
Export Archive Data for SIMATIC WinCC Unified

User manual

Version 1.3.0



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Abbreviations

The following abbreviations are used in this document:

CSV	Comma Separated Values
EAD	Export Archive Data
GUI	Graphical User Interface
MS	Microsoft
PC	Personal Computer
SW	Software
TIA	Totally Integrated Automation
UI	User Interface
UTF-8	Unicode Transformation Format - 8-bit
WinCC RT	WinCC Runtime

Prerequisites

It is assumed that the readers of this manual have knowledge and experience of operating MS Windows at user level. Some topics, such as standard menu items and features, will therefore not be described in detail, but will instead refer to other relevant MS Windows literature.

1. Introduction

This document is an operating manual intended for users of the Export Archive Data SW package.

1.1 Export Archive Data description

EAD is a specially developed software package that provides fast and easy access to logged archive data for tag values and alarms. The software can basically handle the following scenarios:

- Extract historical tagvalues to screen.
- Save historical tagvalues to file in CSV- or MS Excel format.
- Automatically perform extraction of tagvalues directly to file in CSV format.
- Extract logged alarms to screen.
- Save historical alarms to file in CSV- or MS Excel format.

The EAD package consists of the following modules:

1. EAD application:

This module allows the user to set all desired parameters before the actual extraction of archive data. The user can also parameterize all settings regarding automatic time-scheduled data extraction.

The EAD main application is the only module with a program UI. It's the only application the user needs to interact with. The module is designed as an executable application that runs on a WinCC Unified Runtime PC.

For the program to work properly, a WinCC Unified Runtime project must be started on the same PC.

2. EAD service:

This module handles the automatic part regarding time-scheduled data extraction.

The module is designed as a Windows service that automatically starts up with the MS Windows operating system.

3. EAD Auto application:

This module is used for automatic time-scheduled data extraction. The module is only activated by the "EAD service" module.

For all modules, the language of the user interface used is English.

The following chapters describe the installation and operation of the SW package.

2. Installing the EAD package

2.1 Installation requirements

The EAD package has been tested with and supports the following:

Operating systems:

- MS Windows 10 Professional 64-bit
- MS Windows Server 2019 Standard 64-bit

Simatic WinCC:

- Simatic WinCC Unified Runtime V.16
- Simatic WinCC Unified Runtime V.17

All the necessary files are installed in the following directory:

- Program Files \ Swappcon \ ExportArchiveData

It's not possible to use the EAD SW package on a PC without WinCC Unified Runtime installed !

2.2 Installation on a WinCC Unified Runtime PC

On the WinCC Unified Runtime PC, the "setup.exe" file is activated on the installation medium:

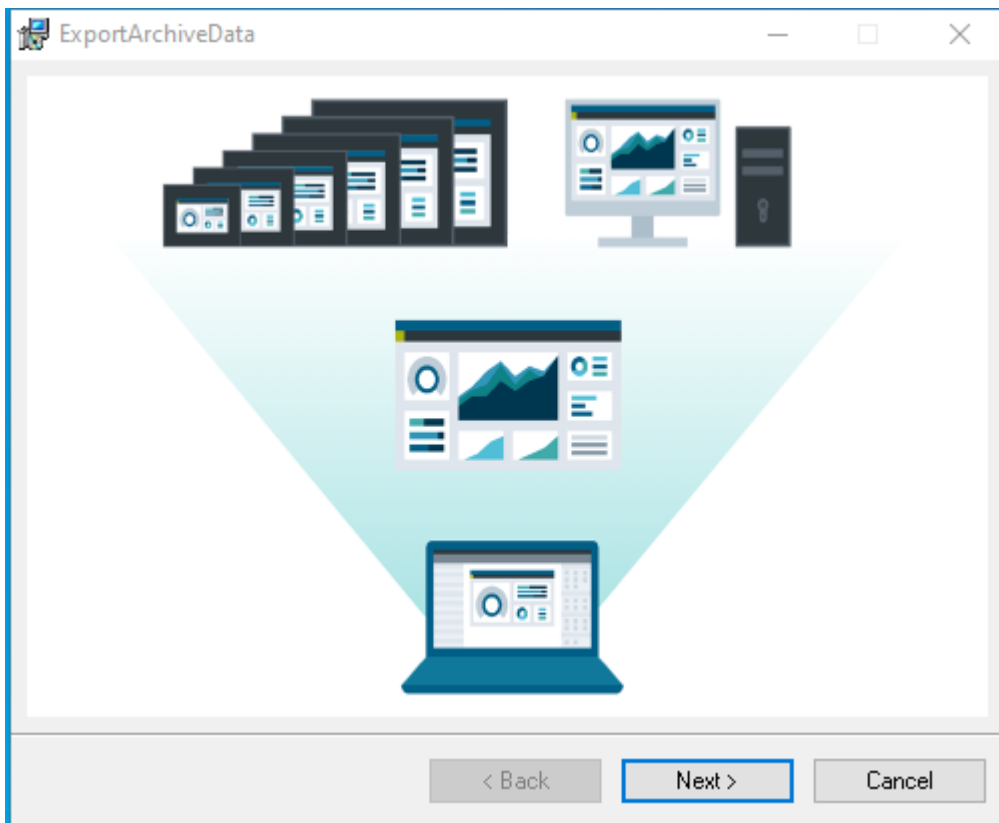


Figure 2.2.1: Installation program startup dialog.

Please press the "Next>" button.

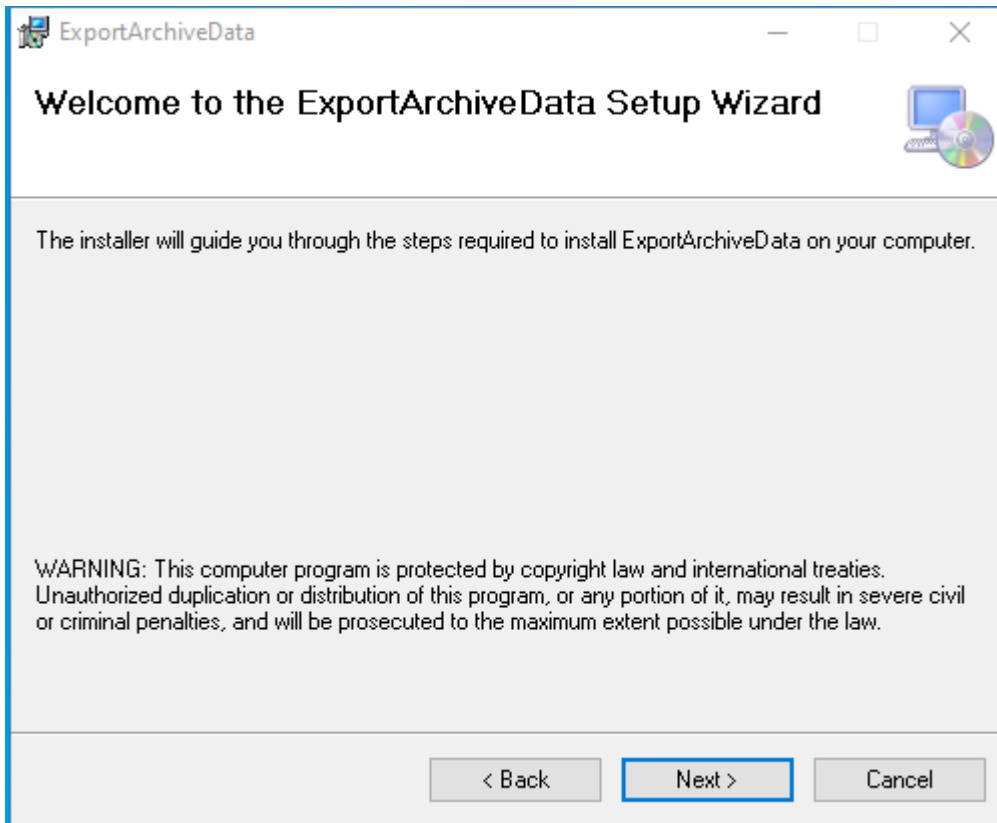


Figure 2.2.2: Installation welcome dialog.

Please press the "Next>" button.

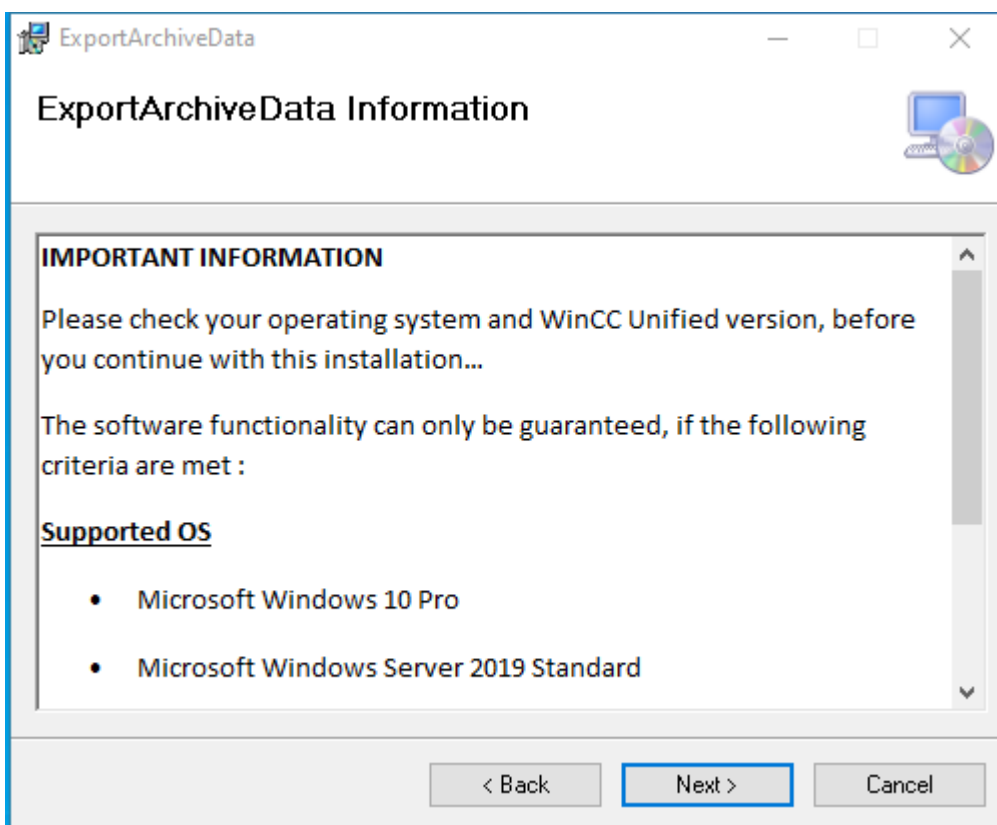


Figure 2.2.3: Information regarding supported software.

Please press the "Next>" button.

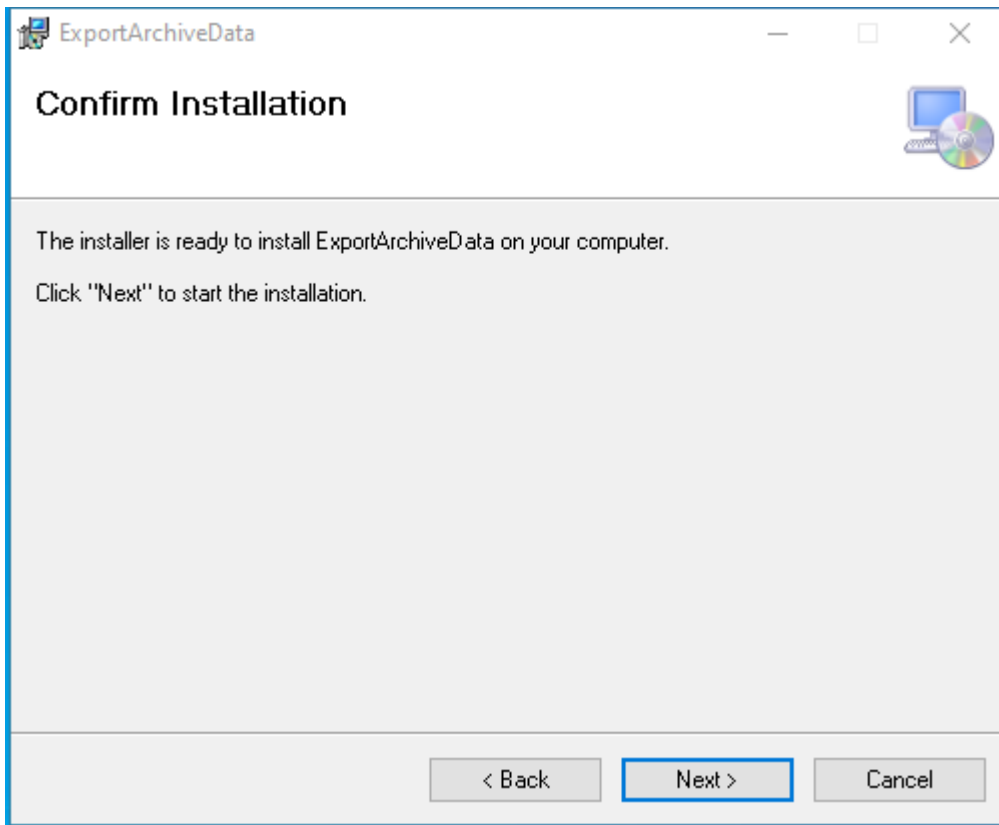


Figure 2.2.4: The installation program is ready for the installation itself.

Please press the "Next>" button.

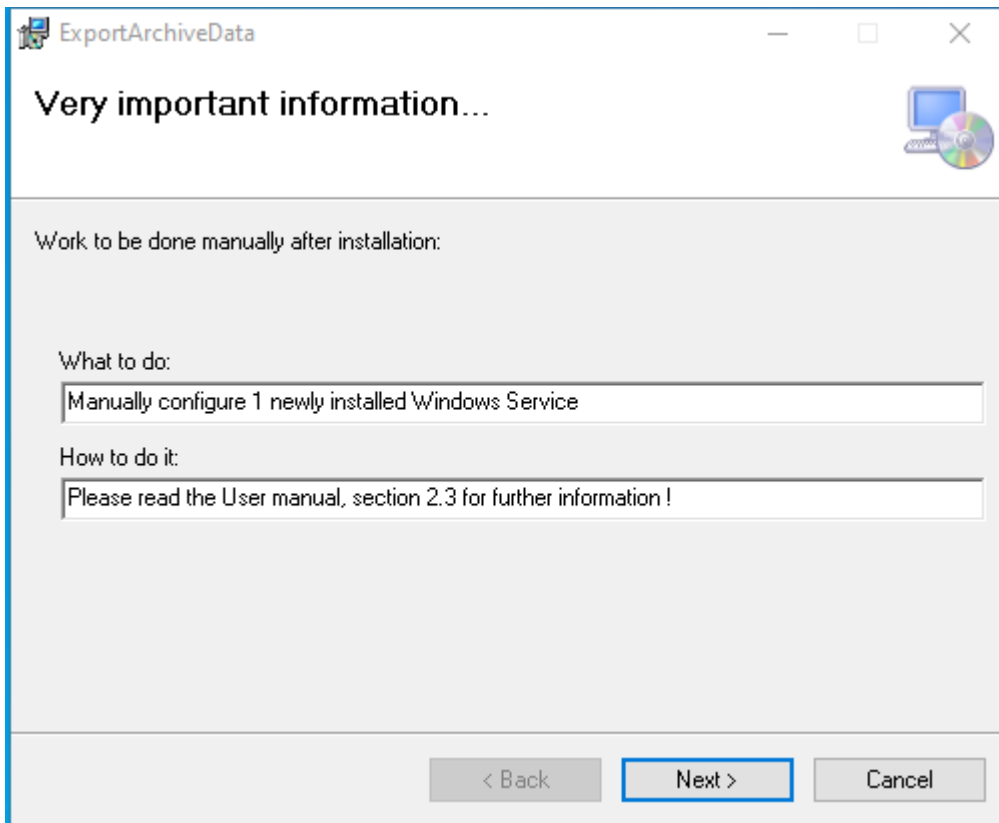


Figure 2.2.5: Important information for the user.

Please press the "Next>" button.

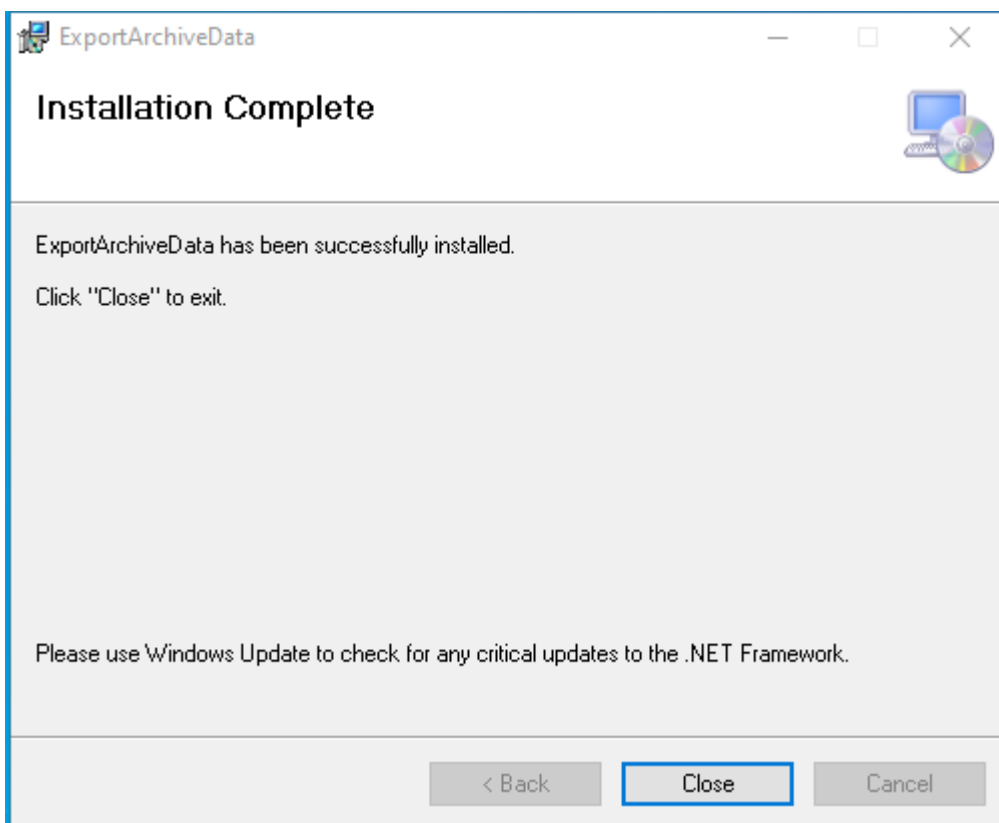


Figure 2.2.6: Installation program exit dialog.

All the required files are installed in the following directory:

- \ Program Files \ Swappcon \ ExportArchiveData

2.3 Manual configuration of installed Windows service

After installation, the EAD package has installed a new Windows service, which must be manually configured by the user. The service is called:

- EAD_Scheduler

It is necessary to configure the user rights the service is assigned in the Windows system. Log on (username and password) is configured as follows (English version of Windows):

1. Press "**Windows key + R**"
2. Type "services.msc" and press "OK" (Windows Services list opens)
3. Double-click on the service "EAD_Scheduler"
4. Select the tab "Log On"
5. Select "This account:" and press the "Browse" button.
6. Press:
 - a. "Advanced..." button.
 - b. "Find Now" button.
7. Select the user account that corresponds to the account running WinCC Unified Runtime. This will typically be the current Windows user account. **The account must be a member of the "SIMATIC HMI" group !**
8. Press the "OK" button.
9. Enter the password of the user account in the field "Password:".
10. Enter the password of the user account in the field "Confirm password:".
11. End the dialog by pressing "OK".
12. Restart the service in order for the changes to take effect.

2.4 Programstart icon

After installing the EAD package, the following application launch icon will be created:

- On Windows desktop:
 - "Export Archive Data"

- In Windows program menu in "Swappcon" folder:
 - "Export Archive Data"
 - "User manual"

3. User manual : Export Archive Data

3.1 Using the EAD module

The EAD module is started using the "Export Archive Data" icon located on the Windows desktop:

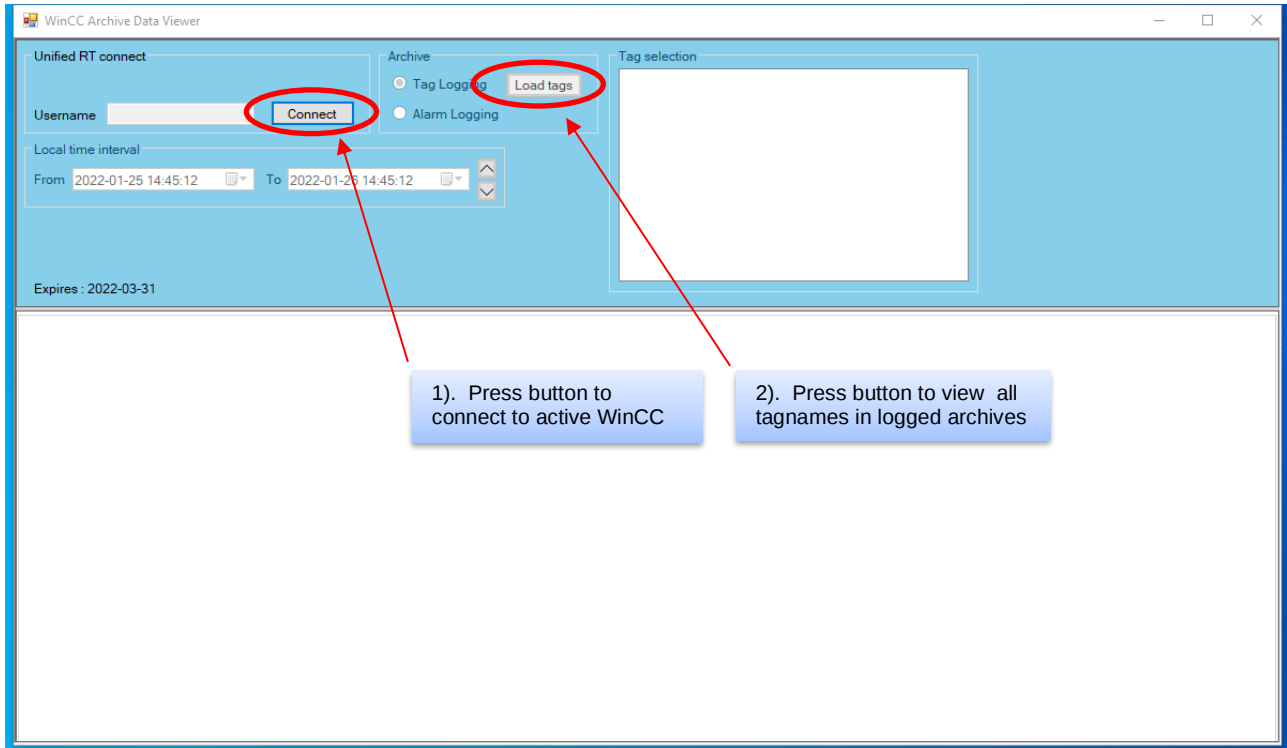
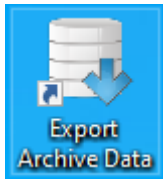


Figure 3.1.1: Appearance of the EAD module at start-up.

Before extracts from the data archives can be displayed, the module must be connected to the WinCC runtime system. This is done by pressing the "Connect" button, shown in figure 3.1.1.

Pressing the "Load tags" button, shown in figure 3.1.1, will display all tagnames defined in all taglogging archives in the WinCC Unified project. The tagnames are listed in the "Tag selection" listview:

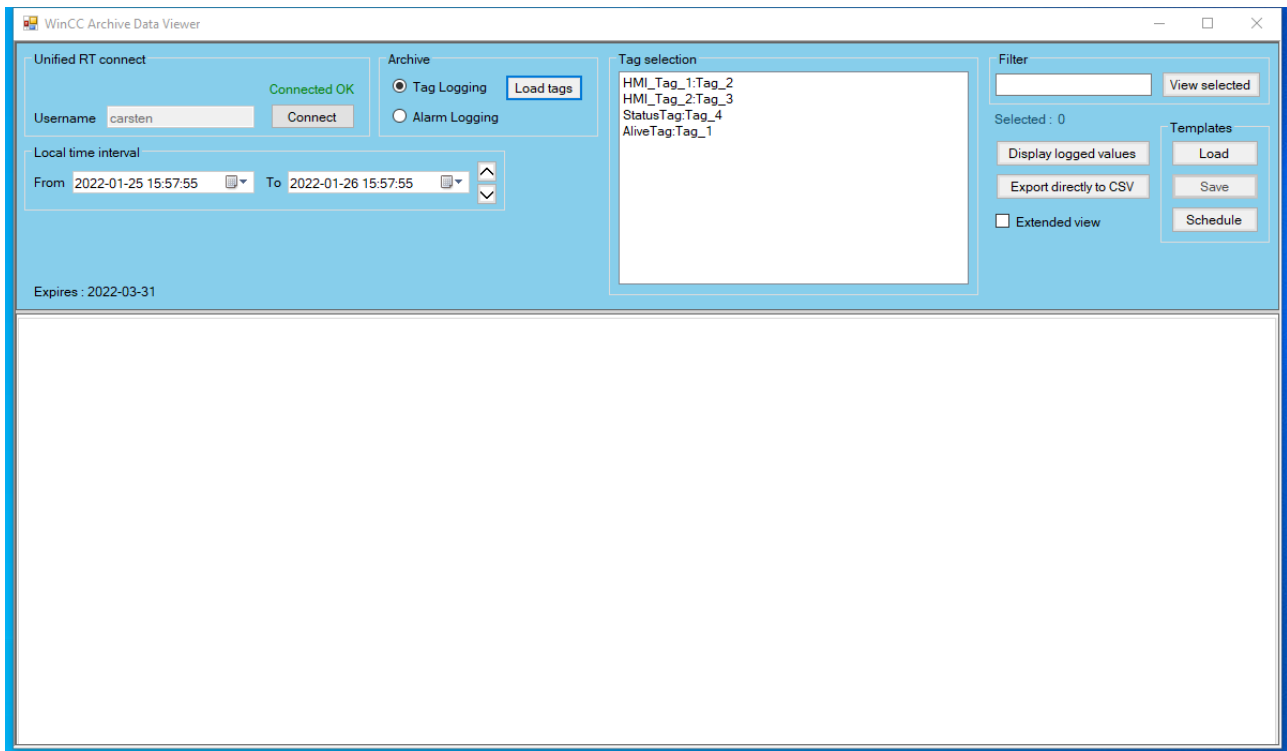
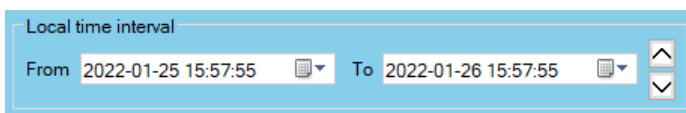


Figure 3.1.2: Example of EAD module after established connection and listing of archived tagnames.

The selection of tags can be done by using standard Windows selection methods, such as <CTRL><mouseclick> and <SHIFT><mouseclick>.



- The “Filter” textbox can be used to dynamically filter the tag names in the listview. It allows the user to select tag names in an fast and easy way.
- The “View selected” button removes all unselected tag names from the "Tag selection" listview, which gives the user a quick overview of the tags selected. If you want to select additional tags, just press the button “Load tags” again and continue your selection.



- In the “Local time interval” box the timespan of the export can be specified. This is done by clicking the timepicker-icons for each textbox.
- The covered timespan (From-To) can be switched back and forth, using the down- or up-arrows located on the right side of the “Local time interval” box.

☐ Extended view

- Displaying logged values presents the user with the following information:
 - Local timestamp.
 - Logged value.
 - Name of the value in the archive.
- Choosing “Extended view”, before displaying logged values, presents the user with the following additional information:
 - Quality code of the process value (Hex value) indicating:
 - Please refer to the official Simatic WinCC TIA Portal documentation.
 - Flags indicating:
 - Extra: There are still additional values at the time of the process value.
 - Calculated: Process value is calculated.
 - Bounding: Process value is a limit value.
 - NoData: No additional information available.
 - FirstStored: Process value is the first value stored in the logging system.
 - LastStored: Process value is the last value stored in the logging system.
 - Error indicating:
 - Please refer to the official Simatic WinCC TIA Portal documentation.

Display logged values

- Pressing “Display logged values” button, will display all stored archive values for the chosen tags within the specified “Local time interval”. Each tags values will be displayed in a separate tab listview with columns depending on the user choice of the “Extended view” option. If no extended view is chosen, each value is presented with 3 columns:
 - “localTimestamp”: The date/time the value is stored in the archive.
 - “RealValue”: The value itself.
 - “ValueName”: The name identifying the value in the archive.

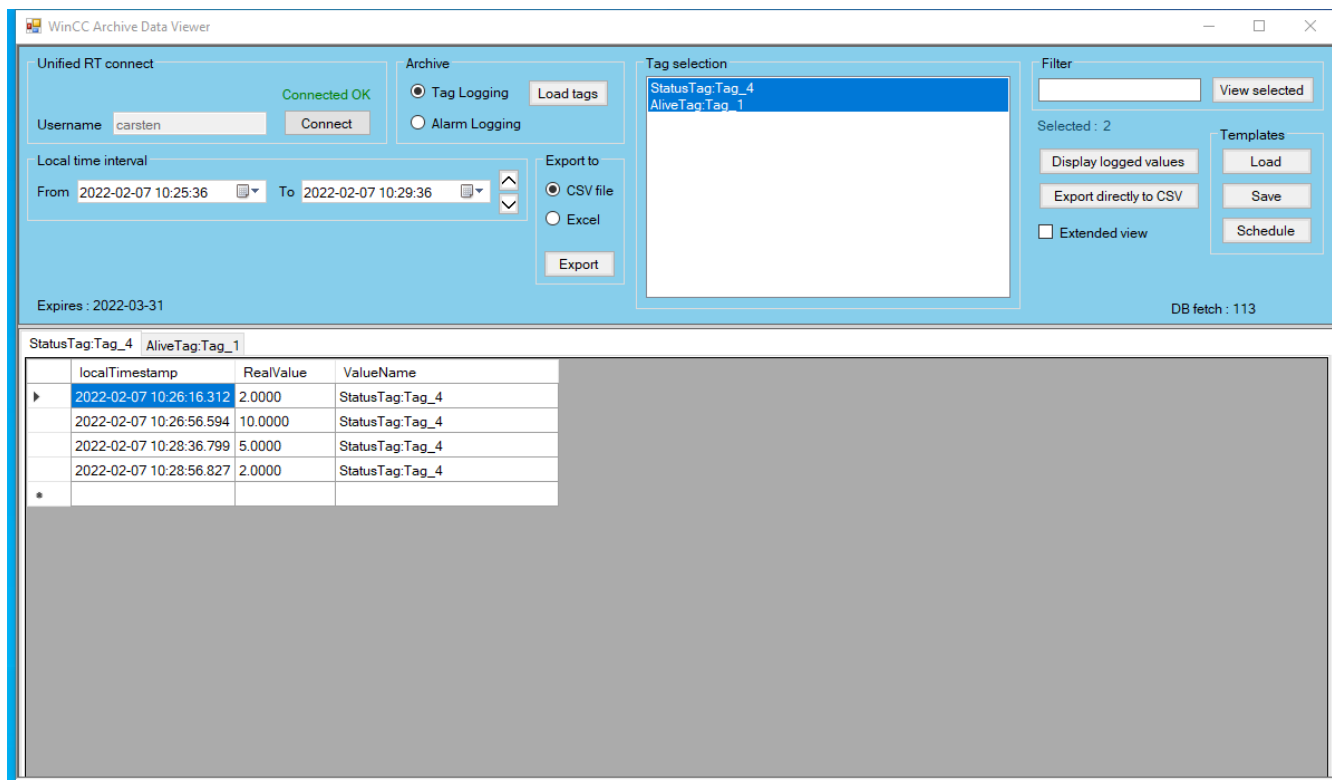


Figure 3.1.3: Example of EAD module after extracting archive values to screen.

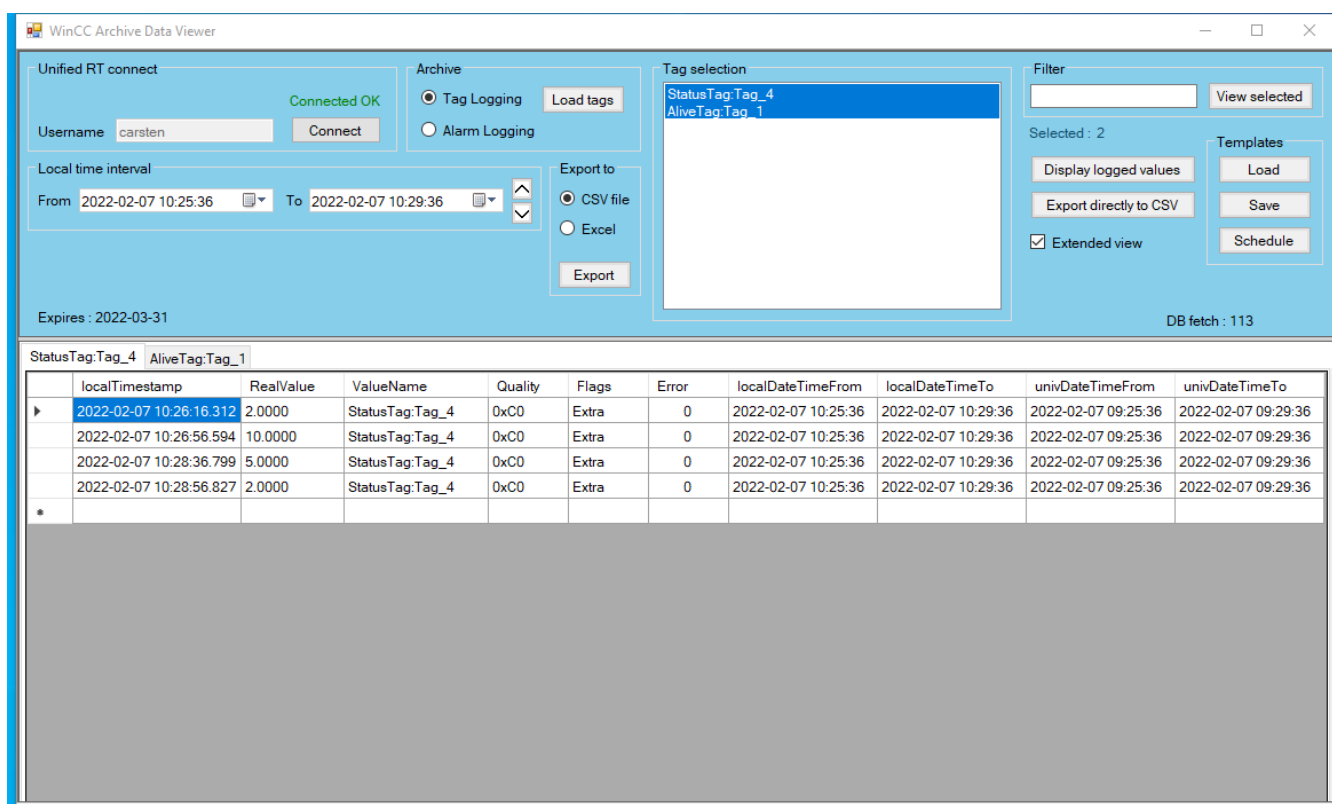
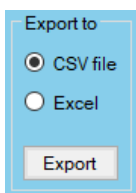


Figure 3.1.4: Example of EAD module after extracting archive values to screen, using "Extended view".

When extracting data, using the “Display logged values” button, there are some restrictions regarding the number of chosen tags and the chosen time period (timespan):

- When EAD is started as a normal Windows application:
 - Max. selected tags: 1000 tags
 - Max. timespan: 30 days
 - Max. values displayed in each tab: 100.000 values
- When EAD is run under WinCC RT implemented in a graphics picture (Pdl-file):
 - Max. selected tags: 10 tags
 - Max. timespan: 5 days
 - Max. values displayed in each tab: 10.000 values

If the user exceeds these limits, a warning is displayed before the actual extraction. The user can then choose to continue, or reevaluate the settings before displaying data. The limitations are implemented in order to avoid memory overrun, especially when used in a WinCC RT graphics system.



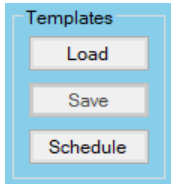
After the extraction of data to screen the user can export the displayed values to a CSV- or to a MS Excel file. When pressing the “Export” button, the user is presented with a standard MS Windows save dialog box, and can now save the file to a preferred destination.

```
localTimestamp,RealValue,ValueName,
2022-02-07 10:26:16.312,2.0000,StatusTag:Tag_4,
2022-02-07 10:26:56.594,10.0000,StatusTag:Tag_4,
2022-02-07 10:28:36.799,5.0000,StatusTag:Tag_4,
2022-02-07 10:28:56.827,2.0000,StatusTag:Tag_4,
2022-02-07 10:25:58.085,True,AliveTag:Tag_1,
2022-02-07 10:26:00.097,False,AliveTag:Tag_1,
2022-02-07 10:26:02.099,True,AliveTag:Tag_1,
2022-02-07 10:26:04.101,False,AliveTag:Tag_1,
2022-02-07 10:26:06.104,True,AliveTag:Tag_1,
2022-02-07 10:26:08.121,False,AliveTag:Tag_1,
2022-02-07 10:26:10.139,True,AliveTag:Tag_1,
2022-02-07 10:26:12.142,False,AliveTag:Tag_1,
2022-02-07 10:26:14.158,True,AliveTag:Tag_1,
2022-02-07 10:26:16.162,False,AliveTag:Tag_1,
2022-02-07 10:26:18.498,True,AliveTag:Tag_1,
2022-02-07 10:26:20.501,False,AliveTag:Tag_1,
2022-02-07 10:26:22.506,True,AliveTag:Tag_1,
2022-02-07 10:26:24.509,False,AliveTag:Tag_1,
```

Figure 3.1.5: Example of a CSV-file export. Please note that this example contains data for 2 archive tags (ValueName changes after the first 4 lines of data).

A rectangular button with a light blue border and a light gray background, containing the text "Export directly to CSV" in a small, black, sans-serif font.

The “Export directly to CSV” button is used, if the user does not need to see the data on screen, before exporting to a CSV-file. This option also gives the user the ability to export a larger amount of data, because it does not need to be displayed on screen, which is a very memory consuming process. When pressing the “Export directly to CSV” button, the user is presented with a standard MS Windows save dialog box, and can save the file to a preferred destination.



Once the user has performed the necessary export setup, it is possible to save the selected setup in a template, for later reuse:

- “Load” button:
 - Load a previously saved template. The user is presented with a standard MS Windows load dialog box, and can load the template from a preferred destination.
- “Save” button:
 - Save the displayed setup to a template. The user is presented with a standard MS Windows save dialog box, and can save the template to a preferred destination.
- “Schedule” button:
 - Open a new dialog, where the user can setup an automatic export schedule, based on the selected options. Please refer to chapter “3.2 Automatic time scheduled export function” for a detailed description.

3.2 Automatic time scheduled export function

The EAD SW package includes the option of creating automated time scheduled exports. The exported data values are saved in CSV-files without any user intervention. The files are saved in UTF-8 format. This chapter describes the setup procedure for the automatic time scheduled export.

3.2.1 The “Setup auto export schedule” configuration dialog

The configuration dialog is opened by clicking the button “Schedule” on the EAD main page:

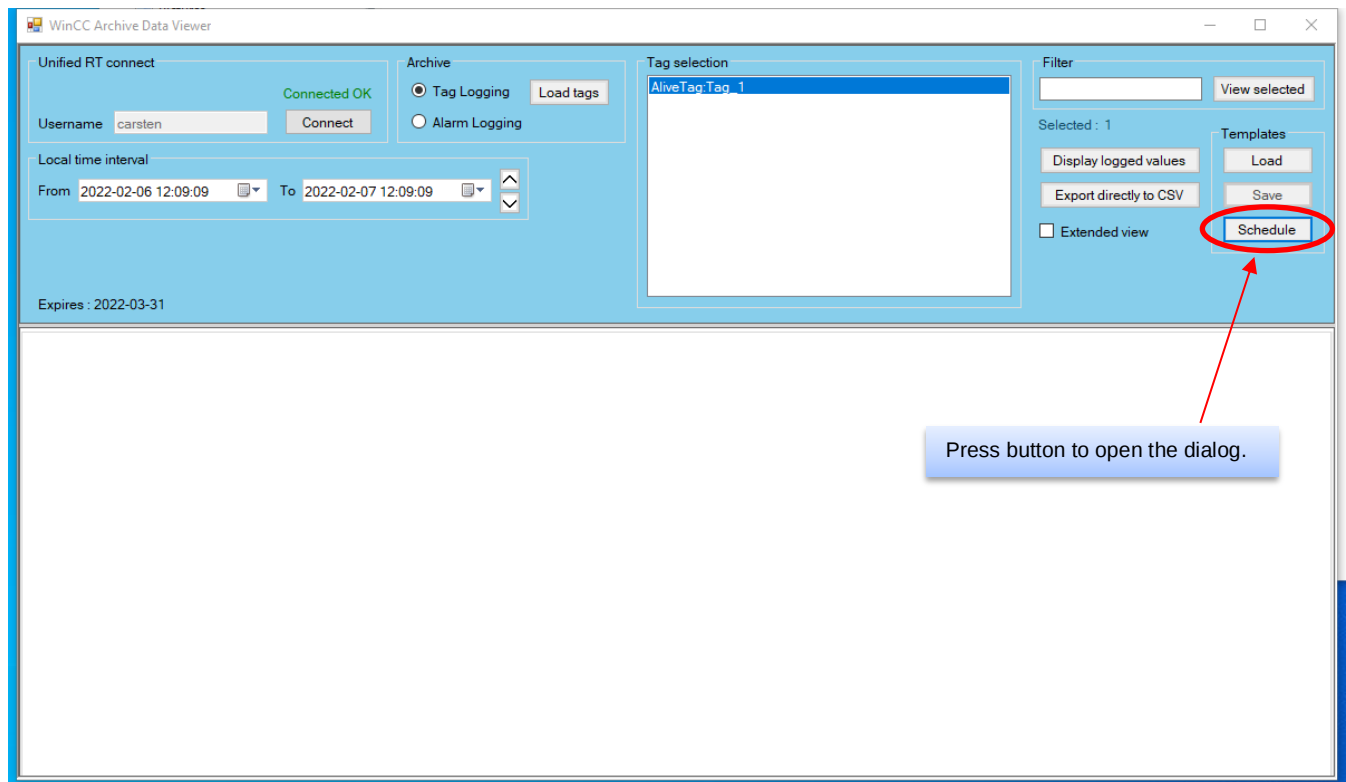


Figure 3.2.1: How to open the “Setup archive export schedule” configuration dialog.

The configuration dialog opens like this:

Figure 3.2.2: Example of the “Setup archive export schedule” configuration dialog.

Configuration regarding “Tags selected”, “Local time interval” and “Extended view” is automatically transferred from the main page to the “Setup auto export schedule” dialog.

The field “First run” is automatically set to the following day according to the “To” field datetime value.

3.2.2 Configuring an automatic time scheduled export

In order to activate an automatic export, the following dialog fields must be configured:

Schedule enabled ☒

- Indicates whether the schedule is activated or not. In this case activated means that it will produce exported data in CSV-files.
Changing the value must be followed by activating “Save” or “Apply” button

Export filename (Timespan will be added to name)

- Specifies the naming of the exported CSV-files. This name is a prefix, and it will be combined with an indication of the timespan for the exported data.

Example (Timespan: 2022-02-07 15:15:00 - 2022-02-07 15:30:00):

Export filename: “ScalanceSignal”

CSV-filename: “ScalanceSignal 2022-02-07 15.15.00 - 2022-02-07 15.30.00.csv”

Export to folder

- The "Select" button opens a standard MS Windows dialog box where the user can select an output folder. The CSV files for the exported data will be stored in this directory folder.

First run

Second run 2022-02-08 00:00:00

- In the field "First run" the user must specify the start date/time for the first export run. It is crucial that this date/time is timewise located later than the "To" date/time in the "Local time interval", otherwise the export will not be run, because of lack of data.
- The "Second run" field is just an information field, indicating the computed date/time for the second run. This field will automatically be updated, when the user changes the "First run" field or makes changes in any of the "Schedule frequency" fields.

Schedule frequency

Add Months

Add Days

Add Hours

Add Minutes

- In the "Schedule frequency" area, the user can specify the time between each export run. The combination of the 4 field values gives the user the ability to specify all possible export run frequencies. The time between each export run should be chosen carefully, especially taking into account the chosen "Local time interval". Always make shure that each export run after the date/time specified in the "To" field of "Local time interval". Please note, that after each export run, the date/time values are automatically adjusted to fit the next export run.

Example:

- "First run": 2022-02-08 00:30:10
- "From": 2022-02-08 00:00:00
- "To": 2022-02-08 00:30:00

...after 1.run shifts to...

- "First run": 2022-02-08 01:00:10 (date/time for 2.run)
- "From": 2022-02-08 00:30:00
- "To": 2022-02-08 01:00:00

...and so on...

☒ Extended view

Additional export

- ☐ Signal quality
- ☐ Flags
- ☐ Error
- ☐ Local Datetime From
- ☐ Local Datetime To
- ☐ UTC Datetime From
- ☐ UTC Datetime To

- Selecting the “Extended view” option allows the user to select extra information about each stored archive tag value. This extra information is saved in the export CSV-file. Please refer to chapter 3.1 for a further description of the extended view.

Local time interval

From 2022-02-06 12:09:09 To 2022-02-07 12:09:09

- In the “Local time interval” box the timespan of the export can be specified. This is done by clicking the timepicker-icons for each textbox. Always make shure that the “Local time interval” (timespan) is timewise located before the “Firt run” date/time specification.
- The covered timespan (From-To) can be switched back and forth, using the down- or up-arrows located on the right side of the “Local time interval” box.

Select all tags in all archives

- If the user wants to include all tags in all archives in the export, this can be done by pressing the button “Select all tags in all archives”. Use this option carefully, because the export can lead to significant memory consumption if your WinCC configuration contains a lot of archives and tags.

Save Apply Cancel

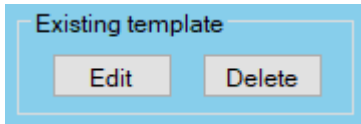
- “Save”
 - Pressing the “Save” button will store the schedule-template in the following directory:
 - **C:\Users\Public\Documents\Swappcon\ExportArchiveData\Schedules**

The user cannot change this save-destination !

If the data is insufficient the user will be prompted for more information, before the schedule-template can be saved. After a successful save operation the “Setup auto export schedule” dialog is closed.

If the “Schedule enabled” box is ticked, the system will start to export archive values to CSV-files.

- “Apply”
 - Pressing the “Apply” button works exactly like the “Save” button, except that the “Setup auto export schedule” dialog is not closed.
If the “Schedule enabled” box is ticked, the system will start to export archive values to CSV-files.
- “Cancel”
 - Pressing the “Cancel” button discards any changes, and closes the “Setup auto export schedule” dialog.



- “Edit”
 - Pressing the “Edit” button opens a MS Windows selection box displaying the files located in the schedule-templates default directory. The user can now open and edit a previously saved schedule-template.
It is also possible to open a standard template file, previously saved on the mainpage. This is a usefull feature if the user has manually viewed some data and saved the configuration. All previously saved standard template can be used as a basis for defining a scheduled export.
- “Delete”
 - Pressing the “Delete” button opens a MS Windows selection box displaying the files located in the schedule-templates default directory. The user can now select and delete a previously saved schedule-template or any other standard-template.
Before the actual deletion the user is presented with a confirmation dialog box:

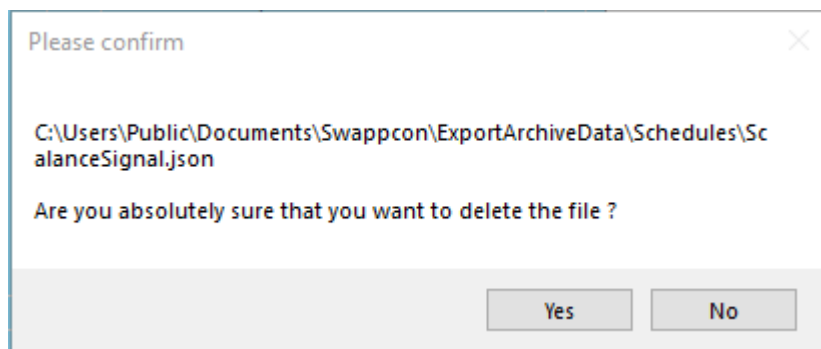


Figure 3.2.3: Example of a delete confirmation dialog box.

4. Log files : Information, Warnings and Errors

The automatic export module of the EAD SW-package is running as a service in the MS Windows operating system. The service has no GUI and operates silently in the background without any user intervention.

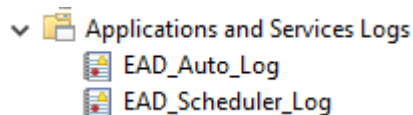
The service writes information to the standard “Event Viewer” application in MS Windows. If the automatic export module does not work as expected, the user can seek information in the “Event Viewer” application to help solving the problem.

4.1. Using the “Event Viewer” application

4.1.1. Starting the “Event Viewer”

The application can be started in the following way:

1. Open a “Run” dialog in MS Windows.
2. Type “eventvwr.msc” and press the “OK” button.
3. Wait a moment while the application is initializing.
4. Expand the left treeview called “Applications and Services Logs”



4.1.2. EAD_Scheduler_Log:

- This log contains information from the scheduling service. Information is written everytime the service is started or stopped. Any errors will also be written to the log.

4.1.3. EAD_Auto_Log:

- This log contains information from the automatic export application. Information is written everytime a scheduled export is performed and the content always include timestamped information about:
 - Name of the schedule template that is started.
 - Number of archive values exported when scheduled template is finished.
 - Any errors will also be written to the log.