL technology, a user can calibrate instruments, diagnose problems, provide data for user interface displays, identify process alarms and obtain information needed for high-level software, such as MES, UI/SCADA, plant historians, asset management and ERP.

All necessary data and functions of an automation component are accessible through the FOUNDATION™ technology, HART® Communication Protocol, Profibus, and OPC Interface. An end user doesn't have to write any software for this purpose. EDDL is supported by virtually every Process Control Systems vendor worldwide, and the information it describes is available in any FOUNDATION-, HART-, or Profibus-based field device. This way, end users can easily profit from all device data provided by the EDD.

One EDD — multiple usage

One EDD can be used everywhere — in asset management systems, Process Control Systems, OPC-UA Servers, hosted solutions, and even in a handheld terminal.

What is in the EDD?

- >> Device identification; e.g., complete device ID
- >> Description of all device parameters and attributes; e.g., lower/upper value range, default value, write privileges and information on how to access this data
- >> Functionality for verifying plausibility, scaling, mode switching, and tank characteristics
- >> Structural information on parameters and functions with built-in flexibility, enabling you to create a specific look and feel for your interface — including advanced graphics and bar graphs, as well as multilingual capability
- >> Links to all types of device documentation or online help
- >> A description of usable and available datasets

Engineering System

Operating System (e.g., Windows®)

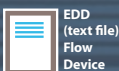
Application

Visualization

EDD Interpreter

Communication

Data Storage





assured of a good future

use the key to interoperability

Learning EDDL

The usage of EDDL is very simple, and the language itself is easy to learn. There is no need to learn a complex and difficult programming environment. A simple text editor is enough, but specialized editors are also available.

How to apply the EDD

The EDD is a text file written with EDDL, containing the description of a device. It is imported into the DCS by simply copying the file to the necessary location. It can be imported any time it is needed, and is then automatically recognized by the EDDL interpreter. EDD is completely independent of the operating system and has no impact on system runtime stability.

EDDL Enhancements Overview

Overview

EDDL enhancements have been developed to extend the concept of interoperability. Enhanced EDDL supports device diagnostics, asset management, user interface displays, bar charts, trends, device signatures and historian functions. These enhancements were submitted to the International Electrotechnical Commission (IEC), and a revision to the International Standard was approved in 2006 as IEC 61804-3. The developments culminating in the new IEC standard 61804-3 substantially increase performance — through improvements in the capabilities of user interfaces and data storage. In addition, the OPC Foundation announced its adoption of EDDL in 2005 as the descriptive technology used in its Unified Architecture (UA).

OPC is a standard interface definition for client and server applications. An OPC Unified Architecture server will provide device and automation component data and their EDDs to client applications, e.g., HMI, MES and device applications.

Improved capabilities of user interfaces

Setting up user interfaces is now easier with standardized dialog windows, standardized representation of simple texts and dynamic variables, images, diagrams and archive files. User interfaces and displays now have a uniform appearance, regardless of whether the device is FOUNDATION, HART or Profibus, despite the EDD process environment. Only the data-relevant aspects are standardized, not the shape and color of the elements. This way, systems and tool developers can achieve a look and feel reflecting their own product and design philosophy. For users of a tool or operating system, this means all their devices can be represented with a consistent look and feel. However, the information displayed is read from the EDD and is completely determined by the supplier of the field device.

Downward compatibility

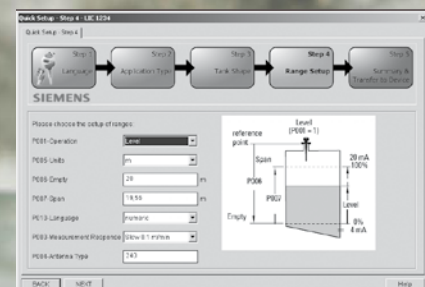
None of these enhancements, or their usage, affects existing description files. So data from more than 20 million EDDL-compatible instruments installed in the field — plus all the new field instruments — can now be readily accessed. EDDL is transparently backward compatible to 1990.

Moreover, since virtually every control system on the market today has access to asset management software, all the complete stored data or online data of the devices described with EDDL is easily accessible from outside EDDL for any purpose — from instrument calibration to diagnostics for maintenance.

New data storage capabilities

New data storage functionalities are being made available that, for example, will further improve archiving. With “persistent data storage,” manufacturers can now store data from the device in a host application without requiring the device to recognize conventions for saving the data under the host system. In this instance, the EDDL interpreter works as a go-between, taking instructions from the EDD and initiating the archiving procedure. The key benefit: data format and semantics are known to the control system or tool, and are thus readily available for onward processes.

This new functionality enables a whole new set of applications. A valve diagnostics application, for instance, is now able to write signatures based on EDD instructions into an archive that can be mined and evaluated at a later stage — without requiring the operator to bother with host-specific data storage and archiving procedures. Here, too, the extensions are based on the existing IEC 61804-3 standard. Based on these enhancements it is, for example, now very easy to define a quick setup even for very complex devices.



Quick setup dialog with graphical representation based on EDD.



relax your workflow

use the key to interoperability



Even very complex devices, e.g., motors, can be described by EDD.

Dialog with trends as well as other process and status data based on EDDL, e.g., a positioner.

A Buddhist monk with a shaved head, wearing traditional orange robes and a black prayer bead necklace, is shown in a meditative pose. He is seated on a wooden floor, looking down with a serene expression. The background features intricate wooden carvings, suggesting a traditional temple or monastery setting. The lighting is warm and soft, highlighting the texture of his robes and the details of the woodwork.

Best-of-best for Everyone

Whatever your role, EDDL delivers the practicality that you need. From smart transmitters to actuators or drives — whatever the component, EDDL is essential.

>> **Component suppliers** – You know your product, its parameters, valid values, accessibility, diagnostic data and the functions, such as calibration, that it can offer. EDDL provides a simple and accessible way of describing all aspects of the device, saving you from worrying about the integration of your component. For example, in many Process Control Systems or tools running Windows® or any other operating system, simply write an Electronic Device Description (EDD) with EDDL.

>> **Process Control System suppliers** – With EDDs and an interpreter, you can easily deliver a common look and feel for all devices and the rest of the control system. If you update or upgrade your system or tool, or the underlying operating system, just run your interpreter and leave the EDD unchanged. No need to worry about deliveries of updated descriptions for all supported components by their suppliers. And, in case of a runtime error in an EDD, which is very unlikely, the Process Control System will not fail — as the EDD is interpreted and doesn't run directly as an executable program on the operating system.

>> **Engineering staff** – EDDL gives you a unique look and feel for all devices and components, independently of the supplier, independently of the communications system and, in the case of transmitters, independently of the measuring task. These features result in reduced training costs, reduced operating failures and unique and transparent access to the data in all devices and components. EDDL makes this possible because the component supplier just defines the structure of the user interface. The tool or system supplier then builds the overall look and feel.

>> **End users** – Of course, you can gain the same benefits as the engineering staff. In addition, you benefit from modern asset management systems that reduce unplanned maintenance tasks through the use of the self-diagnostic functions of smart field devices and other components. EDDL gives you transparent access to exactly this data — without any additional license costs for the EDDs.



working together – simplified
use the key to interoperability

EDDL – benefits for all players

Independence

- >> Operating system
- >> DCS platforms and versions
- >> Communication paths

Ease of use

- >> Unified user interface
- >> One user interface to all devices –
from the simplest to the most complex
- >> Common look and feel
- >> Built-in state-of-the-art graphics

Safe operation

- >> No influence on runtime stability
- >> Easy updates and device additions during operation

Lower costs

- >> Education and training
- >> Development
- >> Maintenance

No investment risk

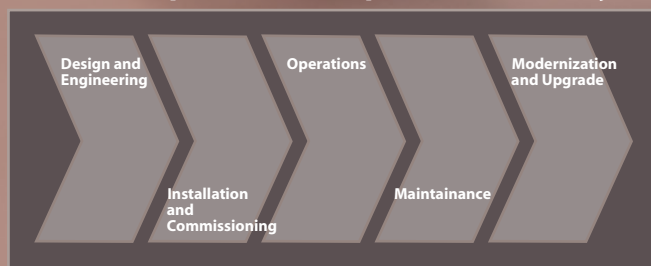
- >> Controlled lifecycle management
- >> Transparent backward compatibility
- >> Stable and consistent EDDL standard

Scalable

- >> From handhelds to MES
- >> From simple to highly complex devices



EDDL in all phases of the production life cycle





ready for take-off

use the key to interoperability

The Growing EDDL Community

>> **Late 1980s** – EDDL first appeared around 1990 in HART instruments. A technician with a universal handheld communicator was able to walk up to any HART instrument, plug in, calibrate and adjust the instrument in the field. All that was needed was the correct EDD file, which was available from the instrument vendors or the handheld manufacturer. Interoperability was born!

>> **Early 1990s** – HART users formed a user group, comprised of 26 companies, marking the beginning of an “open” communications technology. The users went on to establish the HART Communications Foundation (HCF) in 1993. Many users wanted to obtain the data via a digital interface, so it standardized EDDL to describe the information in a programmable manner for a host control system.

>> **1994** – The Fieldbus Foundation adopted EDDL as a standard. Profibus adopted EDDL as well, but the three organizations each supported the technology independently and slightly differently.

>> **2002** – The three groups: Fieldbus Foundation, HCF, and Profibus Nutzerorganisation e.V. (PNO), started to collaborate and submitted a unified version of EDDL to the IEC, where it became an international standard in 2003 — IEC 1804-2. This laid the basis for the creation of a single engineering environment in a host that can support any field device from any manufacturer using any communication protocol. Interoperability was strengthened!

>> **2002** – Fieldbus Foundation, HCF and PNO enhance EDDL and extend the concept of interoperability to the user interface and device diagnostics.

>> **2004** – The EDDL Cooperation Team (ECT) is founded at the Hannover Fair to promote and enhance EDDL technology. The team comprises Fieldbus Foundation, HCF, PNO and, now, the OPC Foundation.

>> **2005** – The OPC Foundation announces its adoption of EDDL as the descriptive technology used in its Unified Architecture (UA), thus extending interoperability even further.

>> **2006** – A revision to the International Standard is approved in 2006 as IEC 61804-3.

>> **Currently** – By 2006, more than 20 million EDDL-compatible instruments will have been installed in the field.

get to



More than 100 companies support EDDL™ worldwide.

the top use the key to interoperability

The leading host suppliers support integration of field devices with EDD technology.

Host vendors:



More than 100 different suppliers of field devices and automation components from all over the world support EDDs for their devices.

Device vendors (selection):



EDDL

The key to interoperability



EDDL COOPERATION TEAM

EDDL Cooperation Team

Founded at the Hanover Fair in April 2004, the EDDL Cooperation Team (ECT) joins the Fieldbus Foundation, HART® Communication Foundation, Profibus Nutzer Organisation e.V., and OPC Foundation in one association. The team seeks to promote and enhance EDDL technology. Already, we have worked together to define the EDDL enhancements that form part of IEC 61804-3, which was issued in February 2006. ECT will continue to promote and develop further technical definitions to increase the productivity of their members and customers.

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