wp_EDDL FAQ rB
2008-07-25 23:54:00

EDDL FAQ

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Question 1: Is EDDL incapable of graphics?

No. Original DD before enhancements were added was incapable of graphics. This limitation no longer exists. Now, EDDL with enhancements provides the graphics required to fully display device information such as advanced diagnostics and setup. On a computer workstation the technician will get the full Microsoft Windows experience, that is, the familiar Windows look and feel.

Menu system

For instance, EDDL with enhancements provides a full menu system including root menu for a navigation area, tabbed cards, frames, pop-up windows, and dialog boxes etc. allowing the device manufacturer to logically structure the information in the device for easy.

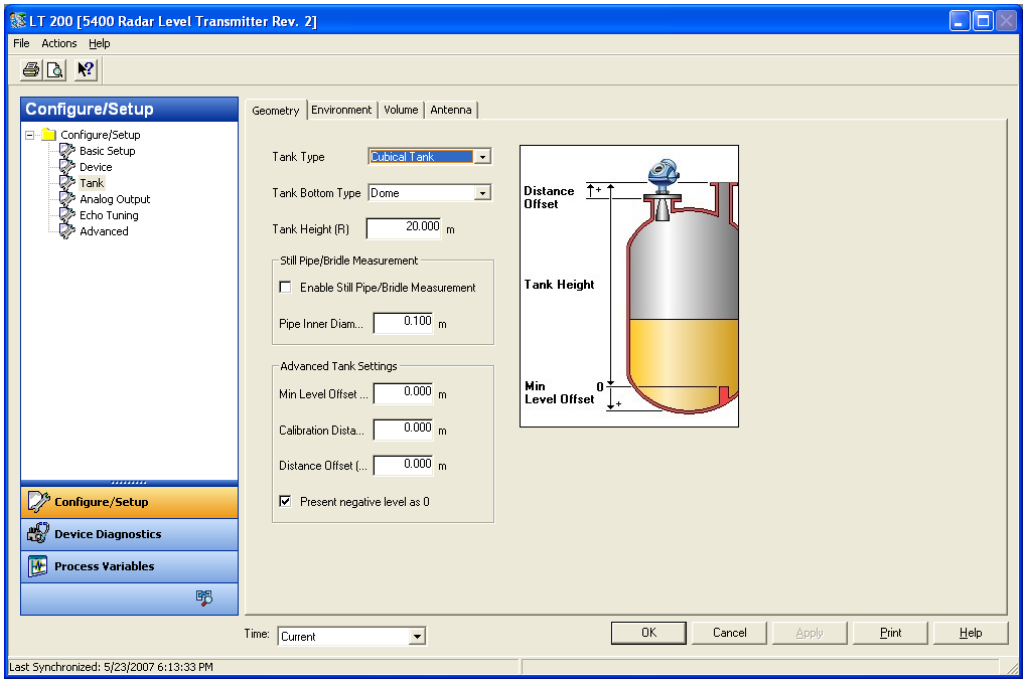


Figure 1 full menu system

The display is not cluttered by irrelevant parameters, thus making devices easy to use.

Graphical elements

EDDL with enhancements permits the device manufacturer to include images, gauges, bar-graphs, waveform graphs, tables, and charts etc. in order to make simple as well as sophisticated devices easy to use. Graphs and charts can show many trends and waveforms simultaneously. EDDL with enhancements therefore supports advanced functions and advanced devices.

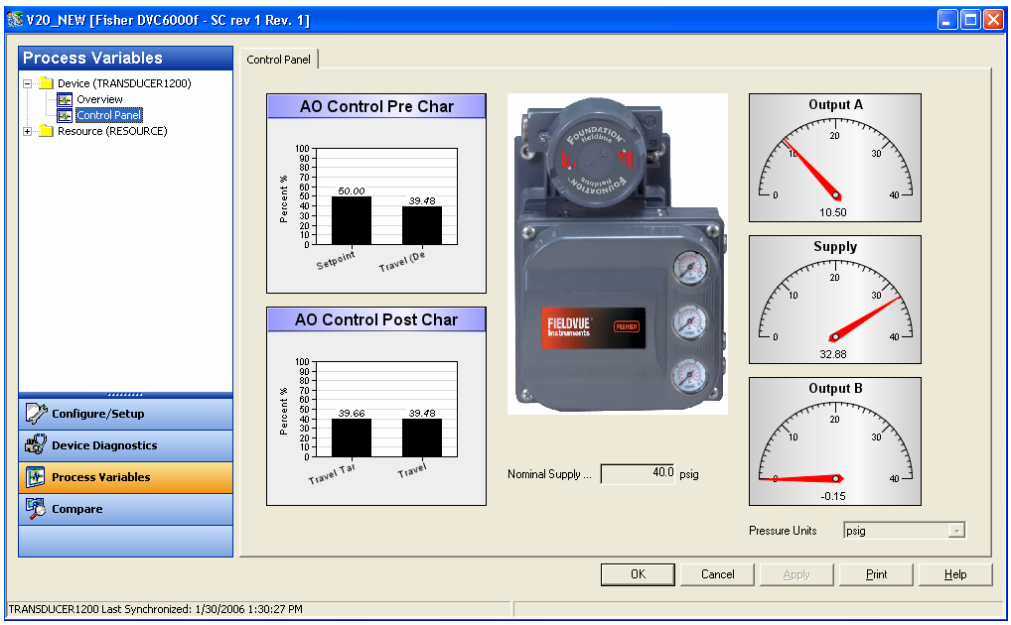


Figure 2 elements of rich graphics

These sophisticated displays designed by the device manufacturer enable setup and diagnostics of advanced devices such as radar level transmitter, valve positioners, electrical motor drives, and machinery health transmitters etc. The plant can move to predictive maintenance practices for its devices. EDDL with enhancements has rich graphics and fully supports devices with their full set of features.

EDDL works like HTML and supports a rich graphical experience just like Internet Explorer. When used on a Windows computer EDDL is rendered with the familiar Windows look and feel including common controls such as hierarchical tree, tabs, frames, command buttons, check boxes, text boxes and drop-down lists, etc. Many EDDL-based tools look like familiar MS-Office applications.

Question 2: Is EDDL incapable of 'Wizards'?

No. Wizards are supported in original DD since 1992. Functions such as wizards, data validation, parameter dependencies, and mathematics are in EDDL handled by 'Method' scripts. These scripts include powerful mathematical expressions for computing and comparison. Method scripts have been part of EDDL since the beginning. However, some implementations of EDDL in device management software did not implement the methods part of EDDL. Therefore some systems did not provide wizards and could not deal with conditionals.

To help users select a control system that implements the full capability of EDDL with enhancements, the Fieldbus Foundation has started a Host Registration Program that tests software to check that the necessary EDDL functionality is implemented.

EDDL has the capability to fully support devices with their full set of features including for instance radar level transmitters, valve positioners, electrical motor drives, and machinery health transmitters etc.

Validation

EDDL supports plausibility check on entered values against fixed range, a range in the device, or range depending on other settings such as units, to reject inadmissible data. This ensures all entered data conforms to the rules and dependencies of the device. Moreover, ultimately values are accepted or rejected by additional validation checks in the device, and if not successful reported through EDDL error messages.

Calibration Wizard

EDDL methods are used to simplify and eliminate mistakes in complex calibration trim procedures, including reminders to ask operations to put loop in manual to prevent disturbing the process, and a reminder to return loop to normal at the end of the procedure. Thanks to EDDL the technician need not be an expert because the expert know-how from the device manufacturer is built into these wizards and it ensures steps are taken in the correct sequence. All technicians follow the same procedure.

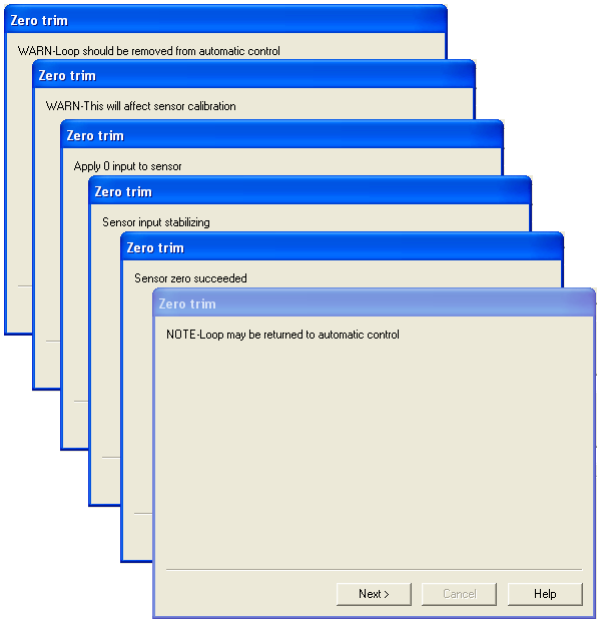


Figure 3 Wizards take technician through complex calibration procedures step-by-step

Setup Wizard

Mechanisms to handle relationships and conditions exist in EDDL. Using wizards, users are presented only with valid options based on previous selections simplifying correct choice. Default values are provided for typical application settings. Setup wizards ensure the necessary settings are done, and are done in the correct sequence, the same way by all technicians.

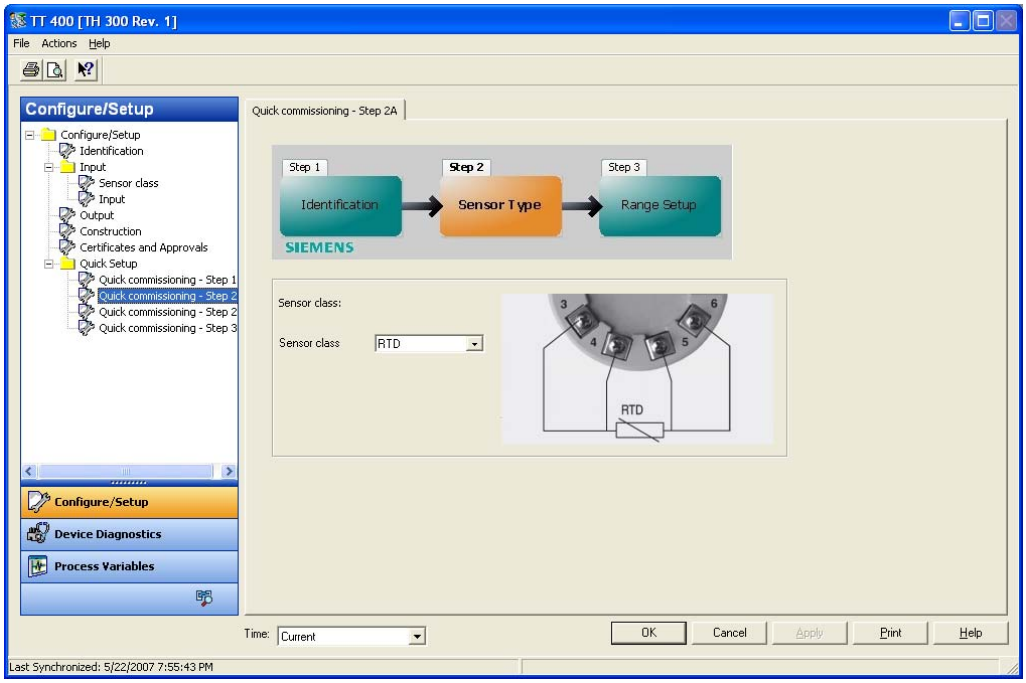
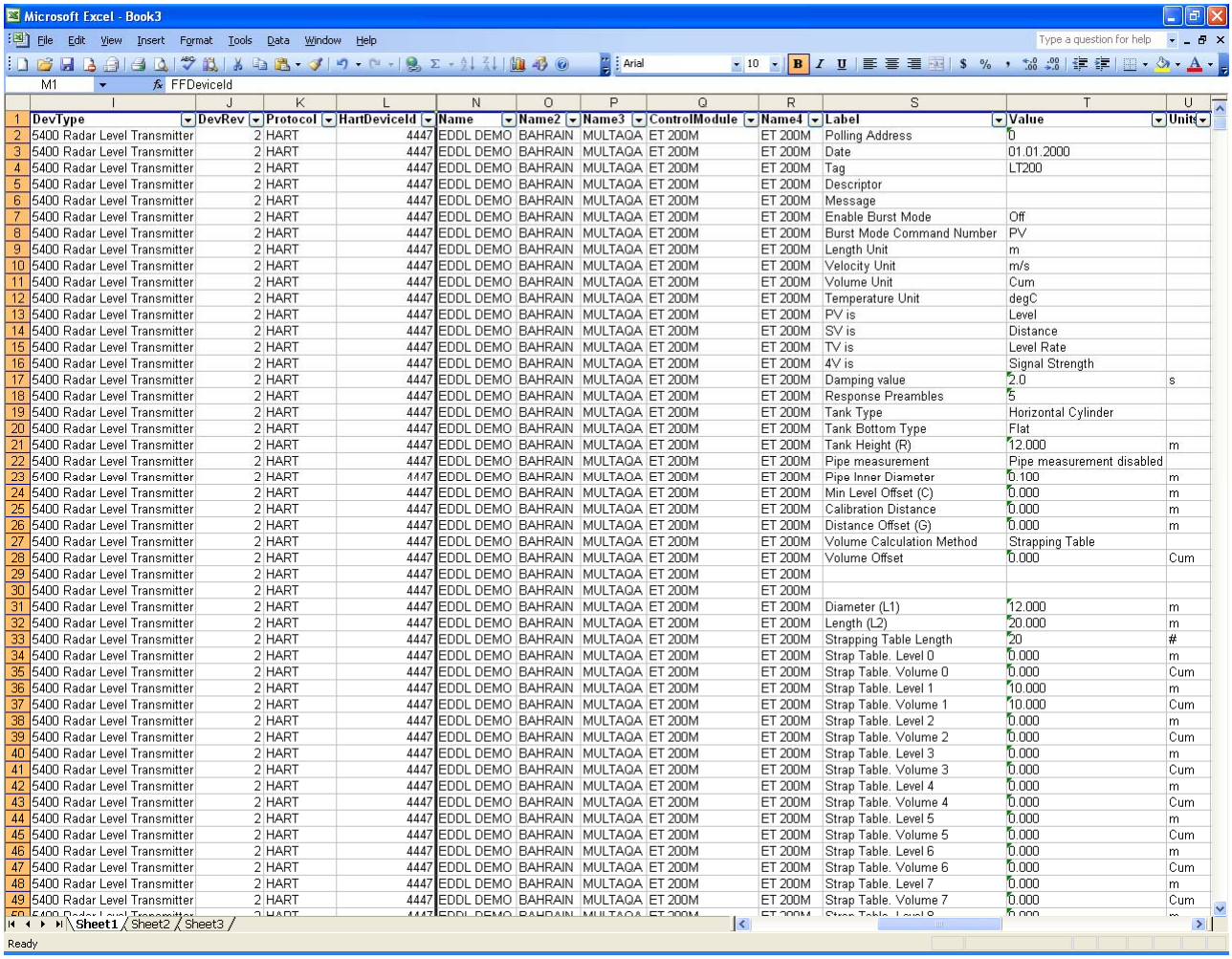


Figure 4 Wizards make device setup easy and less error prone

Excel Export

EDDL enables the device management software to access information in the device, decode it, log changes in the audit trail, and configure an OPC server to make it externally accessible, and export it to XML document or Excel spreadsheet or print it as a document. This functionality need not be built into the EDDL file by the device manufacturer, it is automatically provided by the device management software, only the description of the device data comes from the EDDL file.



Microsoft Excel - Book3

File Edit View Insert Format Tools Data Window Help

M1 FFDeviceId

	I	J	K	L	N	O	P	Q	R	S	T	U
1	DevType	DevRev	Protocol	HartDeviceId	Name	Name2	Name3	ControlModule	Name4	Label	Value	Units
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3	5400 Radar Level Transmitter	2	HART	4447	EDDL DEMO	BAHRAIN	MULTAQA	ET 200M	ET 200M	Date	01.01.2000	
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49	5400 Radar Level Transmitter	2	HART	4447	EDDL DEMO	BAHRAIN	MULTAQA	ET 200M	ET 200M	Strap Table. Volume 7	0.000	Cum

Sheet1 Sheet2 Sheet3

Ready

Figure 5 Exported data opens in Excel

EDDL is not a programming language. It is not used to write software. EDDL is a markup language like HTML and XML. The fundamental concept of markup languages is that it is used to declare and explain; for instance a document, a web page, or in our case a device. Actual processing is done by software such as word processors, web browsers, or in our case device management software and handheld field communicators. Just like HTML pages can add JavaScript, scripts can also be added to EDDL displays. For EDDL these scripts are called methods and are used by device developers to create 'wizards' that coach technicians in complex tasks such calibration trim or setup of sophisticated devices. For security reasons, the methods are interpreted just like JavaScript and have no access to file system, registry, memory space, network, or other part of operating system.

Question 3: Is EDDL incapable persistent data storage?

No. Original DD before enhancements were added was incapable of persistent data storage. This limitation no longer exists. Now, EDDL with enhancements includes persistent data storage and supports devices with their full set of features.

Question 4: Does EDDL provide information and "know-how"?

Yes. Context sensitive help has existed in original EDDL since 1992. Identification information is available in the device itself. Device management software based on EDDL can open documents related to the device itself as well as the plant location.

Device Identification

EDDL displays the manufacturer, device type, and version information as well as ordering code information as stored in the device. Product picture is also displayed. Company logo and contact information may also be included by manufacturer.

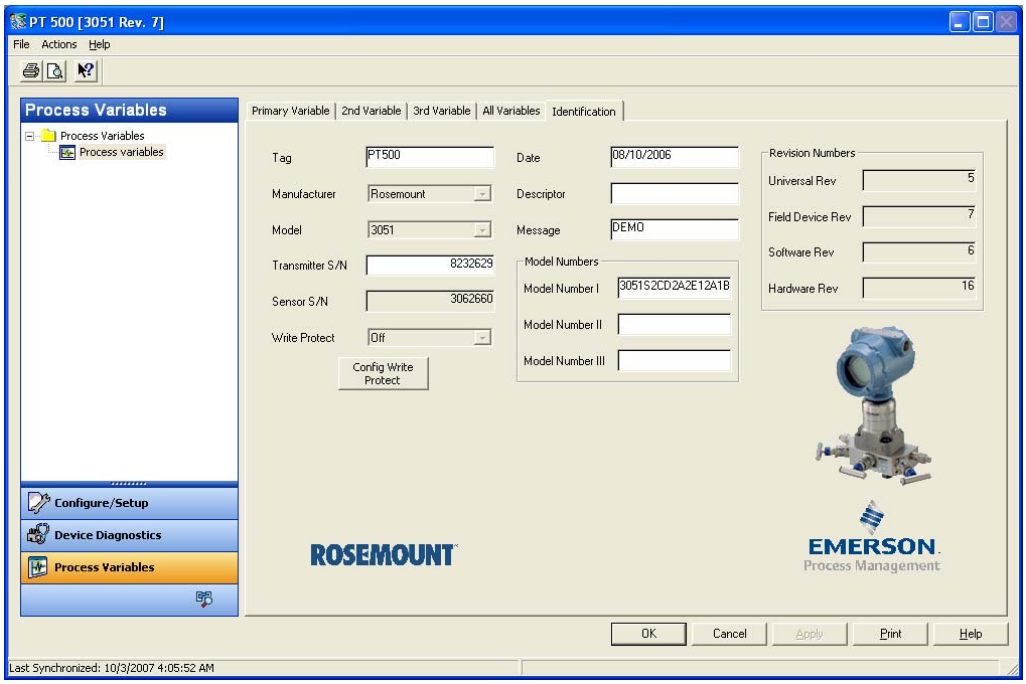


Figure 6 Information from device is displayed

Text

Text and images are also included where appropriate to explain device feature options and diagnostics results etc. This text may include know-how from device and application experts.

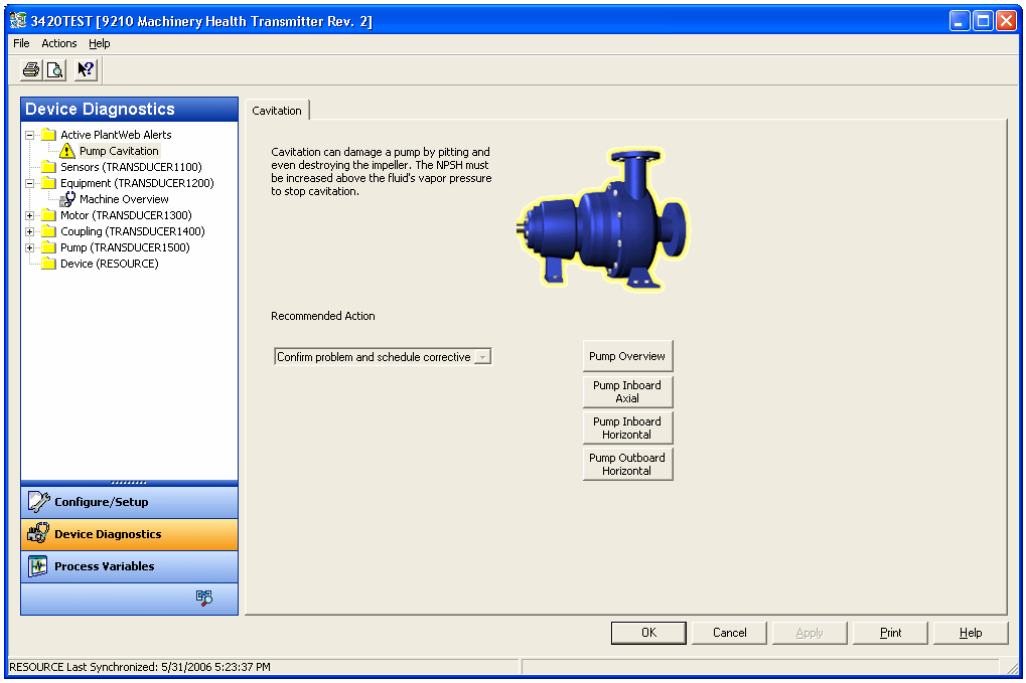


Figure 7 Expert know-how included in displays as text and images

Context Sensitive Help

Context sensitive help text is provided for every variable, every option, every menu, for tables and images, and for methods etc. as well as for graphs and charts plus their individual pens, curves and axis. This makes devices easy to use. The user need not have to search a large body of text to find an explanation.

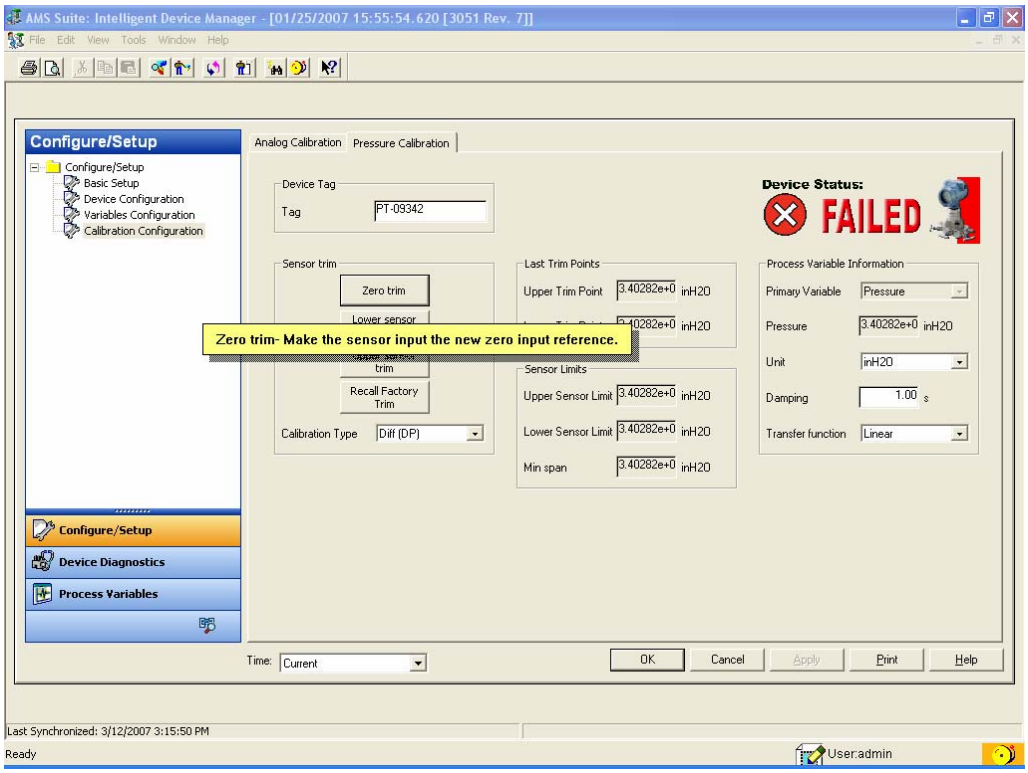


Figure 8 Context sensitive help is built-in by device and application experts

Device Documents

EDDL-based software support access to documents related to the device type, for instance product data sheet, manual, spare part list, and procedures. Because these documents are not stored in the device itself EDDL is not even needed to accomplish this task, but document are organized using the same manufacturer and device type identification as EDDL. Technicians may also add their own service notes.

Plant documents

EDDL-based software support access to documents related to the plant location, for instance hook-up, P&I, and loop diagrams, installation drawings and photos, as well as procedures. Because these documents are not stored in the device and don't even come from the device manufacturer EDDL is not even needed to accomplish this task.

Question 5: Can EDDL be used for 'advanced' diagnostics and troubleshooting?

Original DD before enhancements were added was incapable of graphics and therefore could not display results of advanced diagnostics from some device types graphically. This limitation no longer exists. Now, EDDL with enhancements provides sophisticated graphics and persistent data storage, EDDL can also be used for advanced diagnostics and troubleshooting. EDDL with enhancements fully supports devices with their complete set of features. Diagnostics, including diagnostics from advanced devices, may be presented as text, values, indicator lights, charts, or waveform graphs, whichever device manufacturer's expert finds best. EDDL methods support coaching the technician step-by-step for advanced diagnostics and troubleshooting procedures based on manufacturer know-how.

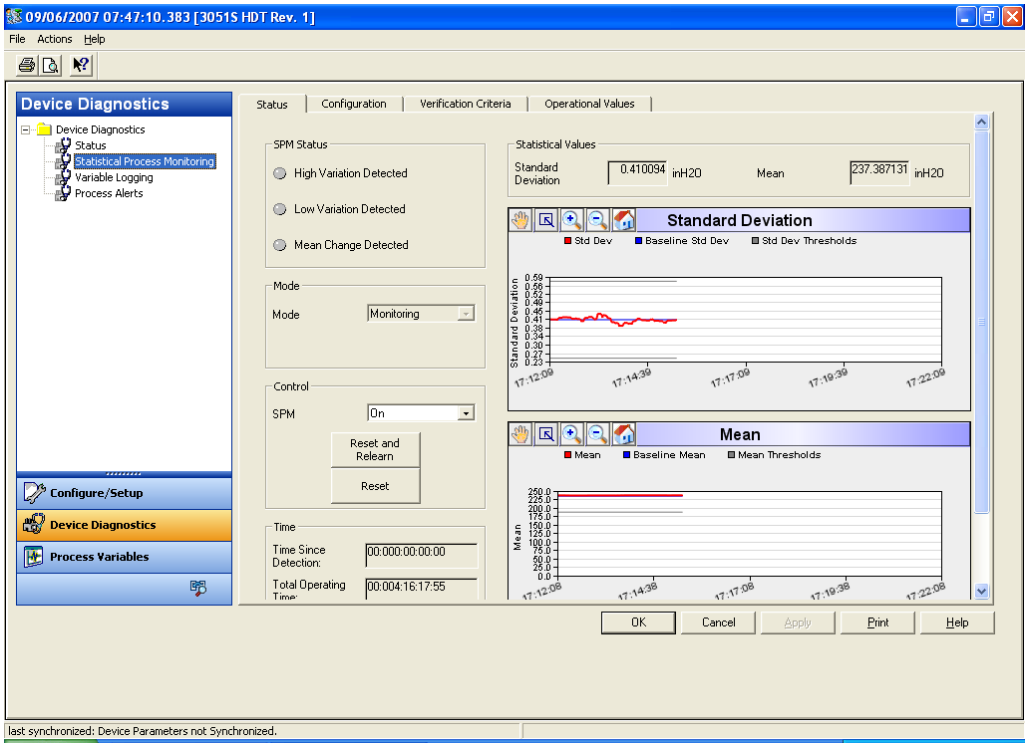


Figure 9 Sophisticated graphics enable diagnostics such as plugged impulse line detection

Question 6: Can EDDL be used in the maintenance and operations phase?

Yes. Since sophisticated graphics and persistent data storage is now possible, EDDL can also be used for advanced diagnostics and troubleshooting as required by some advanced devices for the maintenance and operations phase. Wizards for calibration have existed all along. EDDL has been used in leading intelligent device management software as part of asset management suites and been used to improve maintenance and operations since 1996. EDDL with enhancements is a single solution suitable for all phases of the plant life-cycle including the operations and maintenance phase.

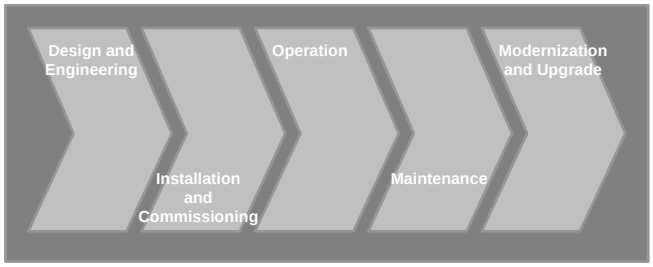


Figure 10 EDDL with enhancements is a single solution for all phases of the plant life-cycle

In fact, EDDL is the only device integration technology suitable for the engineering phase because it is the only technology that integrates into the control system engineering station to automate tasks such as building the instrument database and fieldbus control strategies. EDDL is the technology best suited for operations because it is the only technology that integrates into the control system operator stations to display diagnostics, the only workstations which are permanently manned. EDDL is also best suited for commissioning since it is the only technology that works on handheld field communicators.

Function Check

In integrated system of DCS and device management, EDDL plays an important role in the operations phase. When a critical device failure occurs, an alert appears in the operator console. It will be minutes or hours before the process is affected, so this is an early warning allowing the operator to take action to mitigate the process problem. The operator can also click on the alert to

see the details and tell the maintenance technician in the field about the problem so it can be fixed quickly. Operators can do this without leaving their console or login to another workstation. Had device alerts only been displayed on a dedicated maintenance station, operators would not have seen it. The ability to be an integrated part of the control system operator and engineering consoles is unique to EDDL. It cannot be done by other technologies or if mixed with other technologies.

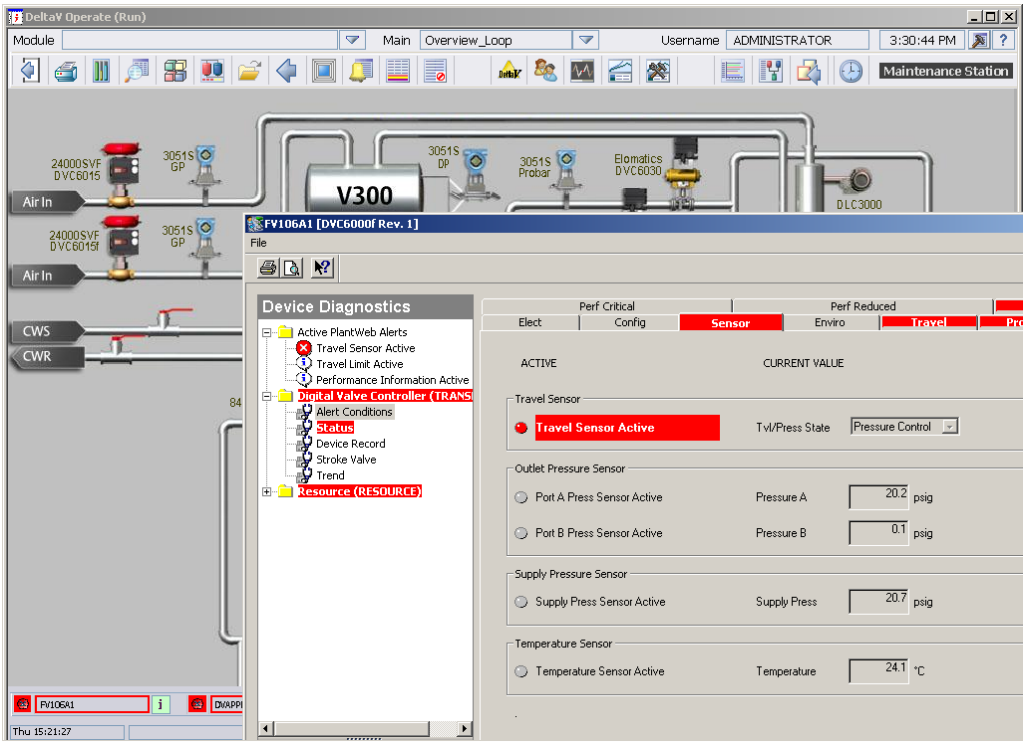


Figure 11 EDDL enables diagnostics integrated in operator console

Conditional graphics illustrate problems in a way easily grasped by technicians as well as operators.

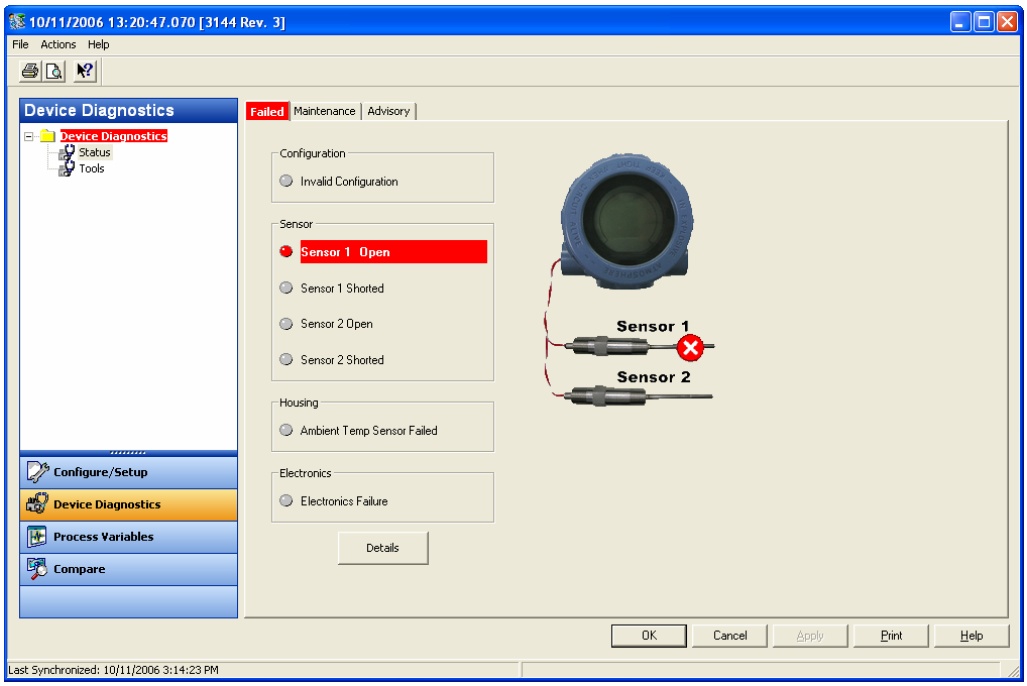


Figure 12 EDDL used for remote function check

Diagnostics

EDDL is used for advanced diagnostics and troubleshooting

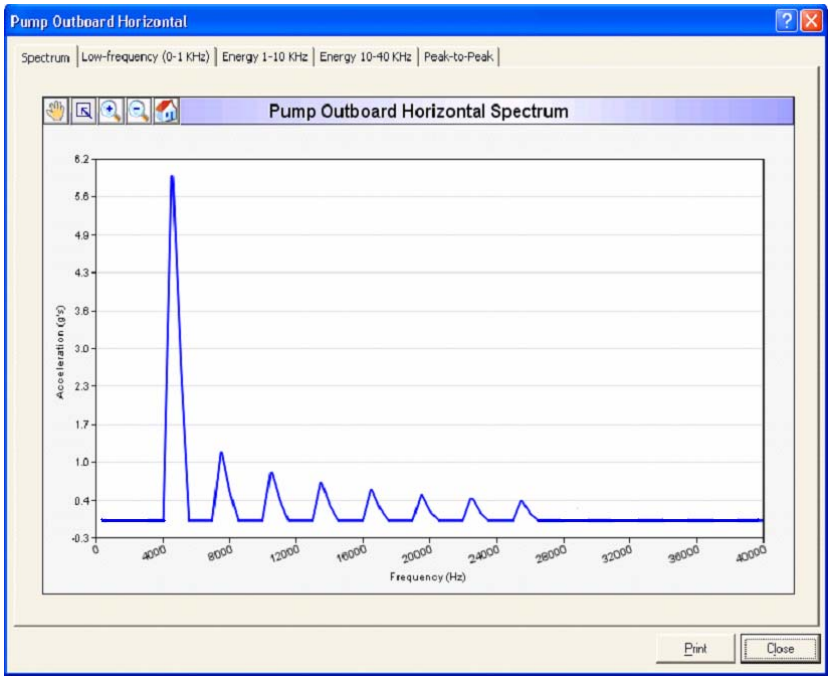


Figure 13 EDDL used for advanced diagnostics of machinery health

An important aspect of maintenance is that if remote check finds the device is indeed confirmed to be faulty, then it is necessary to go to the field to fix it. EDDL works on handheld field communicators making field work possible as the technicians can issue commands from the field without having to radio the control room to make changes in the device or to invoke functions like simulation or test.

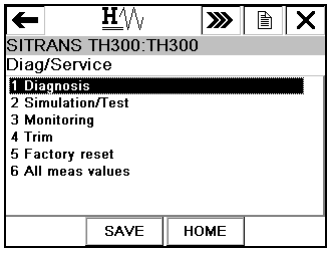


Figure 14 Diagnostics can be carried out in the field using a handheld communicator

Calibration Trim

EDDL is used for calibration trim

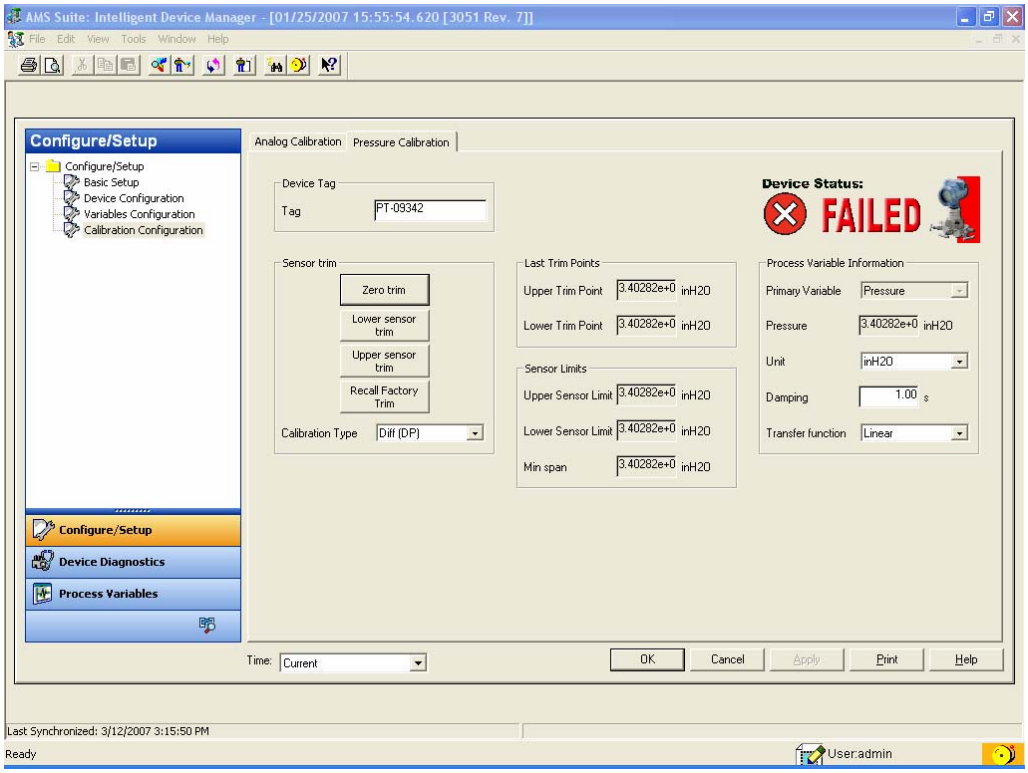


Figure 15 EDDL is used for calibration

An important aspect of calibration trim is that a known input must be applied to the transmitter; therefore the technician must be at the device. Either the device must be brought to the workshop or calibration trim must be done in the field. EDDL works on handheld field communicators making calibration trim possible without having to bring the device to the workshop.

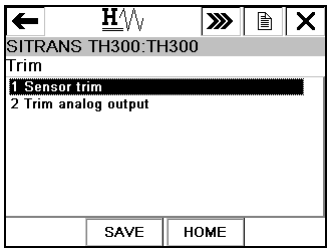


Figure 16 Calibration trim can be carried out in the field using a handheld communicator

Replacement and Audit Trail

Tools that have audit trail provides it for any device with EDDL file, not just some. The audit trail function in turn enables comparison and reconciliation between the database and the configuration of a new device that has replaced a failed device.

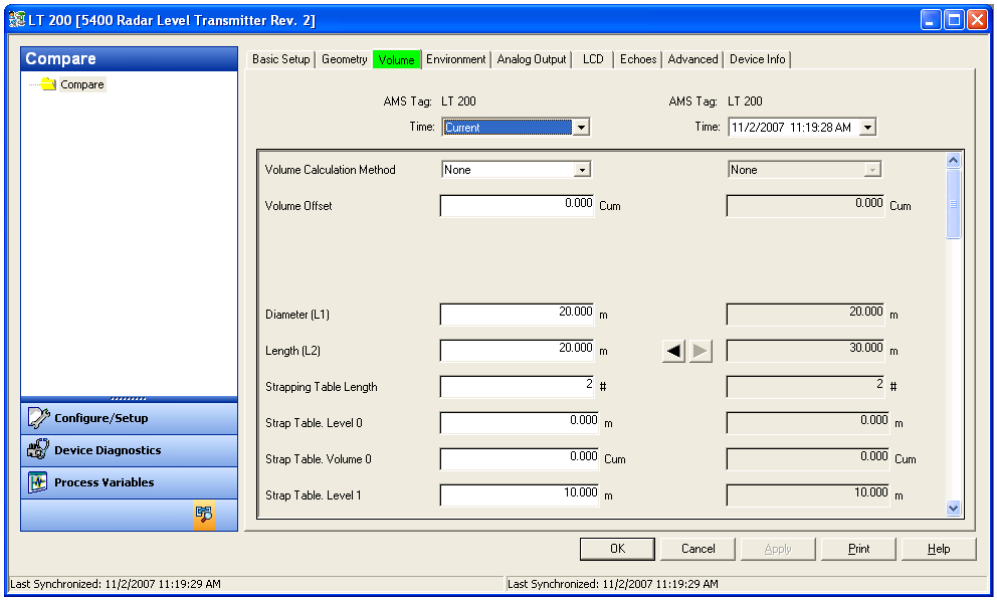


Figure 17 Audit trail and reconciliation works for any device with EDDL

The history of which web sites you have visited is not tracked by the HTML file but the browser. The browser history journaling works without the web designer having to write anything extra in the HTML file, that is why the history works for any page no matter how simple. Similarly, the log of which parameters have been changed is not tracked by the EDDL file but the device management software. The audit trail works without the device manufacturer having to write anything extra in the EDDL file, that is why the audit trail works for any device no matter how simple.

Question 7: Can EDDL be used to setup 'advanced' devices?

Original DD before enhancements were added was incapable of graphics and therefore could not display setup information from some types of device. This limitation no longer exists. Now, EDDL with enhancements capable of fully displaying device setup information. Fixed and conditional limits have been used for plausibility checks since 1992, plus the new sophisticated graphics now enables EDDL to be used for setup of advanced devices. EDDL with enhancements fully supports many types of devices with their full set of features. Setup information may be presented as text, values, indicator lights, or waveform graphs, whichever device manufacturer's expert finds best. EDDL wizards (methods) support coaching the technician step-by-step for advanced setup and configuration procedures based on manufacturer know-how, typical application settings and enforcing proper configuration. This includes advanced devices such as motor starters, variable speed drives, valve positioners, radar level transmitters, analytical, and bus diagnostics etc.

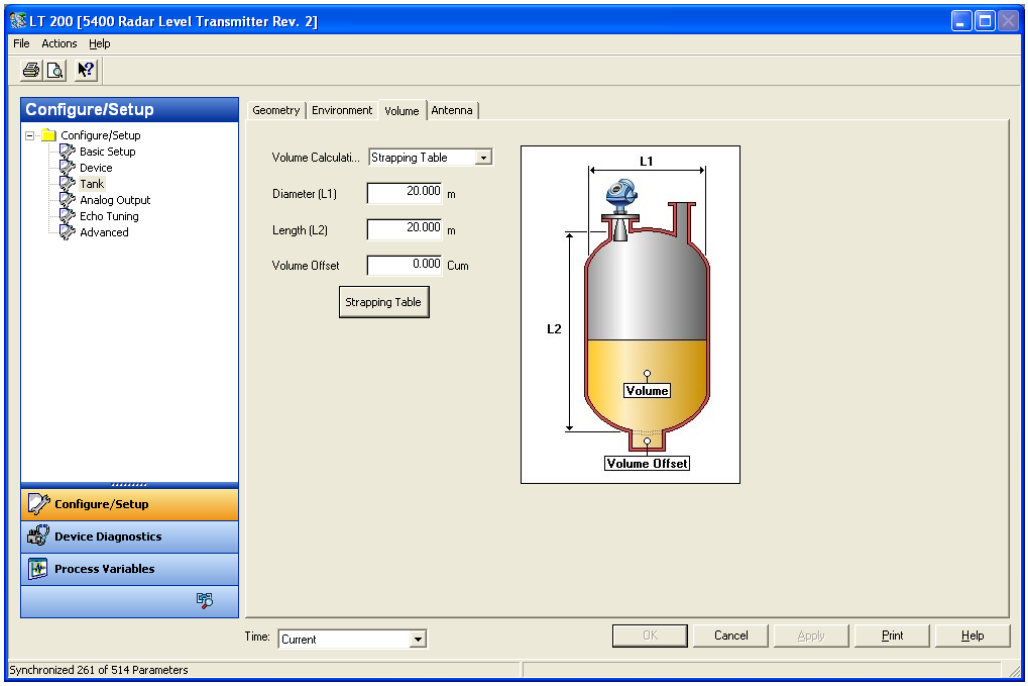


Figure 18 EDDL graphics simplifies setup by explaining parameters

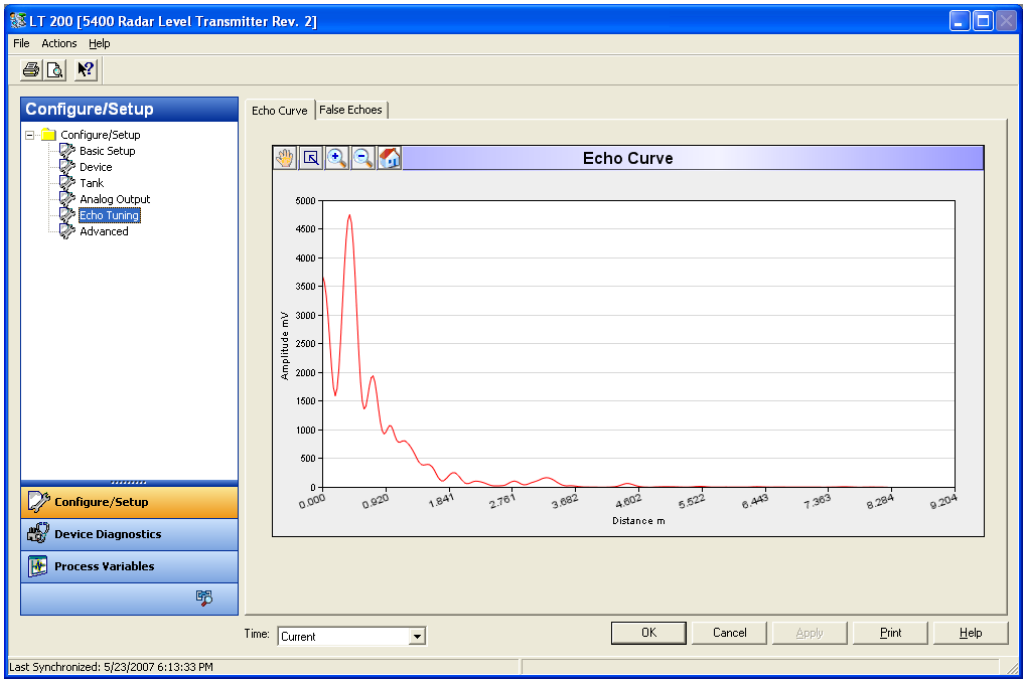


Figure 19 EDDL waveform graphics is necessary for setup of advanced devices

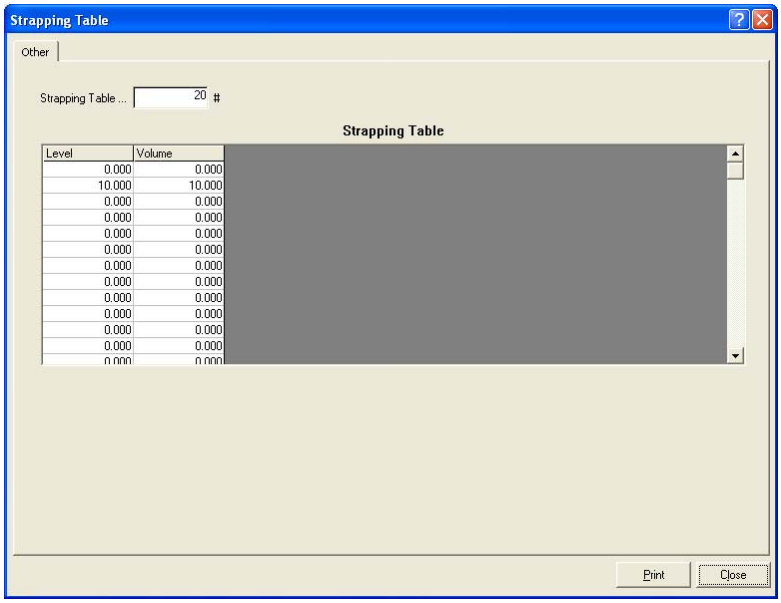


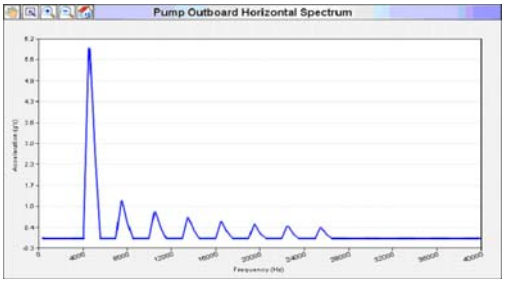
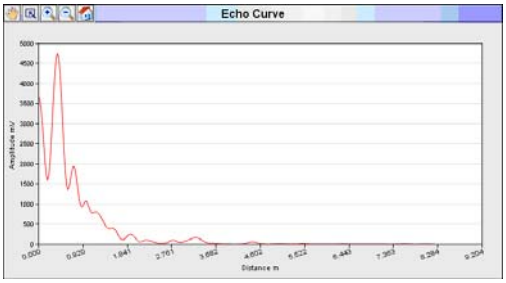
Figure 20 EDDL tables simplify configuration of large datasets

Question 8: Does EDDL stifle innovation?

No, because standards can and do evolve. IEC 61804 has already evolved once, from basic EDDL in 2004 to EDDL with enhancements in 2006. It will evolve again with future device integration advancements, yet retaining backward compatibility. IEC 61804 (EDDL) is driving innovation in device management is like ISO/IEC 15445 (HTML) helps development of the Internet, making the World Wide Web part of everyday life and work. EDDL, like HTML, is driving real innovation.

IEC 61804-3 is a generic technology that is applicable not just to devices today but new kinds of devices that may come in the future as well. These generic graphical elements are applicable to all kinds of devices for all kinds of functions regardless of protocol. For instance, the exact same waveform graph used to display vibration spectrum in a machinery health transmitter or bus signal waveform using FOUNDATION fieldbus is also used to show echo curve in a radar level transmitter using HART and could also be used for PROFIBUS valve actuator valve signature or step response. That is, the graphics is used for many kinds of devices, it is used for both setup and diagnostics, and it is used for HART, FOUNDATION fieldbus, and PROFIBUS. There is plenty of room for innovation without touching the EDDL standard.

Table 1 generic graphical elements are applicable to all kinds of devices for all kinds of functions regardless of protocol

Device Type	Machine Health	Radar Level
Task	Diagnostics	Setup
Function	Vibration Spectrum	Echo Curve
		
X axis	Frequency	Distance
Y axis	Acceleration	Echo Amplitude

How can a simple solution like EDDL work for sophisticated devices? At the beginning of the EDDL enhancement project, manufacturers and users got together to study the requirements; what has to be displayed and how to display it. It was also found that persistent data storage was required. Researchers looked at all existing devices for process and electrical, using different protocols, all kinds of types, from many manufacturers. They looked at all proprietary software tools and the Windows operating system. Devices were studied from the perspective of different phases of the plant and device lifecycle: system database configuration, device commissioning, operation and maintenance, and replacement etc. The use-cases collected was then analyzed and categorized. The use cases showed there is much commonality among devices. Majority of information can be displayed using common Windows controls like text box, control button, option button, drop down list, but some new controls were required for the world of automation. Although the large amount of commonality was initially surprising, it does make sense. Users can't learn many different mechanisms to visualize data. Therefore device manufacturers have over the years kept to a few common ways to display information. Users would reject too many differences. It's like software suppliers stick to common Windows control conventions to ease the learning curve.

That is, the graphical elements such as images, gauges, bar-graphs, waveform graphs, tables, and charts etc. are as universal in device management software as control button, check box, radio button, and combo-box controls are in office software. Therefore these graphical elements cover future products as well. Moreover, by using the same graphical elements for new devices, working with such new devices will be intuitive.

Adopt Faster

To some this may sound counterintuitive at a first glance, but standards actually make new innovation easier and adoption of new technology faster. For instance, EDDL files need not be updated for new versions or service packs of Windows, so new operating system can be adopted and enjoyed much sooner. That is, standards drive innovation.

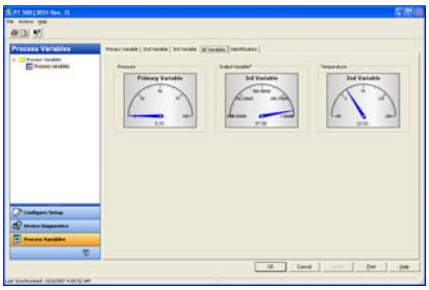
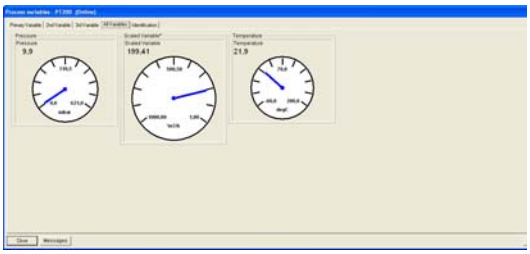
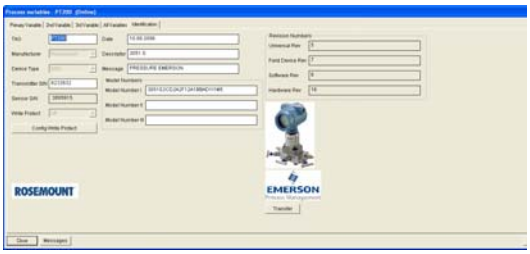
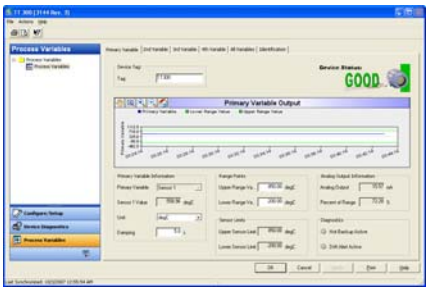
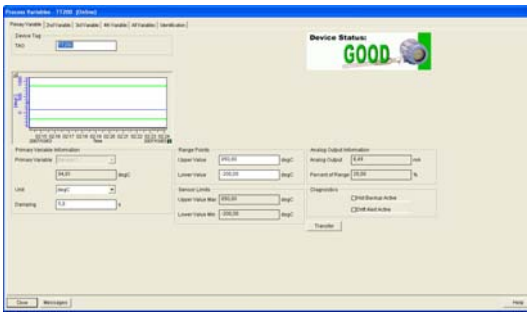
When OPC was released in 1996 and later introduced into device management software, all devices with EDDL files created as early as 1992 could immediately benefit as the EDDL file could be used to automatically configure the namespace of the OPC server. Likewise all devices can export to Excel once the device management software supports export to Excel. Similarly, if some device management software ever provides a function to export to InTools, all devices can instantly export to InTools. There is no need to create drivers for each individual device type or family to get this capability.

Question 9: Does DCS hide EDDL information?

No. Now, EDDL with enhancements provides the standard graphics required by the device manufacturer to create displays for the information in their device and embed their know-how. EDDL-based control systems display all the information content defined by the device manufacturer.

Table 2 The device display content and structure is the same in different systems as decided by device manufacturer

Same Content & Structure	Emerson System Look & Feel	Siemens System Look & Feel

Same Content & Structure	Emerson System Look & Feel	Siemens System Look & Feel
Monitoring 5 tabs. 3 gauges on this tab	 Gauges are 180 degrees and have gray background	 Gauges are 270 degrees and have white background
Identification 5 tabs. 2 frames, 3 images, 1 button, 16 parameters on this tab	 Images have gray background. Text boxes have no frame	 Images have white background. Text boxes have black frame
Monitoring 6 tabs. 6 frames, 1 image, 1 trend, 11 parameters, 2 indicators on this frame	 Trend chart takes up full page width. Toolbar is permanently visible	 Trend chart takes up part of page width. Toolbar is initially hidden

Another problem from the past is that some simpler software may not have supported all aspects of EDDL such as for instance conditionals (the dependencies between parameters). If conditionals were used in the EDDL file to make work easier, a second less sophisticated EDDL file without conditionals had to be provided for simpler software.

To help users select a control system that implements the full capability of EDDL with enhancements, the Fieldbus Foundation has started a Host Registration Program that tests software to check that the necessary EDDL functionality is implemented.

Look & Feel vs. Content & Structure

There is a distinction between “look & feel” as opposed to “content & structure”

As illustrated above, “content & structure” is totally controlled by the device manufacturer. That is, the device manufacturer decides if there shall be a gauge, trend chart, wizard button, image, and a

particular parameter displayed and how they are grouped together in frames, pages, and hierarchical menus - the same in any system.

However, as illustrated above, the “look & feel” is controlled by the system manufacturer. That is, the software manufacturer decides what shape the gauges are, the size of the trend charts, the color of the buttons, and the background for the parameters - the same for all devices.

That is, EDDL is 'open' because the device manufacturer controls the content and structure, yet consistent and easy to use because the look and feel is the same for all devices.

Question 10: Is EDDL affected by firmware revision?

Version management and the ease of keeping the control system evergreen is one of the most appreciated strength of EDDL since the very beginning. No other solution comes even close to the ability of EDDL to easily manage multiple versions of devices without conflict.

A little bit of background is in order here. A new version of a device requires the control system to be updated one way or the other in order to support the new features in the new device. One way is to install entirely new software. Another way is to install a new software component ("driver"). A third way is to load a new EDDL file. In either case, the new update must match the new version of the device. There is no way to take advantage of new features in a device without providing the system with some kind of support corresponding to these new features. There is no way around that because new versions of a device are by definition different. If the device was not different it would not be a new version.

Also note that for a system that shall support FOUNDATION fieldbus, the EDDL file is always required in order to support database setup and control strategy building. No other technology can support this aspect of FOUNDATION fieldbus. EDDL is the only technology that can do both system configuration and device management, that is, supporting an integrated host as a single technology.

Copying and pasting an EDDL file onto the system is faster, easier, and less risky than installing new software or much less risky than installing a software component because installing software opens up the possibility of DLL conflicts.

Question 11: Is EDDL tested against control system?

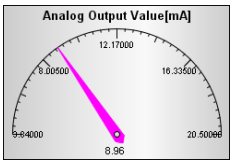
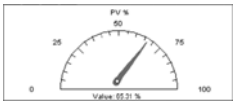
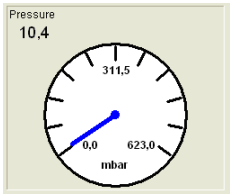
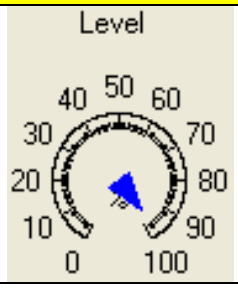
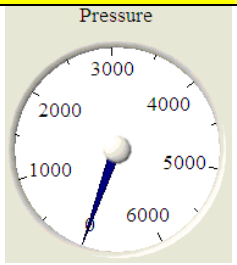
There is no need to test every EDDL file against every control system. Each EDDL file is verified with a tester together with the device against a device interoperability test kit. Each control system software application is tested against a host interoperability test kit. Because there is no dependencies between one EDDL file and another EDDL file, and no dependencies between an EDDL file and control system software, there is no need to test each EDDL file against the others or against each control system software.

Question 12: Is EDDL presentation in different hosts different?

No, not really. The content & structure as determined by the device manufacturer is the same in all systems. The look & feel for each system insignificant and irrelevant.

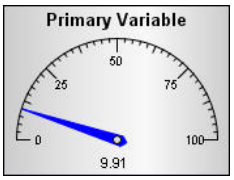
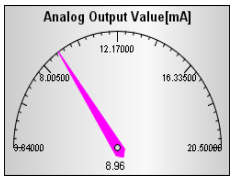
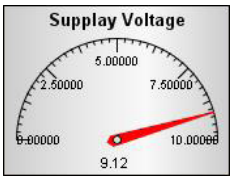
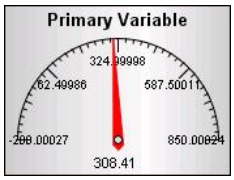
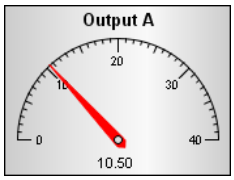
A little bit of background is in order here. First, nobody expects the display in full-fledged device management software with a 19" color screen to look identical to the 4" monochrome screen on a handheld field communicator. Secondly, if the gauges and graphs in one device management system looks slightly different from the those in another manufacturer's device management system is irrelevant because an operator or technician only works on a system from one manufacturer.

Table 3 the small differences in look & feel between different manufacturers is irrelevant

Emerson AMS	Emerson 375	Siemens PDM	HCF SDC625	National Instruments NI-FBUS
				
Device Management Software	Handheld Field Communicator	Device Management Software	Configuration & Diagnostics Software	Configuration & Diagnostics Software

However, what does matter is that different devices appear the same within one control system regardless of protocol, manufacturer, or type. This is what EDDL with enhancements does better than other solutions, and is one of the most appreciated characteristics.

Table 4 consistent appearance of gauge for devices with different protocols, manufacturer, type, and parameter

Rosemount HART	Siemens HART	Rosemount Wireless	Rosemount HART	Fisher Fieldbus
Pressure Transmitter	Temperature Transmitter	Temperature Transmitter	Temperature Transmitter	Valve Positioner
				
Pressure	Output Current	Battery Voltage	Temperature	Actuator Pressure

The difference between look & feel and content & structure is explained for question #9.

Question 13: Is there third-party testing for EDDL files?

Yes. The EDDL file is tested together with the device by the bus protocol organization that tests the device communication. For instance, in the case of FOUNDATION fieldbus, the Interoperability Test Kit (ITK) is first loaded with the EDDL file, the ITK which then tests the file along with the device to ensure the file matches the device.

Question 14: Are there EDDL 'gaps' that must be filled with software?

Standalone software for radar setup and plugged impulse line detection is fast disappearing with new EDDL capability and as devices are evolving based on emerging technologies, increasing component performance, miniaturization, and lower costs.

Valve Positioner

EDDL is used to decode and display information found in a device. EDDL is not used to schedule tasks such as periodic partial stroking of valves. Therefore, if the basic device management software package does not already provide this function, an optional application must be added. It should be noted that other 'open' device integration technologies cannot be used to complement EDDL because there is no device integration technology that address the need for periodically triggered

functions that spans multiple devices. That is, batch scheduling of multiple valves cannot be done by other means. Not all positioners need partial stroke testing or advanced diagnostics. It would be a mistake to use non-IEC 61804-3 technology for all types of devices just because some of the valve positioners have partial stroke testing or advanced diagnostics relying on specialized software since this is a small percentage of the total device population. FDI, which is the next generation of technology that will come from the EDDL Cooperation Team, is expected to provide this capability as an additional enhancement over and above what is possible with EDDL or other technologies today.

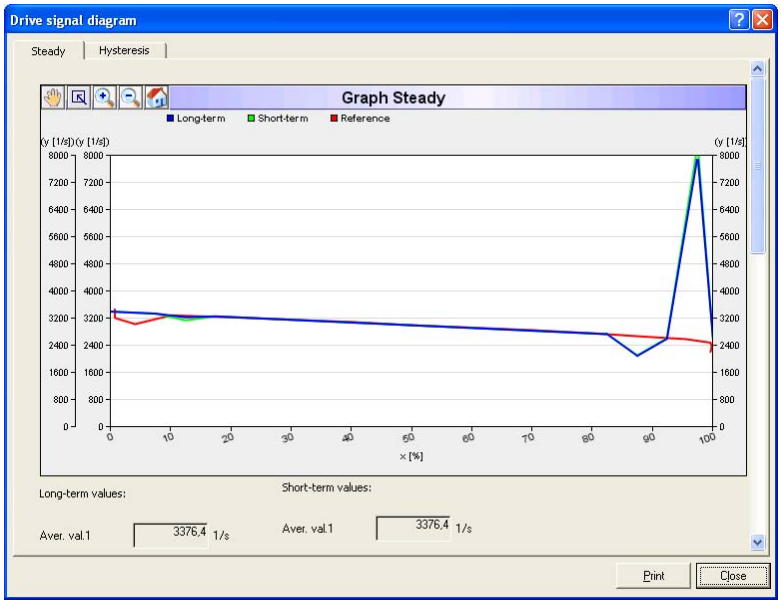


Figure 21 valve positioner drive signal diagram

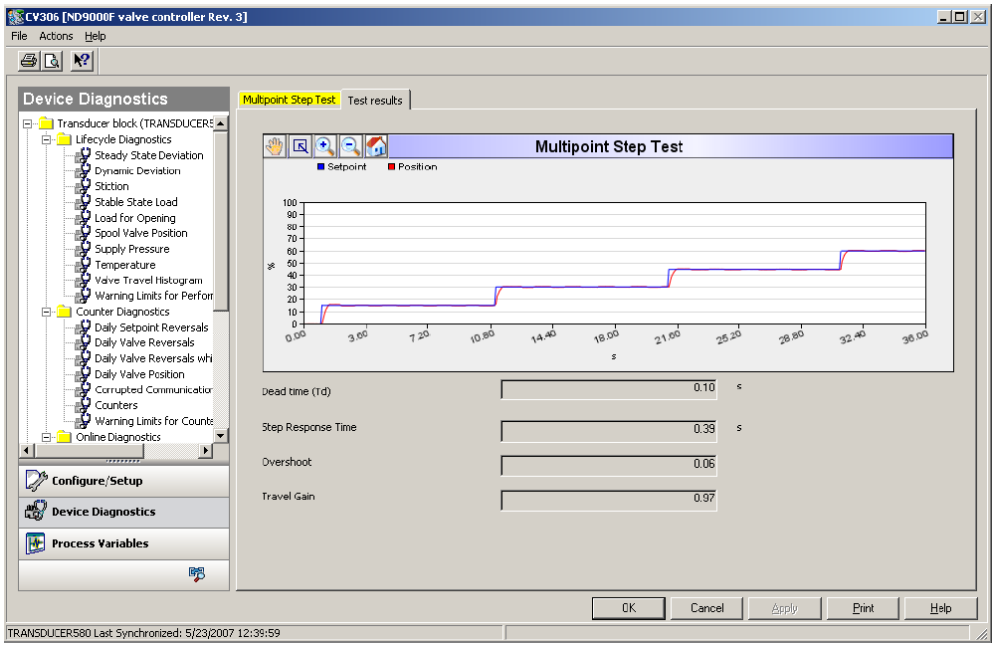


Figure 22 valve positioner step test

Multivariable DP flow

EDDL is an open technology. However, some devices such as for instance differential pressure flow transmitter with flow computation capability rely on licensed third-party physical property data in the form of tables or polynomials for initial setup. This data must be hidden for intellectual property reasons, and EDDL does not hide, because it was designed to make information accessible. Therefore software must be used instead. It would be a mistake to use non-IEC 61804-3 technology for all types of devices just because a few multivariable flow transmitters rely on specialized software since this is a small percentage of the total device population. In the future devices may

rely on FDI, which is the next generation of technology that will come from the EDDL Cooperation Team, expected to provide this capability as an additional enhancement over and above what is possible with EDDL.

Others

Plug-in software is an extension of device management software, not necessarily the device. Many functions provided through plug-in software have nothing to do with complex devices or advanced diagnostics. It is simply options not part of the basic device management software package. This may include for instance interlock testing - often done on multiple simple devices, or wireless planning. Documenting calibrator interface to download calibration route and upload calibration data is another instance.

Question 15: Is EDDL supported in the required tools?

Yes. EDDL is supported in the greatest variety of tools: handheld communicators for field work, laptop software for workbench, device management software, control system operator software, and control system engineering software. EDDL covers all tools. Technicians can chose the best tool for the job. The ability to be used in a handheld field communicator and to be an integrated part of the control system operator and engineering consoles is unique to EDDL. It cannot be done by other technologies or if mixed with other technologies.

Table 5 EDDL with enhancements supported in different kinds of tools

Emerson DeltaV	Emerson AMS Intelligent Device Manager	Emerson 375	Siemens PDM	HCF SDC625	National Instruments NI-FBUS
					
Operator Workstation	Device Management Software	Handheld Field Communicator	Device Management Software	Configuration & Diagnostics Software	Configuration & Diagnostics Software
HART and FOUNDATION fieldbus	HART and FOUNDATION fieldbus	HART and FOUNDATION fieldbus	HART and PROFIBUS	HART	FOUNDATION fieldbus

On top of these tools, EDDL also supports the control system database population and control strategy configuration for FOUNDATION fieldbus devices. There is no other technology that can do this.

Question 16: Can EDDL be used in the commissioning phase?

Yes. For devices with digital communication, commissioning entails assigning the tag to the device and setting the address. Software based on EDDL can do this, although EDDL is actually not necessary for these universal functions. Technicians may also want to have a link to document including product manual and commissioning procedure. This is also provided by software based on EDDL, although also does not need EDDL to accomplish this generic function. Commissioning also includes configuration download and parameter reconciliation, which can also be done by software based on EDDL as explained for Maintenance above. Setup may also be considered part of commissioning. EDDL tools are well suited for this as explained for question #7. That is, regardless

of what functions you read into the commissioning task, they can be met using tools based on EDDL.

Question 17: Does EDDL support security?

Yes. The security is provided by the device management software, not the EDDL file. That is, the user must login to the device management software with name and password before gaining access to the device. Device management software is setup for authorization for each individual user. On a Windows computer the device management integrates with Windows security for user authentication. Depending on the privileges given to each user, this use may or may not be able to write parameters in the device.

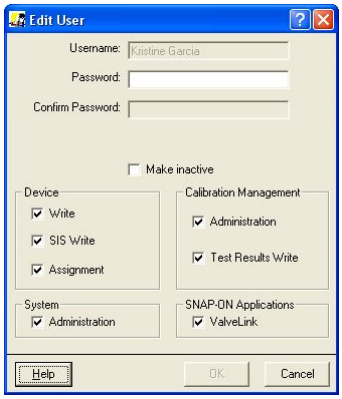


Figure 23 User authorization for EDDL-based device management software

EDDL displays device write protection status and in the case of soft-write locks allows it to be set. Moreover, ultimately values are accepted or rejected by a check in the device and if not successful reported through EDDL error messages. EDDL-based software provides security to restrict access to individual users.

EDDL is not a programming language. It is not used to write software. EDDL is a markup language like HTML and XML. The fundamental concept of markup languages is that it is used to declare and explain; for instance a document, a web page, or in our case a device. Actual processing is done by software such as word processors, web browsers, or in our case device management software. The EDDL files tell the device management software which parameters in the device can be written. The device management software authorizes user to write values based on preconfigured privileges. Microsoft Windows is responsible for authentication based on login name and password.

In fact, EDDL has another security advantage in that since the EDDL file is copied rather than installed, loading the EDDL file does not require 'administrator' level password. That is, the highest level password authorization need not be divulged to all that need to be able to commission a new type or version of device, but can be reserved for system administrators. That is, technicians can add new types and versions of new devices, but not install new software on the system. This helps improve defense against malicious and inadvertent alteration to the system.

Question 18: Does EDDL display 'health' in configuration display?

Yes, the device management software can have a status bar appearing in every display as part of the 'frame' indicating a device failure. However, EDDL-based software is even more effective than that. Keep in mind that technicians do not sit in front of a computer with a device display opened looking at the status bar waiting for a change. This method does not work because they would need to open one display for each device in the plant and watch at all of them. What EDDL-based software instead does, it that it contains an alert-monitor that automatically monitor all devices. If a problem occurs in any device, the system status bar and horn will indicate this as an alarm regardless of

which display of which device is open. The technician next picks the device from a list of all failed devices in the system. A status bar for each individual device is not as useful.

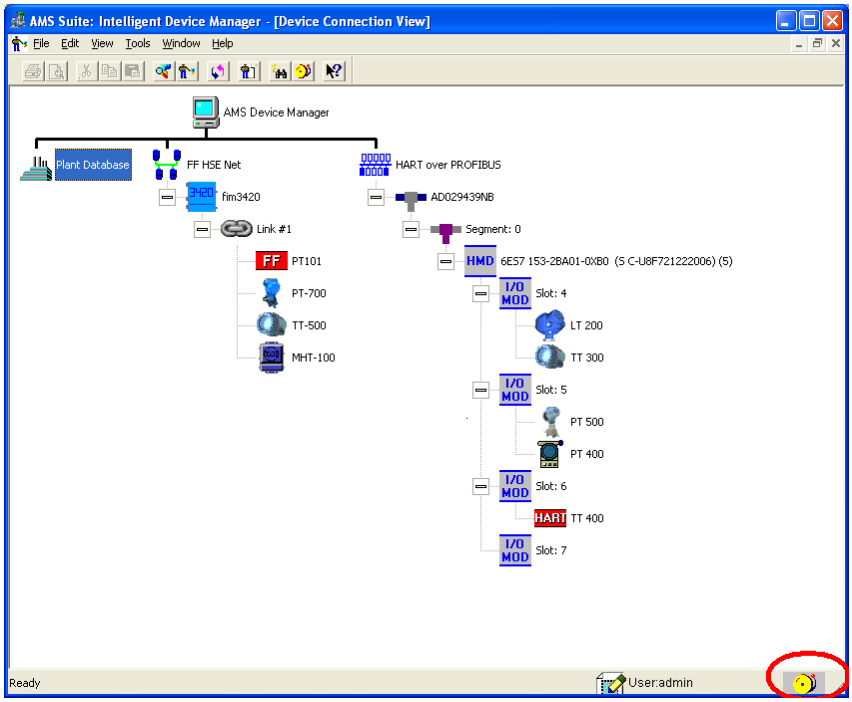


Figure 24 system status bar is always visible to flag failure in any device (circled, bottom right corner)

Question 19: Must EDDL system and devices come from the same manufacturer?

No. IEC 61804-3 is an international standard providing interoperability supported by more than a hundred manufacturers of devices and systems. Devices and systems can be selected freely.

Conclusion

Original EDDL from 1992 had its limitation but those limitations no longer exist in the IEC 61804-3 for EDDL with enhancements. EDDL need not be complemented. There is no need to grapple with two device integration technologies. System manufacturers have already adopted or are adopting EDDL with enhancements. Device manufacturers have already migrated from DD or are migrating to IEC 61804-3 EDDL with enhancements to make device easier to use. Plants are already benefiting from this new version of the technology.