APPLICATION EXAMPLE

Integration and Usage of the WinCC OA MTP Importer

SIMATIC WinCC Open Architecture

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1. Introduction

1.1. Overview

This document describes the integration of the WinCC OA MTP(Module Type Package) Importer within WinCC OA projects. The importer allows to create PEA(Process Equipment Assembly) instances in WinCC OA projects, to create automatically OPC UA connections, to generate automatically panels.

1.2. Components used

This application example has been created with the following hard- and software components:

Component	Number	Article number
WinCC OA 3.20 Server Basis	1	6AV6355-1AA50-0BA0
WinCC OA V3.20, Para Standard	1	6AV6355-1AA50-0CH0

Table 1-1 WinCC OA Licenses

You can purchase these components from the Siemens Industry Mall.

1.3. Requirements

- Installed WinCC OA version 3.20
- Installed .Net Framework 4.8

This application example consists of the following components:

Component	File name	Note
Manual	WinCCOAMTPExample.pdf	This document
Application	MTPViewer	MTP importer tool
Subproject WinCC OA (the mtp library)	mtplib	Subproject for WinCC OA
• WinCC OA Project for simulation of an OPC UA server	• MTP_SERVER.zip	Project example for WinCC OA

Table 1-2 Application Example Parts

2. Engineering

2.1. Project integration

2.1.1. System requirements

- WinCC OA Version 3.20 P1 or higher installation and license (incl. Para)
- Minimal system requirements for WinCC OA (see WinCC OA Documentation)

2.1.2. Installation WinCC OA

To carry out the installation of WinCC OA, please follow the steps in the WinCC OA documentation.
You can find the documentation under following link: Installation of WinCC OA

2.1.3. Preparation

Unpack the supplied ZIP archive "mtp.zip" into the folder where the project is to be created.
The ZIP-archive contains 2 folders:

- MTPViewer: The MTP Importer application
- mtplib – the ready to use library of mtp objects.
- MTP_SERVER.zip – zip archive with WinCC OA Project for simulation an OPC UA server
- The following requirements shall apply to use this OPC Server project:

  if projects are running on the same machine, every time before usage of the importer, stop all WinCC OA projects, run target project, use the importer, start the OPC UA server project.

  files Siemens.Automation.MTP.WinCCScadaHandler.dll and Siemens.Automation.MTP.WinCCScadaHandler.pdb shall be replaced with Siemens.Automation.MTP.WinCCScadaHandler_WinCC.dll and Siemens.Automation.MTP.WinCCScadaHandler_WinCC.pdb

IMORTANT NOTE: Before extracting the archive, right-click the ZIP, choose **Properties**, and under **Security** check **Unblock** (Allow), then click **Apply** and **Ok**

2.1.4. Creating a WinCC OA Project

To create your own project and use it with the Importer, the following steps can be followed:

1. Start the WinCC OA Project Administrator and create a new WinCC OA project

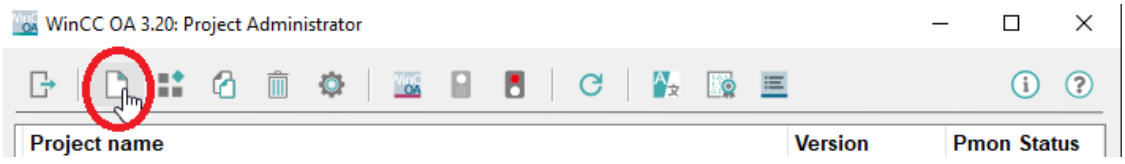


Figure 2-1 Project Administrator

2. Select the option “Legacy Standard project“ and click “Next“

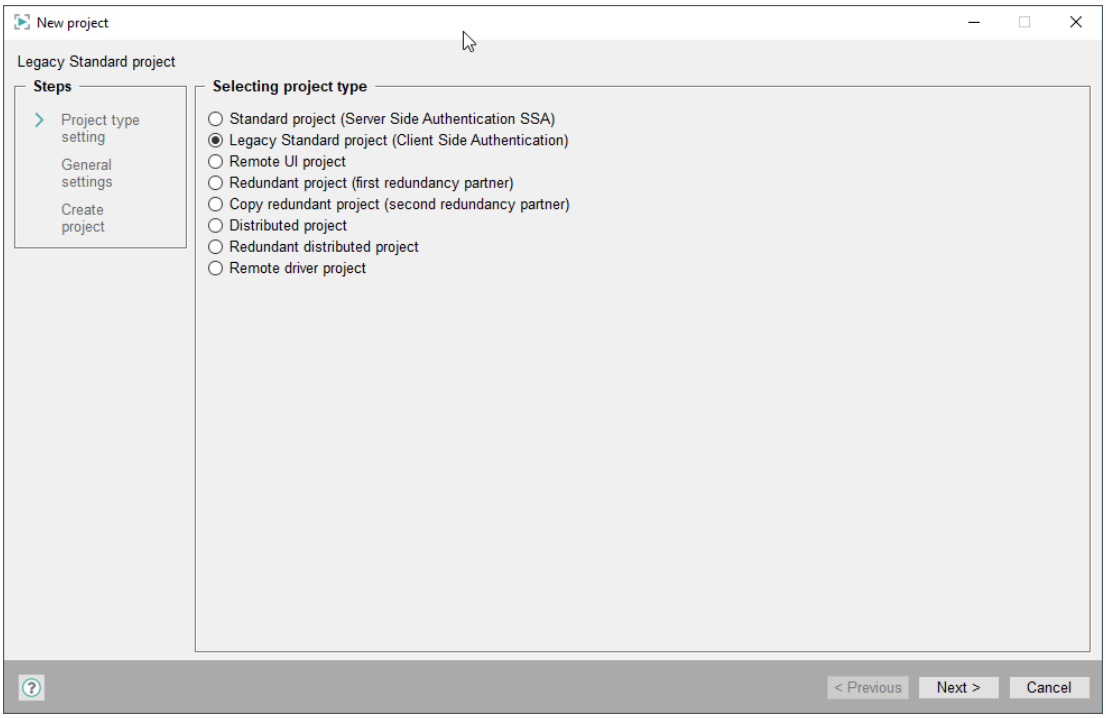


Figure 2-2 Project type selection

3. Enter a project name and select “Englisch – US“ as project language. Define your project path, select “Use SQLite“, and click „Next“.

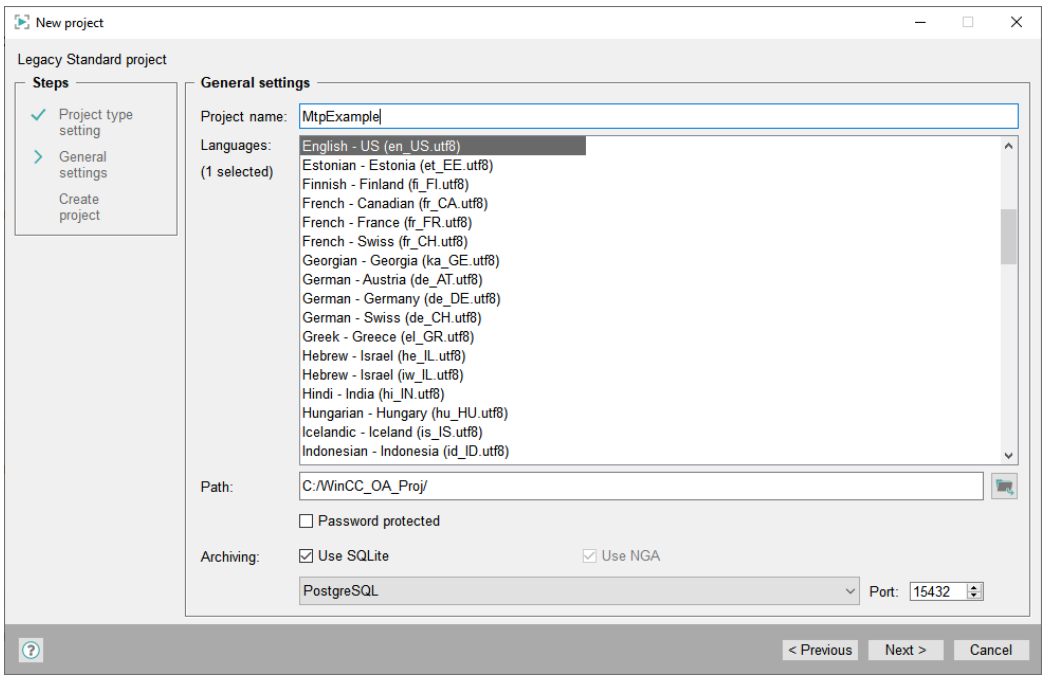


Figure 2-3 General settings

4. Click “OK“ to finish the creation of the new project

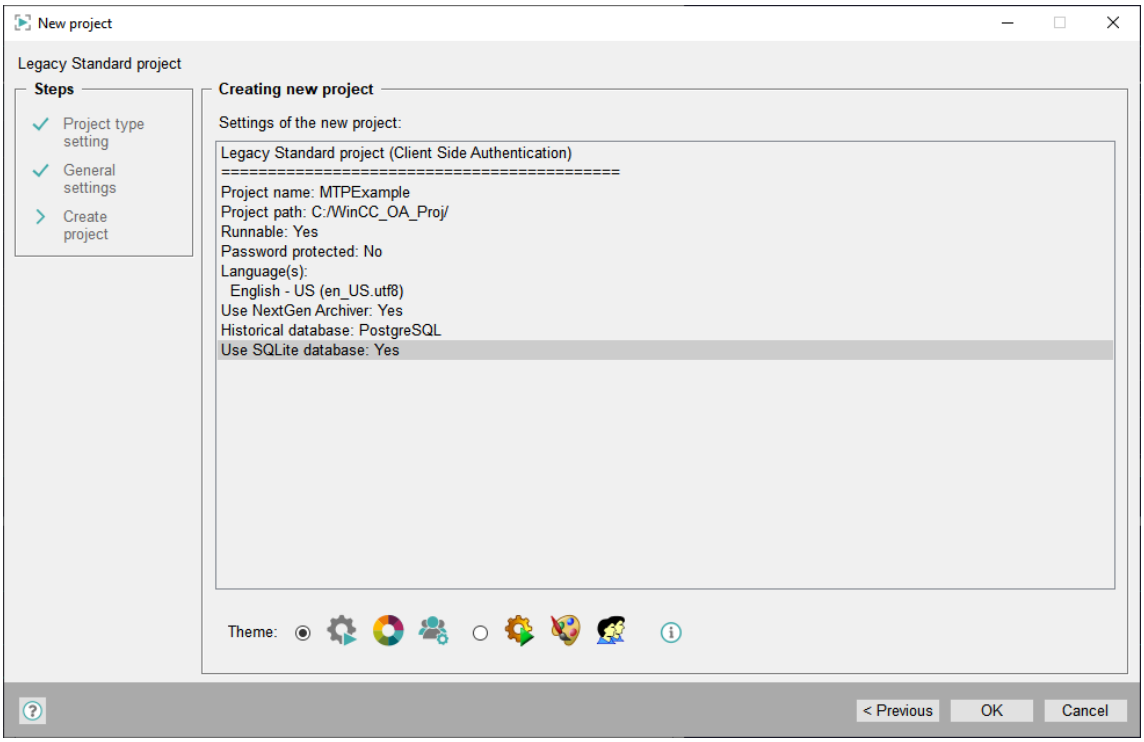


Figure 2-4 Project creation summary

5. After clicking on “OK”, a dialog opens, which allows you set a password for the “root” user. When “Yes” is selected, another dialog opens, where you can enter the desired password.

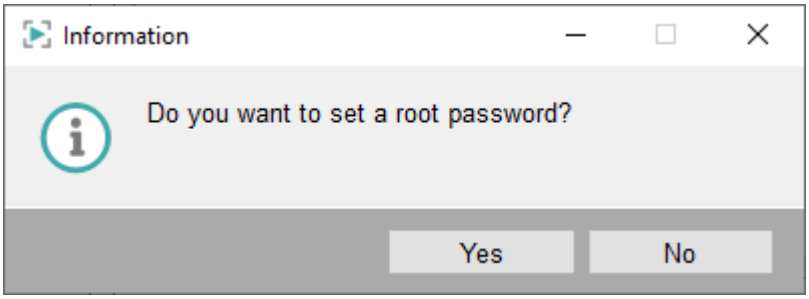


Figure 2-5 Dialog to set "root" password

6. The WinCC OA “Project Administrator“ now shows your newly created project.

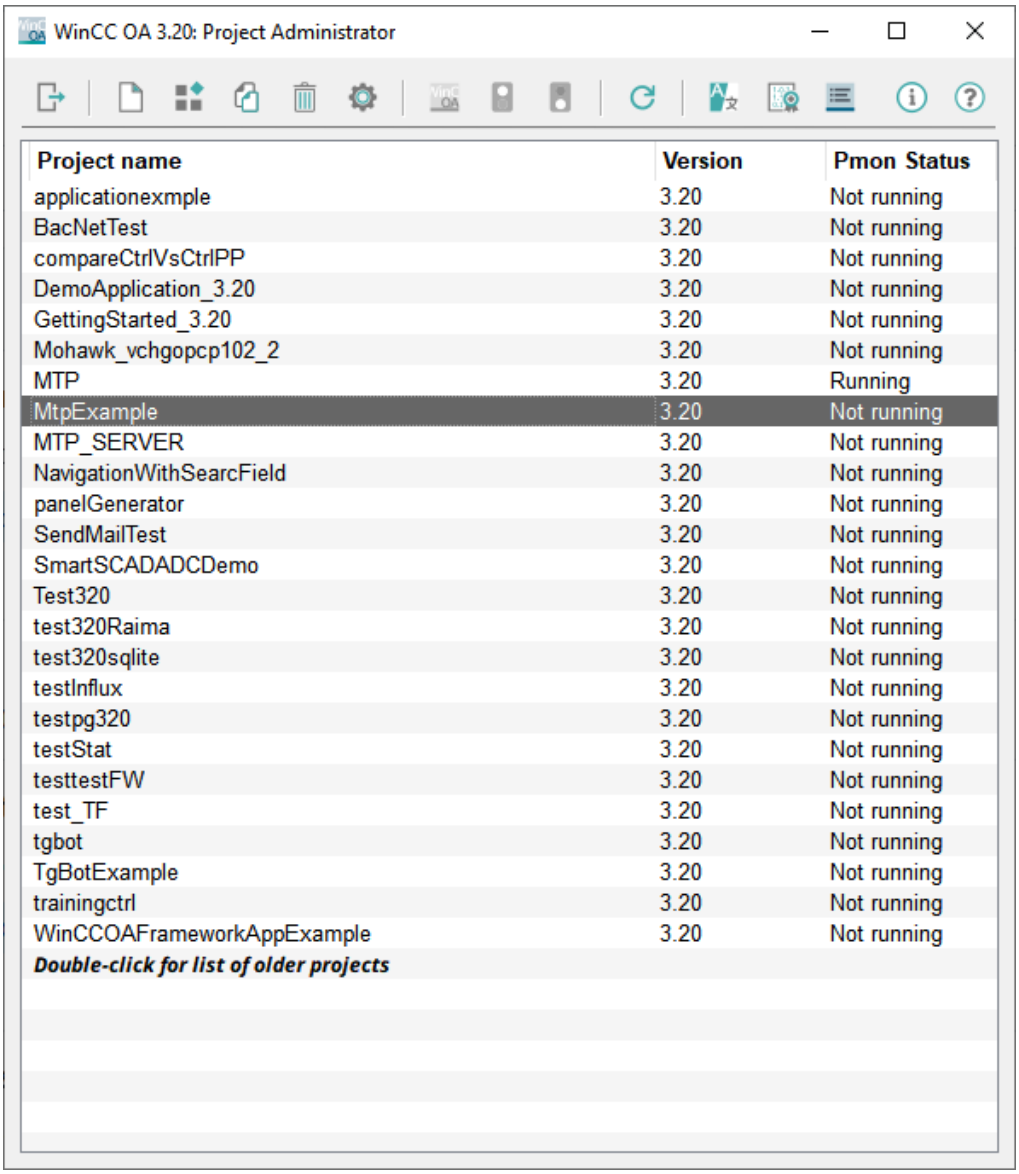


Figure 2-6 Project Administrator with new project

2.1.5. Registration and integration of the mtp library as a WinCC OA subproject

1. In the WinCC OA Project Administrator click on  (see Figure 2-6) to register a new project. From the previously created folder in the section 2.1.3, select the folder “mtplib“, deselect the checkbox “Runnable“, and click on OK.

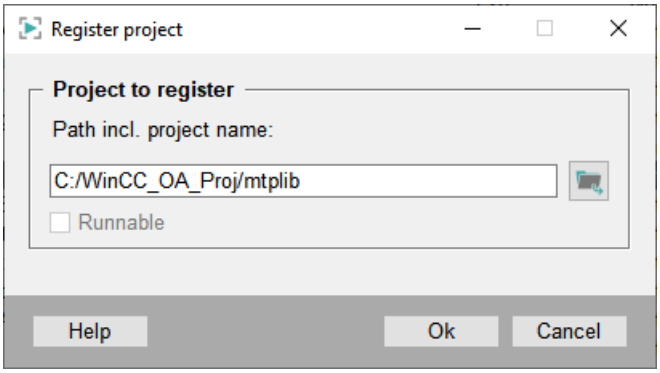


Figure 2-7 Project registration dialog

The subproject is now registered.
Attention: Subprojects (not runnable projects) do not appear in the WinCC OA Project Administrator!

2. To assign the registered subproject to your project, first select your project in the “Project Administrator” panel, then click in the WinCC OA project administrator on  to open the project properties.

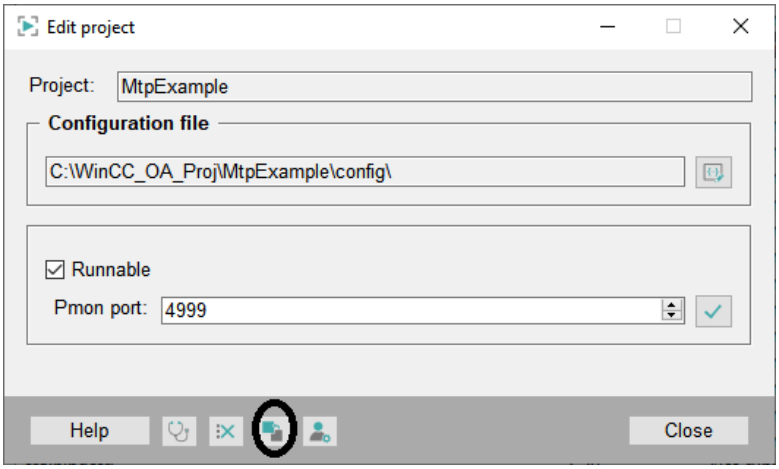


Figure 2-8 Project editing dialog

Now click on  to display the available subprojects.

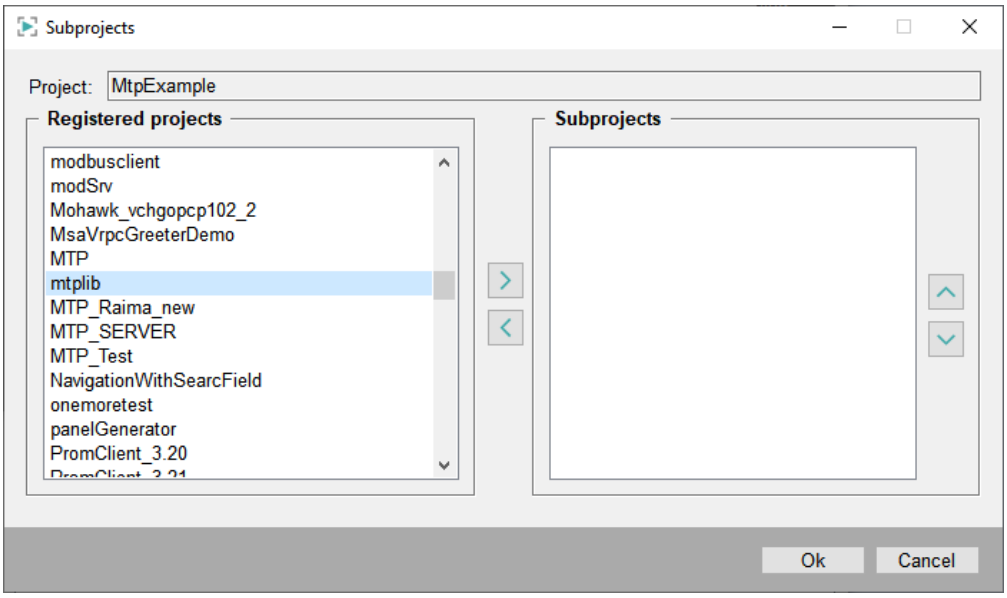


Figure 2-9 Manage subprojects

Select the subproject "mtplib" then move it by means of  to the right list

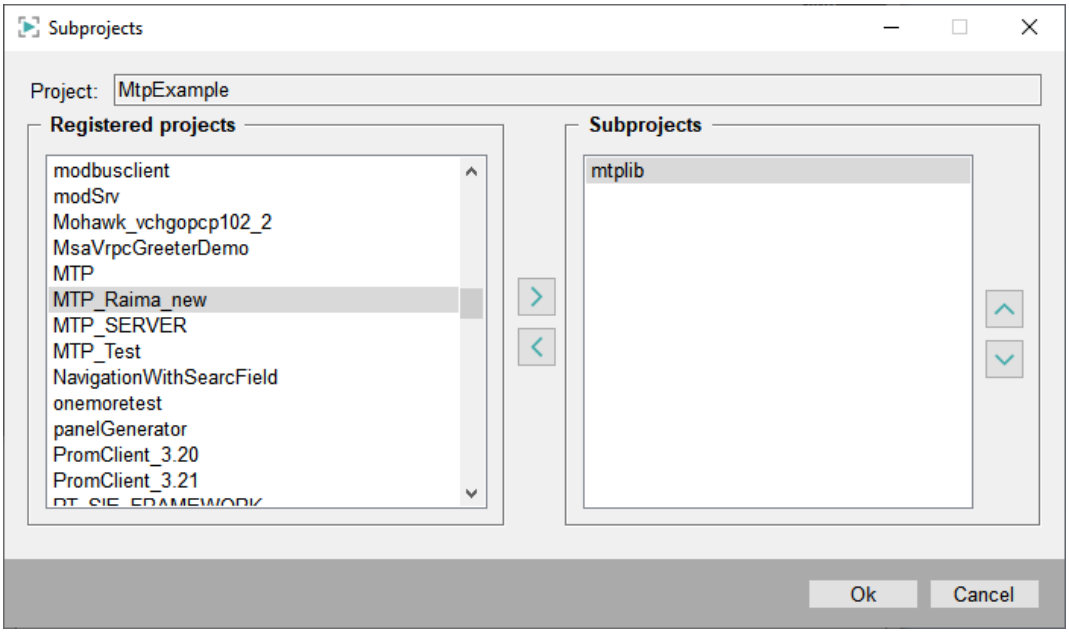


Figure 2-10 Include the subproject into your project

Click "OK" and "Close".

3. Be sure that this is the correct order of the project and subprojects in the config file of your project.

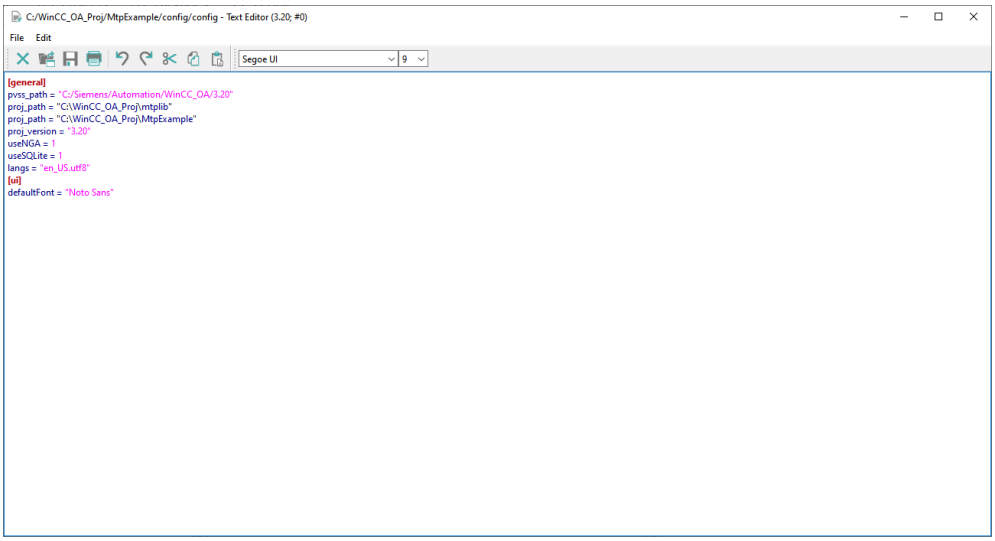


Figure 2-11 Project config file – Order of projects / subprojects

2.1.6. Configuring the importer.

2.1.6.1. Main configuration of the importer/Settings.xml

Edit file <MTPImporter>/Config/Settings.xml.
The element <WinCCOAConfiguration>.must contain 3 child elements <AdditionalProperties> with “key attributeNow supported following values of the attributes:

- SupportedBlocksConfig – path to a xml file which contains pathes to panel references
- WinCCOASettings – path to a xml file, which contains Importer’s specific config for WinCC OA settings.
- DataStructure – path to a xml file which contains structure of MTP’s data point types

```
</MigrationControl>
<WinCCOAConfiguration>
    <!--Path is relative to running executable of MTP Integrator!-->
    <AdditionalProperties key="SupportedBlocksConfig">.\Config\Objects.xml</AdditionalProperties>
    <AdditionalProperties key="WinCCOASettings">.\Config\WinccOAMTPImporterConfigs.xml</AdditionalProperties>
    <AdditionalProperties key="DataStructure">.\Config\DataStructureAll.xml</AdditionalProperties>
</WinCCOAConfiguration>
```

Figure 2-12 Settings.xml

Provided file is ready to use with the mtp library

2.1.6.2. <Objects.xml>

By default to display objects definitions from MTP_Settings.xml are used. To override it, SupportedBlocksConfig should be used. The Objects.xml contains relatives pathes to reference panels.
Provided file is ready to use with mtp library. If other objects should be added or if pathes should be changed, same structure must be used.

```
<Types>
  <Type type="BinMon">objects\BinMon\BinMonRef.xml</Type>
  <Type type="AnaMon">objects\AnaMon\AnaMonRef.xml</Type>
  <Type type="BinManInt">objects\BinManInt\BinManIntRef.xml</Type>
  <Type type="AnaManInt">objects\AnaManInt\AnaManIntRef.xml</Type>
  <Type type="MtpBarIndicator">objects\MtpBarIndicator\MtpBarIndicator.xml</Type>
  <Type type="LockView4">objects\LockView4\LockView4Ref.xml</Type>
  <Type type="MonAnaDrv">objects\MonAnaDrv\MonAnaDrvRef.xml</Type>
  <Type type="MonBinDrv">objects\MonBinDrv\MonBinDrvRef.xml</Type>
  <Type type="MonBinVlv">objects\MonBinVlv\MonBinVlvRef.xml</Type>
  <Type type="PIDCtrl">objects\PIDCtrl\PIDCtrlRef.xml</Type>
  <Type type="ServiceControl">objects\Services\ServicesRef.xml</Type>
</Types>
```

Figure 2-13 Settings.xml

2.1.6.3. < WinccOAMTPImporterConfigs.xml>

The file contains WinCC OA specific settings. Now following nodes can be used:

- PathToASCIIExe – path to binary ASCII importer file. It should be either <WinCCOA_Instalation_Folder>\bin\WCCOAasciiSQLite.exe or <WinCCOA_Instalation_Folder>\bin\WCCOAascii.exe. (In case Raima db is used for your project WCCOAascii.exe must be used, in case Sqlite is used – WCCOAasciiSQLite MUST be used)
- UserName – WinCC OA user name with privileges create/delete DPTs, DPs (usually - root)
  - Password – WinCC OA user password for the user from previous point
  - UseTypeInAddress – address specific config. Some OPC servers instead of addresses like ns=3;s="cmValvesDB"."V104"."HMI"."mtpData"."OpenOp"have addresses like ns=3;s="cmValvesDB"."V104MonBinVlv"."HMI"."mtpData"."OpenOp", so this node allows to add MPT datatype to second segment in the address.

```
<Configs>
    <PathToASCIIExe>C:\Siemens\Automation\WinCC_OA\3.20\bin\WCCOAasciiSQLite.exe<
    <UserName>root</UserName>
    <Password></Password>
    <UseTypeInAddress>true</UseTypeInAddress>
</Configs>
```

Figure 2-14 WinccOAMTPImporterConfigs.xml

2.1.6.4. <DataStructure.xml>

The file contains data point types definitions. Provided file is ready to use with the mtp library. If datapoint types should be changed, or new datapoint types should be added, the same structure must be used. Now next DP elements types are supported:

- struct
- Uint
- int
- float
- bool
- bit32
- string
- dyn_dpid_str

- dyn_dpid
- langString
- long

```
<Types>
  <Type typeName="BinView">
    <Elements>
      <Element type="Uint">WQC</Element>
      <Element type="bool">V</Element>
      <Element type="string">VState0</Element>
      <Element type="string">VState1</Element>
    </Elements>
  </Type>
  <Type typeName="BinMon">
    <Elements>
      <Element type="bit32">WQC</Element>
```

Figure 2-15 content of the DataStructure.xml

If a DPE should have alert config, add to the corresponding element attribute “AC” with alert class name as attribute value. Now only alerts for boolean datapoint elements are implemented.

```
      <Element type="float">VAHLim</Element>
      <Element type="bool" AC="S7_Alarm.">VAHAct</Element>
      <Element type="bool">VWHEn</Element>
      <Element type="float">VWHLim</Element>
```

Figure 2-15-2 Declaration of an alert handler in DataStructure.xml

2.2. Usage of the importer

1. Start the project
2. In the folder with the Importer app run PowerShell command
    - .\Siemens.Automation.MTP.HandlerViewer.exe <WinCCOA_Project_Path> "Dummy"

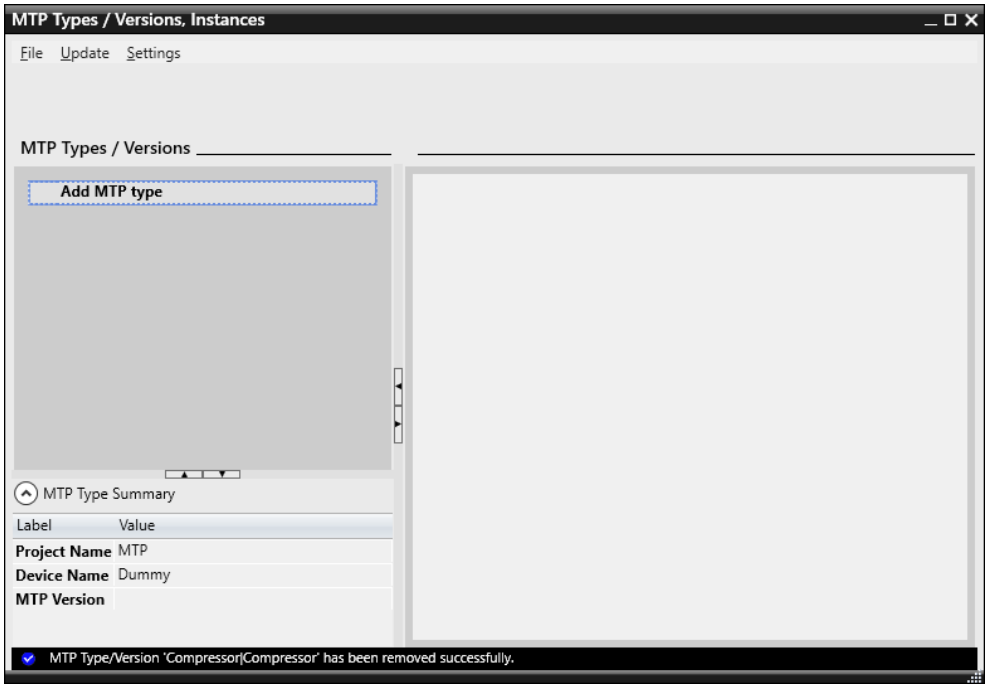


Figure 2-16 Main window of the Importer

- Use button Add MTP Type to add a MTP file (Examle file Compressor-5.1.0-6.1.0.mtp presents in the zip archive)
- After adding the MTP file main window of the importer should look as follows:

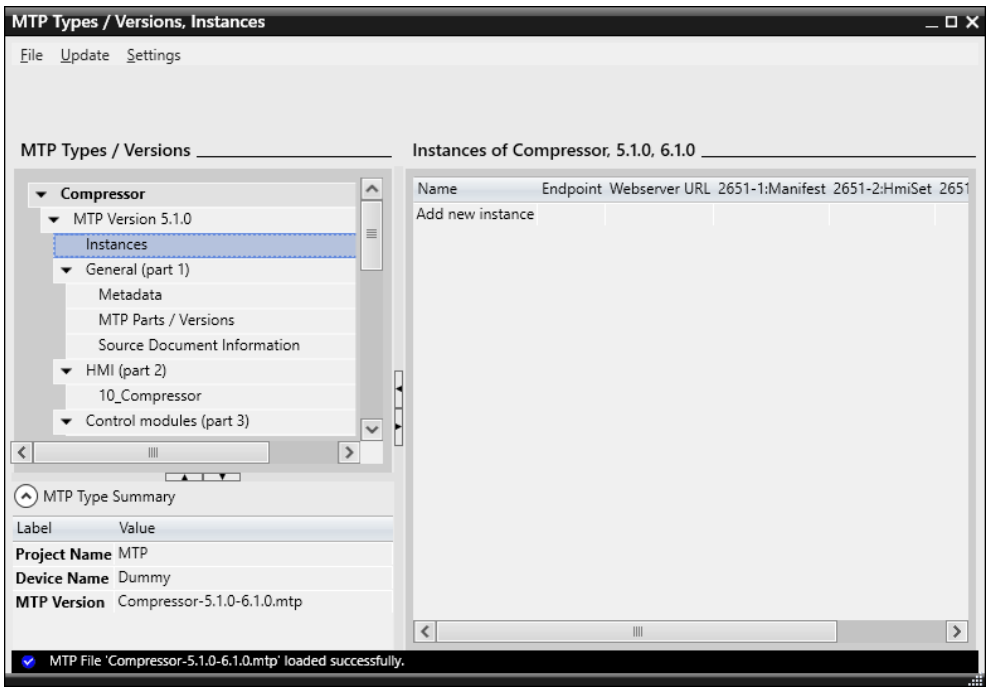


Figure 2-17 Main window of the Importer with MTP file

- Double click on “Add new instance”, Fill Name and OPC server address

  For testing pupose MTP_SERVER project can be used as OPC Server

  IMPRTANT NOTE: The OPC server MUST contain corresponding tags

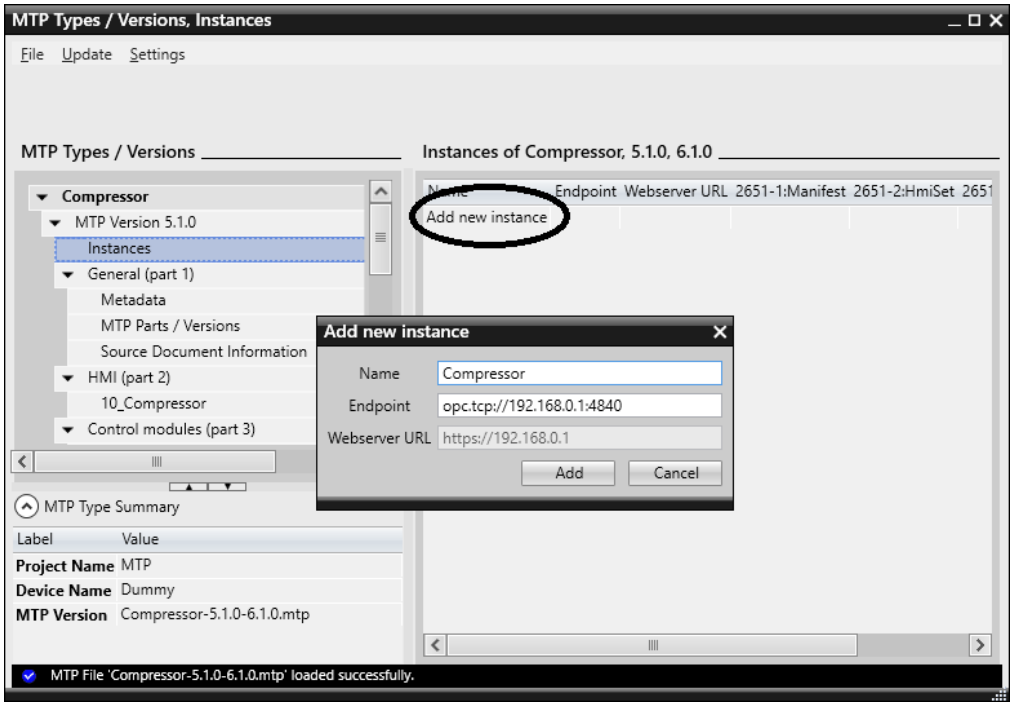
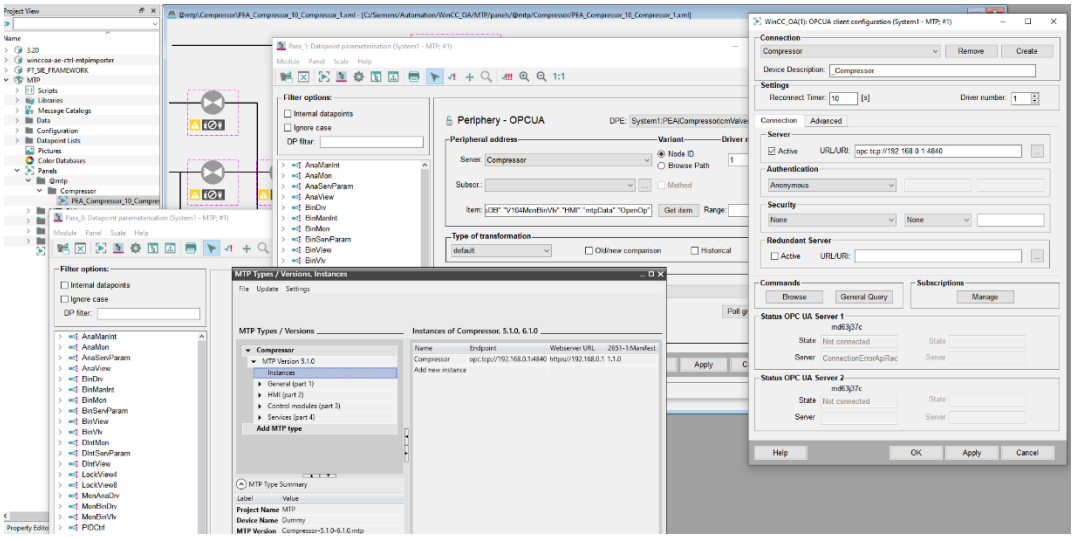


Figure 2-18 Main window of the Importer with MTP file

- Panels, Datapoint types, datapoints with necessary configs, OPC connection are created

  The panels are placed in folder @mtp/Compressor



- Add to the WinCC OA Project new OPC client driver with number 1, stop simulation driver, start the OPC Client

3. Appendix

Important WinCC OA specific abbreviations

Acronym	Long form	Meaning
WinCC OA	Simatic WinCC Open Architecture	A SCADA system for visualizing and operating of processes, production flows, machines and plants in all lines of business. Distributed systems enable any number of stand-alone systems, from 2 to 2048, to be linked via a network. Each subsystem can be configured either as a single-user or multi-user system, redundant or not, in each case.
DPT	Data point type	Object definition (class) of a structured data object as mapping of a real device. Single data points (instances) are derived from the DPT. Therefore, the data point type is a form of template.
DP	Data point	Structured, device-oriented data object as representation of a real device within the control system. A data point contains one or more data point elements (process variables).
DPE	Data point element	Single process information within a device-oriented data point. Each DPE corresponds to a value/state. In addition to the value, there are DPE attributes like time stamp, quality information or origin.
GEDI	Graphic Editor GEDI	Graphic Editor. It is used both for drawing of process images ("panels") as well as for designing of symbols, dialogs, and scripting.
PARA	Configuration Tool	Editor for the creation and configuration of data point types, data points, and data point elements as well as their configs.
ASCII	American Standard Code for Information Interchange	Standardized protocol for storage and transfer of characters/text. In WinCC OA, the acronym also refers to the database import/export manager. It is a module to export and import configurations as ASCII files. Mass configuration can therefore be carried out in a spread sheet program (for example MS Excel), file editor, or in an external database.
D	Driver Manager ("Driver")	Interface for connecting controllers (PLC, DDC, ...) fieldbuses and telecontrol systems. A driver handles the communication via an external protocol and enables the exchange of information with WinCC OA. The processing of data from the “field” to WinCC OA contains event orientation, old/new comparison, transformation, conversion, and smoothing. The protocol of the Driver must be the same as the protocol of the “field” device. Furthermore, the connection (how to reach the device) must be configured in WinCC OA. For exchanging data, a periphery address must be configured on a corresponding DPE.
CTRL	Control Manager ("Scripting")	Processing unit that allows to process user specific logic / business logic (control scripts).

	Control possesses an easy to learn syntax (similar to ANSI-C) and is processed by an interpreter (CTRL Manager).

Table 4-1 WinCC OA specific abbreviations

Service and support

WinCC OA Extended Services

Do you have questions about WinCC OA projects, need additional features, or require technical assistance? ETM provides 24/7 access to our complete service and support expertise for WinCC OA.

Our range of services includes the following:

- Extended Services provide tailored support for your evolving needs
- All kind of analysis/troubleshooting for older WinCC OA versions than our current mainline
- Project startup workshop
- Architecture definition
- Project engineering assistance with dedicated contact person
- Special project developments (special requirements, web widgets, gateways, etc.)
- WinCC OA library development assistance
- Project or architecture reviews with report
- Project-specific problem or performance analysis
- Project upgrade (analysis with report, assistance during upgrade, etc.)
- Assistance for complex error reproduction scenarios
- On-site assistance for any tasks related to WinCC OA and their components
- 24/7 on-duty assistance or priority callback for certain time range
- Database support Oracle®, InfluxDB®, PostgreSQL® and MS SQL®
- Raima/HDB to SQLite/NGA migration
- Setup and consulting for WinCC OA Add-ons e.g., APM, AMS, DRS, …
- WinCC OA Security services (as per the WinCC OA Security Guideline, NIS2)
- Tests on unsupported platforms (e.g., unsupported OS)
- Individual Workshops (driver workshop, UI workshop, business logic, etc.)
- Factory Acceptance Test (FAT)/Site Acceptance Test (SAT) assistance
- Creating of prototypes, proof of concepts, demos, etc.
- Project tender analysis and evaluation of projects
  You can find detailed information on our range of services in the service catalog web page:

www.winccoa.com/documentation/WinCCOA/latest/en_US/Support/topics/support_extendedServices.html

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For more information on our offered trainings and courses, as well as their locations and dates, refer to our web page:

www.winccoa.com/support/training.html

Change documentation

Version	Date	Modifications
V1.0	9/2025	First version

Table 4-2 Change Documentation

Published by
Siemens AG
DI FA HMI ISW ETM

Marktstrasse 3
7000 Eisenstadt
Austria
E-mail: wincc_oa.at@siemens.com
Web: www.siemens.com/wincc-open-architecure

For the U.S. published by
Siemens Industry Inc

100 Technology Drive
Alpharetta, GA 30005
United States