TIA Portal
Openness
TIA Portal Openness

Introduction

Manual operation of TIA Portal

Automatic execution of actions

TIA Portal Openness uses DLLs to provide access to objects and functions of TIA Portal.

TIA Portal is controlled remotely by the application through Openness.

Creation of applications with required functionality with Microsoft Visual Studio.

TIA Portal Openness uses DLLs to provide access to objects and functions of TIA Portal.

TIA Portal is controlled remotely by the application through Openness.

Visual Studio

Manual operation of TIA Portal

Automatic execution of actions
TIA Portal Openness Functionality

Functionality of the Openness interface
• TIA Portal functionality is stored in program libraries (DLL) in the installation directory of the TIA Portal.
• Openness is the public interface that uses these libraries and forwards commands.

Advantages:
• Documented interface
• Consistency even when functions of the TIA Portal program libraries change
TIA Portal Openness
Overview of basic functionality

TIA Portal Openness

• An interface to TIA Portal functions
• Access to these functions via a public API
• Automates engineering through remote control by means of self-created applications

Examples

Automatic actions
• Create project data
• Modify projects and project data
• Delete project data
• Read in project data
• Make projects and project data available for others

Public API

Simplified operation using your own user interface

Automatic execution of actions

Your own program EXE

Import/Export XML

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TIA Portal Openness
Application options

First execution

- Manual: 180 min
  -10%

- With TIA Portal Openness: 360 min
  -80%

Any repeated execution

160 min

75 min

More time due to creation of the application
TIA Portal Openness Compatibility

Openness libraries of all previous versions are available in TIA Portal V16

The Openness DLLs from V14 SP1, V15 and V15.1 are also available in the TIA Portal V16 in addition to the new V16 DLL.

Customer benefits

Openness applications based on older versions of TIA Portal can run unchanged with the TIA Portal V16 environment.

New Openness functions can be expanded by exchanging the earlier Openness DLL for the V16 DLL and used after a re-compile.
How can you program with Openness?

Savings of code

Example

Application in C#

Connect to TIA Portal process and open a project
Select PLC "PLC_1"
Compile PLC software and hardware
Disconnect TIA Portal from the application

Savings of about 95% of code
How can you program with Openness?

Code example

TIA Portal with UI instantiate

```java
TiaPortal myPortal = new TiaPortal(TiaPortalMode.WithUserInterface);
```

Open project

```java
myPortal.Projects.Open("C:\TiaProjects\OpennessProject\OpennessProject.ap16");
```

Creating a device (PLC)

```java
Device device = devices.CreateWithItem("OrderNumber:6ES7 510-1DJ01-0AB0/V2.0", "PLC_1", "NewDevice");
```

Complie PLC

```java
compileResult = my1500Plc.Compile(CompilerOptions.Hardware, BuildOptions.Build);
```
## TIA Portal Openness Functionalities

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<thead>
<tr>
<th>XML export of the snapshot of actual values</th>
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<td>The snapshot of the actual values is stored in the XML file during export via Openness.</td>
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<th>Fault-tolerant XML import of inconsistent blocks</th>
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<td>Block XMLs can be imported, even if used UDTs or called blocks are not available or not matching in the target project.</td>
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<th>Archiving/retrieving a project</th>
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<td>API-controlled access to UI function project archiving or project retrieval.</td>
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<th>Opening two projects in TIA Portal</th>
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<td>Two projects can be opened simultaneously in a TIA Portal instance, one of them in read mode.</td>
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<th>PLC offline/offline comparison</th>
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<td>Automatically triggered comparison of 2 PLCs which can be in different projects.</td>
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<th>Automatic protection of blocks</th>
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<td>A block can be know-how protected via Openness API. Conversely, a know-how-protected block can be unlocked via Openness.</td>
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<th>Download to an R/H PLC</th>
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<td>Automated loading of the R/H PLC, which can be operated redundantly since V15.1, consisting of primary and backup PLC.</td>
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<th>Export/import of watch tables</th>
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TIA Portal Openness
New Functionalities in V16

Reading of block checksums
Reading out of checksums of a PLC S7-1500 and S7-1200. Checksums of blocks can be determined by code, interface, comment, etc.

Parameter-specific access to S7-1500 PLCs and ET 200SP modules
Read and write of hardware module parameters of S7-1500 PLCs and ET 200SP are now both supported

TIA Portal Add-Ins
Add-Ins offer a convenient way to enrich TIA functionality using the Openness API

Openness libraries of previous versions are available
Openness DLLs from V14SP1, V15 and V15.1 are available besides the new V16 DLLs
Systemfunktionen
TIA Portal Add-Ins

Overview

• Add-Ins offer a convenient way to enrich TIA functionality using the Openness API
• Add-Ins are written as .NET programs
• Add-Ins can be easily shared within a company and even distributed to third-party vendors

Installation

• Add-Ins can be easily installed by copying the .add-in file into the “Add-Ins” folder in the TIA Portal installation directory
• Add-Ins can be activated or deactivated in the Add-Ins task card (by default Add-Ins are deactivated)
• Additional information about the Add-In like the author, description or the required permissions are also shown in the Add-Ins task card
Systemfunktionen
TIA Portal Add-Ins

Benefits

• Add-Ins integrate as a part of the TIA Portal environment
• Add-Ins can be run without having any knowledge of high-level programming languages
• Add-Ins are context sensitive. This means they only appear for the selected objects within a TIA Portal project
• Add-Ins can also execute Windows system functions, file or network operations and interact with other application

Utilization

Add-Ins can be used inside the following areas of the TIA Portal
• Project tree
• Library view
• Version Control Interface
• Devices and network view
System functions
TIA Portal Openness – HW configuration of modules

Extension of the support of the configuration of modules and components

Configuration of the S7-1500 PLCs and ET200SP modules such as

- OPC UA server configuration and user management
- Certificate management
- Web server configuration and user management
- Watch tables for Web server and display

Advantages of the function

In addition to the automated placement of devices/modules in a networked configuration, automated configuration of the S7-1500 PLCs and ET 200SP modules is now also possible. This enables, for example, the consistent and full generation of the hardware configuration of a plant object.

Openness API

Read and write complex module parameters
Live Demo

TIA Portal Openness
Than you for your attention

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Introduction and demo application