

AxiaManager Scope



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1 Overview

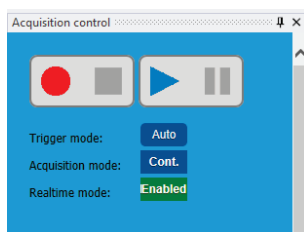
AxiaManager Scope (short: AM Scope) is an integrated oscilloscope software that offers an advanced view of selected tracks.

- You can record tracks of selected parameters and collect unlimited sampled for up to 8 tracks at a time. This helps you to analyze commissioning errors and make an easy troubleshooting of your application setup.
- You can visualize up to 8 tracks simultaneously at high frequency and trigger solution. This helps you to supervise and fine-tune commissioning parameters and control loops.

AxiaManager Scope can be started as a separate software or be opened from within AxiaManager.

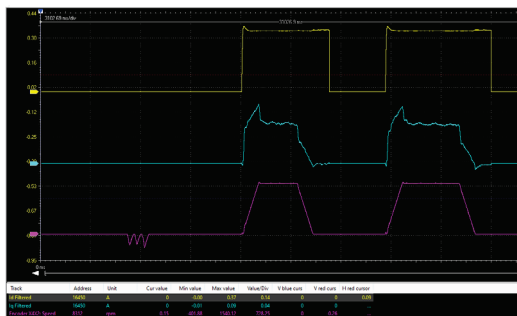
1.1 Possible actions

Record tracks



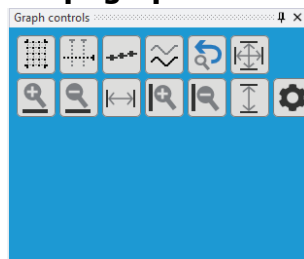
You can visualize single sequences of up to 8 parameters.

Capture tracks continuously



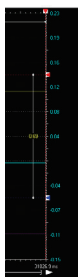
You can capture 8 tracks continuously for future analyzation, printing or export.

Adapt graph view to personal needs



You can show or hide grids, measure bars, split tracks and zoom in and out horizontally and vertically to obtain all the information you need.

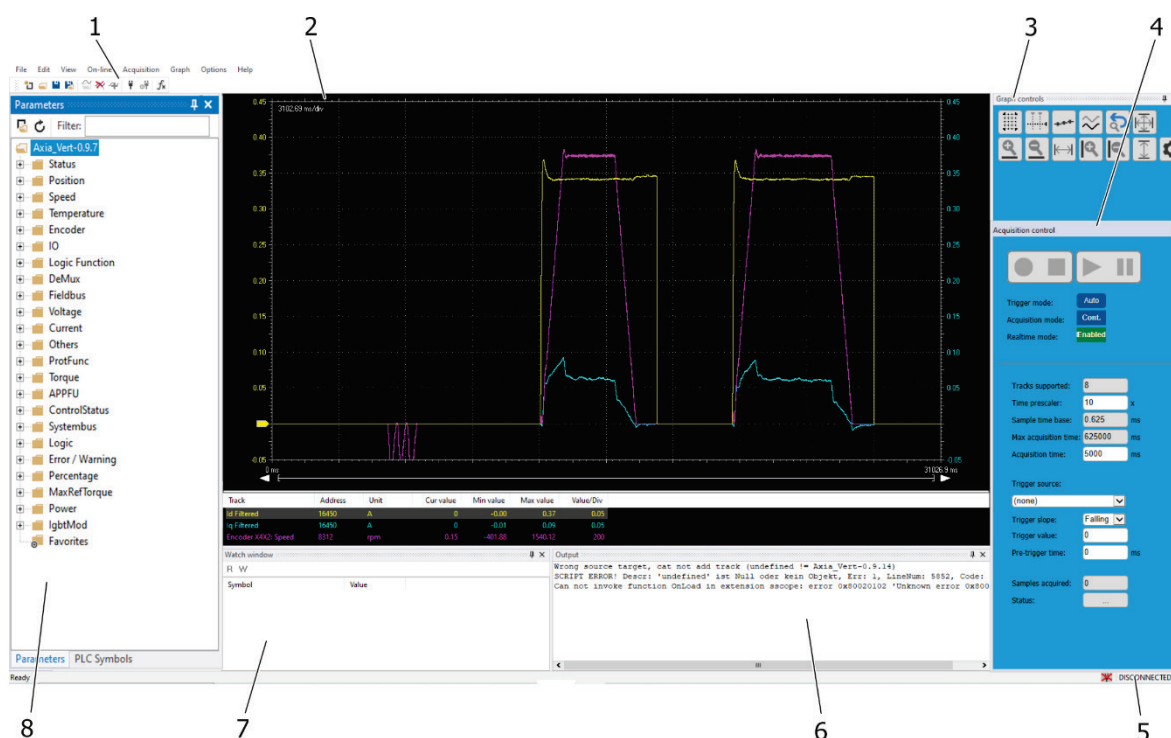
Display triggers



You can display the value of selected tracks at runtime, without the need of stopping the application.

1.2 Introduction to the User Interface

The figure below shows a view of AxiaManager Scope's workspace, including many of its more commonly used components.



1	Menu Bar and Toolbar	2	Graph window
3	Graph controls	4	Acquisition controls
5	Status bar	6	Output window
7	Watch window	8	Parameters window

The following paragraphs give an overview of these elements.

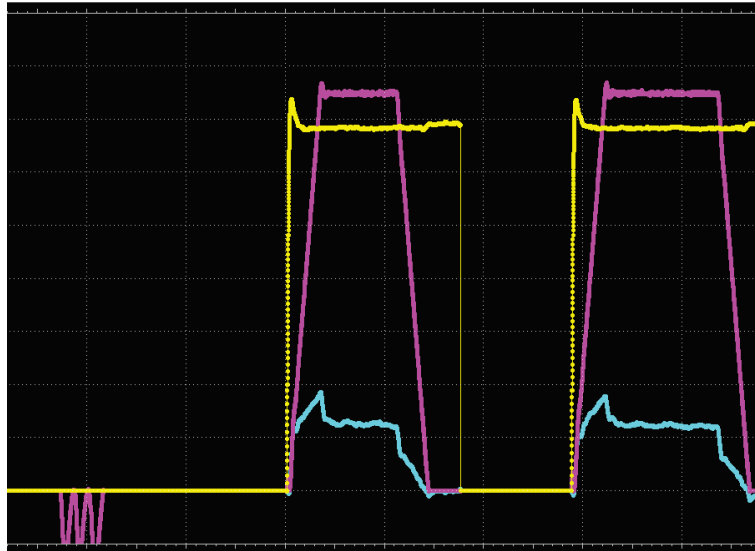
1.2.1 The Menu Bar and the Toolbar (1)



AxiaManager Scope allows the user to hide or show the main toolbar to fully customize the workspace. Each operation in the environment, to realize a program, can be performed through the menu bar; the toolbar contains icons which work as shortcut for the menu's commands (see 6.3 and 6.4).

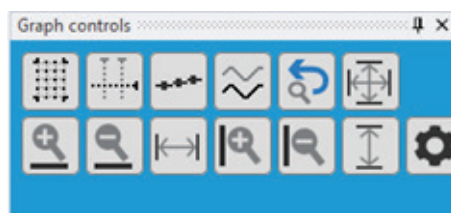
1.2.2 The Graph Window (2)

The *Graph* window shows the graphs and tracks of the selected parameters is always visible.



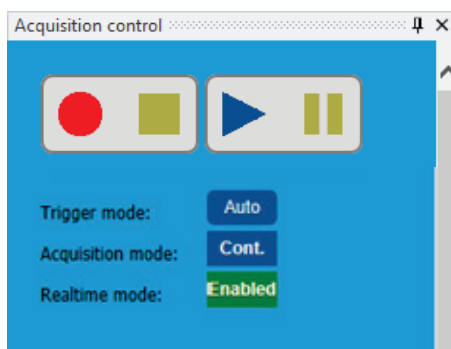
The Graph window is the main window in AxiaManager Scope and will always be shown. It cannot be hidden via the View menu. The monitored tracks are shown in the lower bar of this window.

1.2.3 The Graph Controls (3)



You can personalize the view of the graph window: Show or hide grids, measure bars, split tracks and zoom in and out horizontally and vertically.

1.2.4 The Acquisition Controls (4)



You can make acquisitions of an unlimited number of samples related to up to 4 tracks (🔧 4.5).

Save, print and export tracks for offline analysis (🔧 5).

1.2.5 The Status Bar (5)

The Status bar displays the connection status of the application with the target device at its right border.



If you have not yet attempted to connect to the target, the status of communication is set to *Disconnected*.

When you try to connect to the target device, the state of communication becomes one of the following:

- **Connected:** the communication has been correctly established.

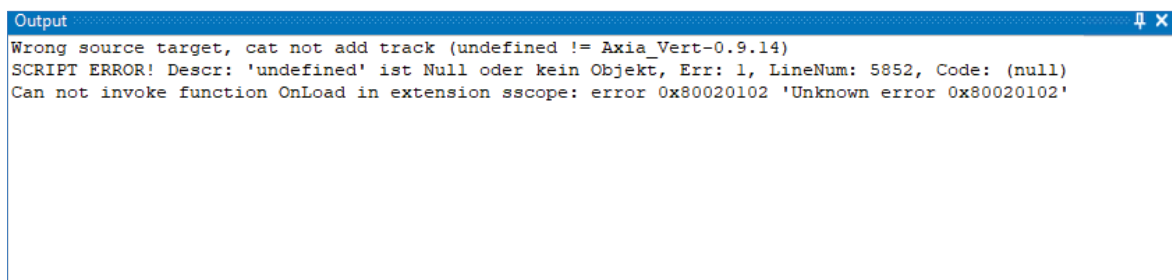


- **Error:** the communication cannot be established. You should check both the physical link and the communication settings.



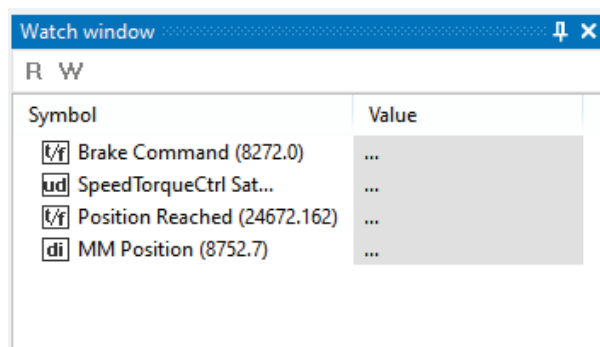
1.2.6 The Output Window (6)

The *Output* window (6) is the place where AxiaManager Scope prints its output messages.



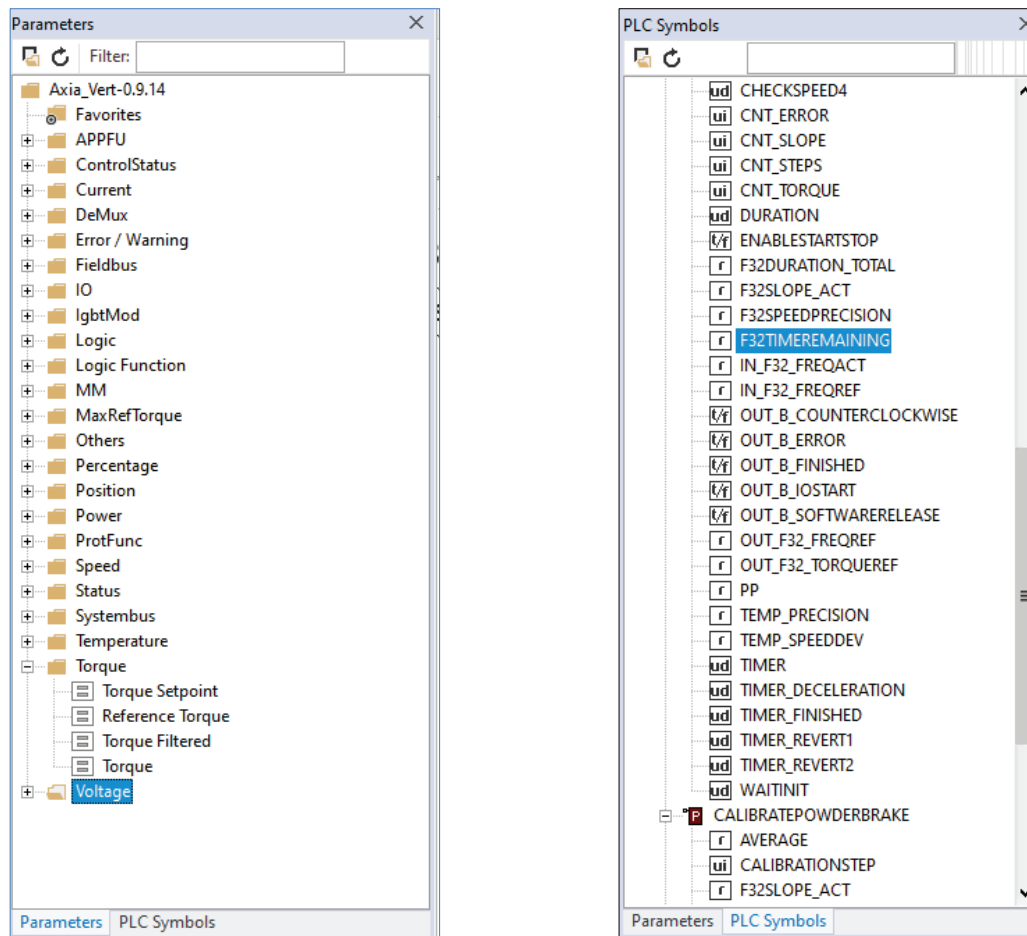
1.2.7 The Watch Window (7)

The *Watch* window is one of the debugging tools supplied by AxiaManager Scope. Among the other debugging tools in AxiaManager, it is worth mentioning the graphs, the triggers, and the debug log.



1.2.8 The Parameters Window (8)

The *Parameters* window consists of two distinct panels, as shown in the following picture.



1.2.8.1 Parameters

The *Parameters* panel contains all the elements of the project, visualized in a tree-like organization. Custom folders (*Favorites*) can be added to the project tree in order to reorganize the elements accordingly to the user preferences.

1.2.8.2 PLC symbols

The content of the *PLC symbols* panel depends on how the target device is interfacing with AxiaManager Scope: it may include configuration elements, schemes or wizards.

2 Using the Environment

This chapter shows you how to deal with the UI elements AxiaManager Scope is composed of, in order to let you set up the oscillator in the way which best suits to your specific development process.

2.1 Conventions Used in This Document

Text Type	Description
Command, Key	Name of the command or keyboard shortcuts key
<i>Menu>Item</i>	For menu items hierarchy, the ">" symbol is used. A record File>Open Project is equivalent to "the Open Project item under the File menu".
 ...	Link to related subject within this guide.
 ...	Link to related subject in an external guide.
<i>Terminology</i>	Important term or concept.
0x1234	Representation of parameter numbers
<i>Parameter/Object</i>	Representation of parameter names
01234	Representation of parameter values/object settings

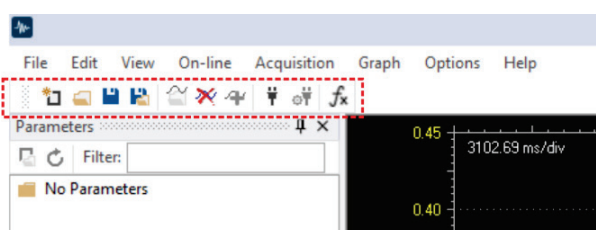
2.2 Customize the Layout

The layout of AxiaManager Scope's workspace can be freely customized in order to suit your needs.

AxiaManager Scope takes care to save the layout configuration on application exit, in order to persist your preferences between different working sessions.

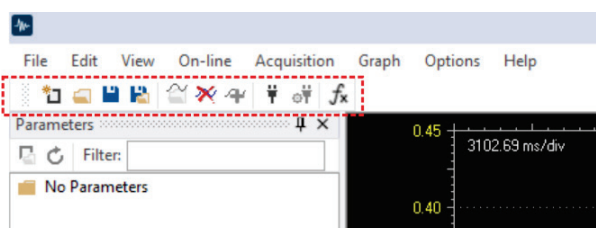
2.2.1 Show/Hide the Toolbar

In details, in order to show (or hide) the toolbar, open the [View>Main toolbar](#) menu. The toolbar is then shown (hidden).



2.2.2 Move the Toolbar

You can move the toolbar by clicking on its left border and then dragging and dropping it to the destination.



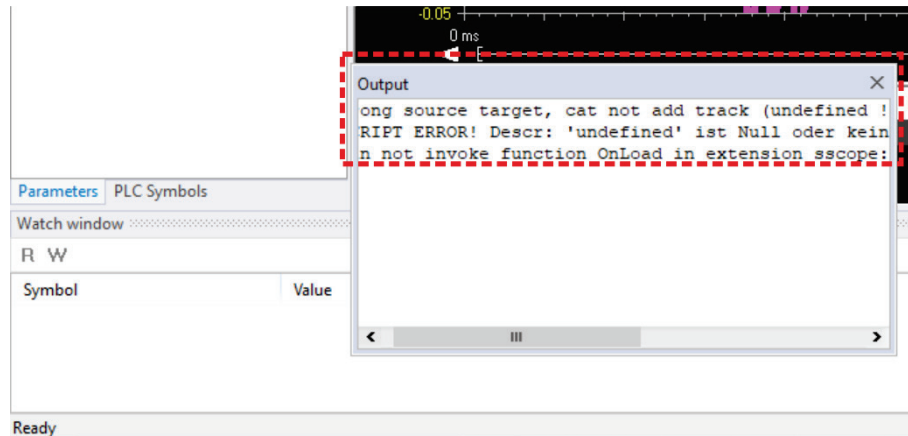
The toolbar shows up in the new position.

2.2.3 Show/Hide Tool Windows

The **View** menu allows you to show (or hide) a tool window (for example, the *Output* window, the *Parameters* panel, the *Watch* window ...). The window is then shown (hidden).

2.2.4 Floating Tool Windows

You can undock any window from its default location in AxiaManager Scope and move it anywhere, just click on its title bar and drag it to the location you want.

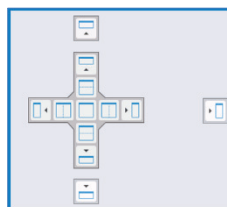


Take back a window to its most recent docked location simply double-click the title bar of the window.

2.2.5 Docking Tool Windows

AxiaManager Scope shows you a guide diamond when you drag a window to another location to help you easily re-dock the window.

While dragging a window move the mouse cursor on the position of the guide diamond you want to use as new window position.



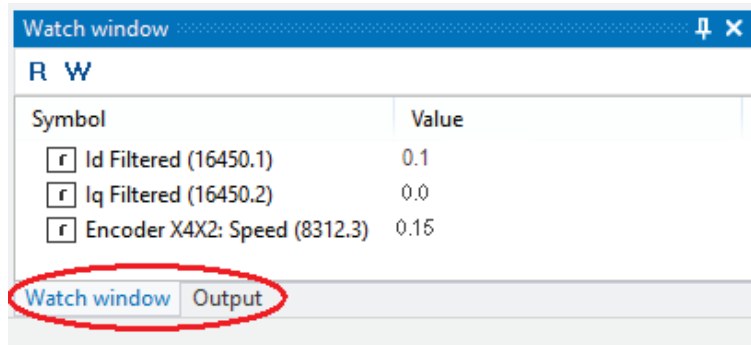
Tool windows can be fastened to one side of a frame in AxiaManager Scope or within a frame.

2.2.6 Auto-Hide Tool Windows

By the pin button on the top right corner of the window you can switch the window to auto-hide mode or to regular docking mode.

2.2.7 Merge Several Windows in One

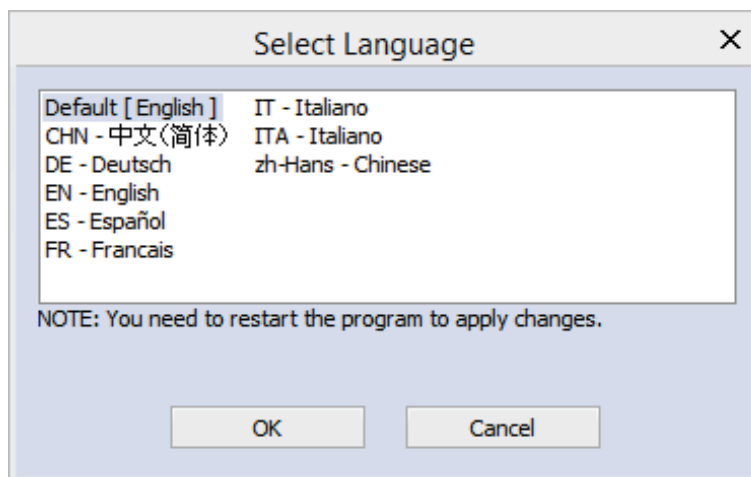
To achieve a clearer arrangement of the workspace it is possible to merge several tool windows into one. E.g.: Drag the *Output* window and drop it into the *Monitor* window.



In the resulting combined window click on the tab in the bottom left corner to choose the desired window.

2.3 Change the Language

If you click *Options>Change Language* menu you can change the language of the environment by selecting a new one from the list shown in this panel.



After selecting the new language, confirm by the clicking *OK* button. This change will be effective only the next time you start AxiaManager Scope.

3 Configuring Communication to the Inverter

If you started AxiaManager Scope from the AxiaManager the connection is taken over. To set up the communication see   VEC1en51 AXIManager GUI Manual.



- Press the *Communication settings* icon in the toolbar to change the communication.

Alternatively, you can go to *Connection > Configure communication ...* or press the button **F12**.

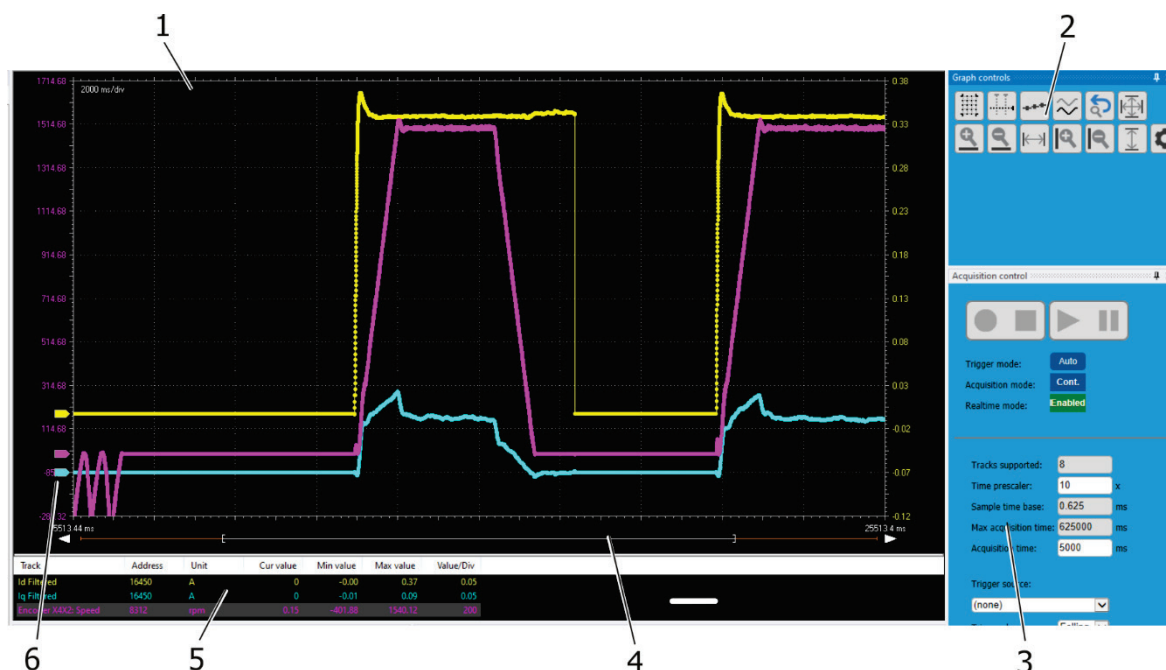
- Change the settings as needed (  VEC1en51 AXIManager GUI Manual).



- Press the *Connect* icon or button **F11** to connect the inverter.

4 Using the Oscilloscope

The Oscilloscope allows you to plot the evolution of the values of a set of parameters. The Oscilloscope consists of six elements, as shown in the following picture.



1	Chart area	2	Graph controls window
3	Acquisition controls window	4	Scroll bar
5	Tracks area	6	Cursors

The *Chart area* (1) and the *Tracks area* (5) are always visible. The *Graph controls* (2) and *Acquisition control* windows (3) can be shown or hidden as described in chapter 2.1.

Chart area (1)

This area shows the graphs of the selected tracks. It includes several items:

- Plot: area containing the curve of the tracks.
- Cursors (6) identifying up to four distinct vertical or horizontal lines. The values of each track at the intersection with these lines are reported in the corresponding columns.
- Scroll bar (4): If the scale of the x-axis is too large to display all the samples in the chart area, the scroll bar allows you to slide back and forth along the horizontal axis.

Graph controls window (2)

In this window you can make visual adaptations to the charts in the Oscilloscope. A detailed description of the function of each control is given in chapter 4.5.

Acquisition control window (3)

In this window you can control all parameters for the data acquisitions. A detailed description of the function of each control is given in chapter 4.5.

Tracks area (5)

The lower section of the Oscilloscope is a table consisting of a row for each selected track. Each row has several columns, as shown in the picture below.

Track	Address	Unit	Cur value	Min value	Max value	Avg value	Value/Div	Description
Id Filtered	16450	A	0	-0.00	0.37	0.13	0.05	
Iq Filtered	16450	A	0	-0.01	0.09	0.02	0.05	
Encoder X4X2: Speed	8312	rpm	0.15	-401.88	1540.12	375.96	200	

Column	Description
Track	Name of the variable
Address	
Unit	Unit of measurement
Cur value	Current value of the variable
Min value	Minimum value in the record set
Max value	Maximum value in the record set
Avg value	Average value in the record set
Value/Div	How many engineering units are represented by a unit of the y-axis (i. e. the space between two ticks on the vertical axis).
Description	Information about the variable in watch, like its parent POU and the execution task

4.1 Sampling Tracks

4.1.1 Normal Operation

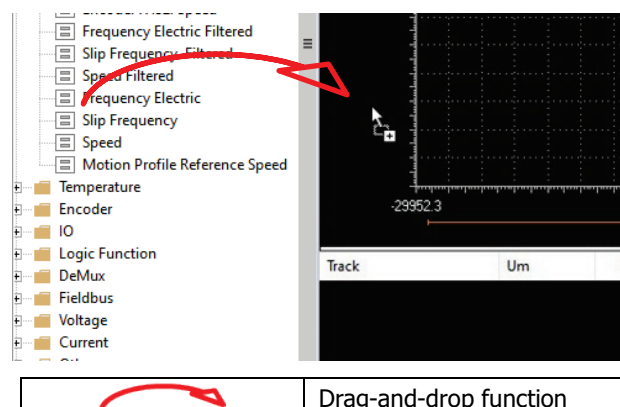
The Oscilloscope manager periodically reads from memory the value of the tracks. However, this action is carried out asynchronously, that is, it may happen that a higher-priority task modifies the value of some of the tracks while they are being read. Thus, at the end of a sampling process, data associated with the same value of the x-axis may actually refer to different execution states of the PLC code.

4.1.2 Target Disconnected

If the target device is disconnected, the curves of the dragged-in tracks get frozen, until communication is restored.

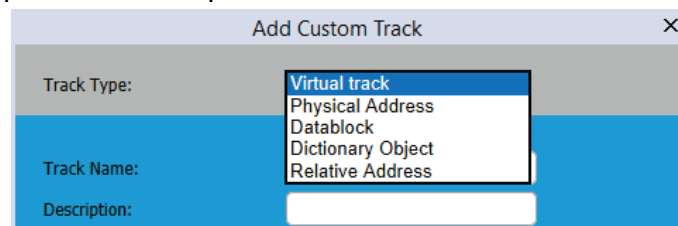
4.2 Add a Track from the Parameters Panel

In order to plot the evolution of the value of a parameter, you need to add it to the Oscilloscope. To add a parameter, you can select it in the Parameters panel and then drag-and-drop it into the chart area or the tracks area.

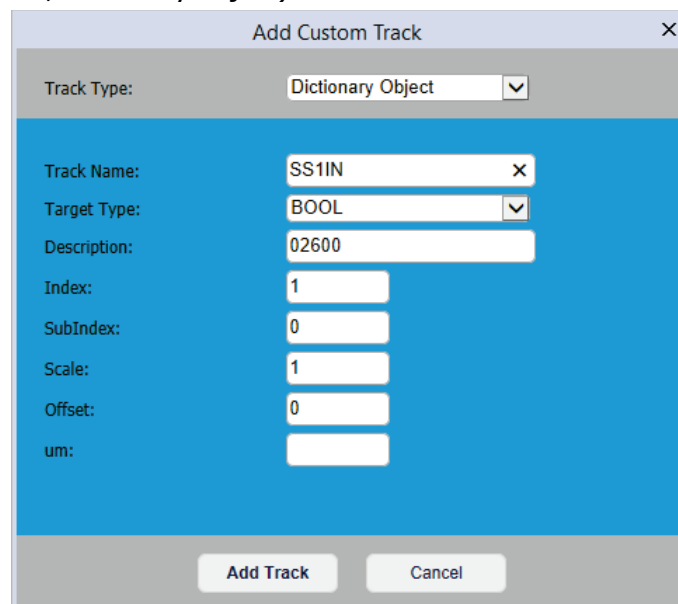


Alternatively, you can click on **Edit> Add custom track** (or **ctrl+T**) to add a track to the Oscilloscope. This function is useful if you are looking for a specific track and do not find it in the parameters panel.

- Select a track type from the drop-down menu.



- Insert any information that you know about the track (virtual track, physical or relative address, data block, dictionary object) and click on **Add Track**.



4.3 Remove a Track

If you want to remove a track from the Oscilloscope, select it by clicking on its name once, then press the **del** key.

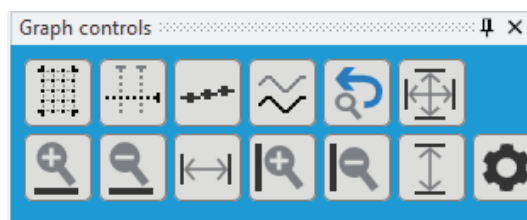
Track	Address	Unit	Cur value	Min value	Max value	Value/Div
Slip Frequency	16448	Hz	...	...	-1.80e+308	1
Encoder X412: Speed	8312	rpm	...	...	-1.80e+308	1

Alternatively, select the track you want to remove from the Oscilloscope and click on **Edit>Remove selected track**.

To remove all tracks from the Oscilloscope click on **Edit>Remove all trigger source tracks**.

4.4 Adapt View Preferences

The *Graph Control* window includes commands, which can be used to adapt the way graphs are displayed.



Icon	Command	Description
	<i>Toggle grid</i>	Choose whether to display or not the Toggle grid in the oscilloscope window (🔑📄 4.4.1)
	<i>Show measure bars</i>	Show or hide measure bars in the oscilloscope window (🔑📄 4.4.2).
	<i>Show acquisitions</i>	Highlight the single values detected during data acquisition (🔑📄 4.4.3)
	<i>Vertical split</i>	Split the graph view to show the graphs in single windows (🔑📄 4.4.4)
	<i>Show all values</i>	🔑📄 4.4.5
	<i>Undo zoom settings</i>	🔑📄 4.5.5
	<i>Horizontal zoom in</i>	
	<i>Horizontal zoom out</i>	
	<i>Horizontal show all</i>	
	<i>Vertical zoom in</i>	
	<i>Vertical zoom out</i>	
	<i>Vertical show all</i>	
	<i>View graph settings</i>	You can set the scale of the axes (🔑📄 4.4.6)

In the *Graph* menu more functions are available:

Command	Description
<i>Dynamic grid</i>	Activate/deactivate the dynamic grid function in the oscilloscope window (🔑📄 4.4.1).
<i>Show all values for selected track</i>	🔑📄 4.4.5

4.4.1 Set the Grid Options

Toggle grid

You can customize the appearance of the Oscilloscope by clicking on the *Toggle grid* icon in the *Graph controls* window.



You can choose whether to display or not the *Toggle grid*.

Dynamic grid

You can adapt the vertical scale of the grid to make it display the values corresponding to the curves shown in the graph.

Click on *Graph>dynamic grid* to activate/deactivate the dynamic grid function.



The dynamic grid function displays the exact values of single peaks of the curves, making it easier to read the scale.

4.4.2 Take Measures

The Oscilloscope includes a measure bar, which can be exploited to take some measures on the chart; in order to show and hide them, click on the *Show measure bars* icon in the *Graph control* window.



If you want to measure a time interval between two events, you just have to move one bar to the point in the graph that corresponds to the first event and the other to the point that corresponds to the second one.

Vertical cursors



The time interval between the two bars is shown in the top left corner of the chart.

You can use a measure bar also to read the value of all the tracks in the Oscilloscope at a particular moment: Move the bar to the point in the graph which corresponds to the instant you want to observe.

In the table below the chart, you can now read the values of all the tracks at that particular moment.

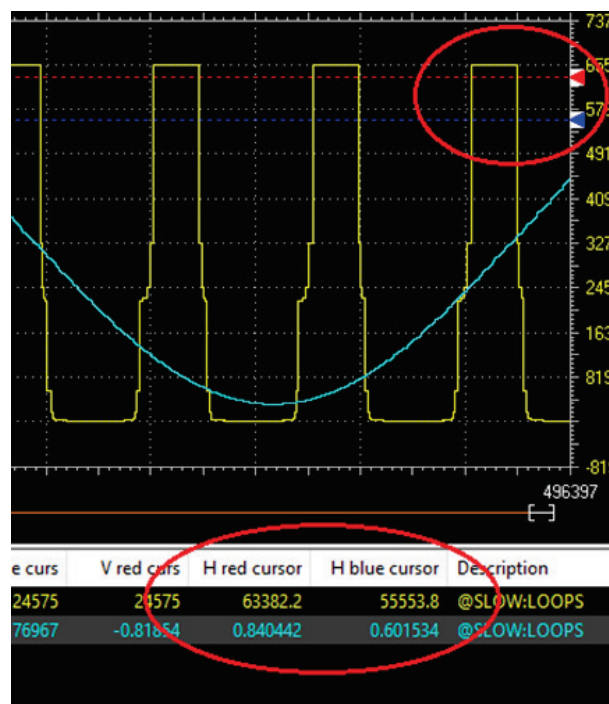
Track	Min value	Max value	Cur value	Value/Di	V blue curs	V red curs	H red cursor	H blue cur...	Descriptio
@SLOW:LOOPS.LOOPSV...	0	65535	22015	8191.48	24575	24575	53247.2	12287.8	@SLOW:L
@SLOW:LOOPS.Y	-1	1	0.977755	0.25	0.0176967	-0.81854	0.66766	-0.582338	@SLOW:L

Column	Description
<i>V Blue cursor</i>	Value of the variable at the intersection with the line identified by the vertical blue cursor
<i>V Red cursor</i>	Value of the variable at the intersection with the line identified by the vertical red cursor

In addition to the vertical bar, by enabling the measure bars, you will also find two horizontal bars on the right of the grid. They work the same way of the vertical bars, but they take values on the vertical axis.

Horizontal cursors

Like the vertical bars, also the horizontal bars have their values displayed for every track in the table below the chart.

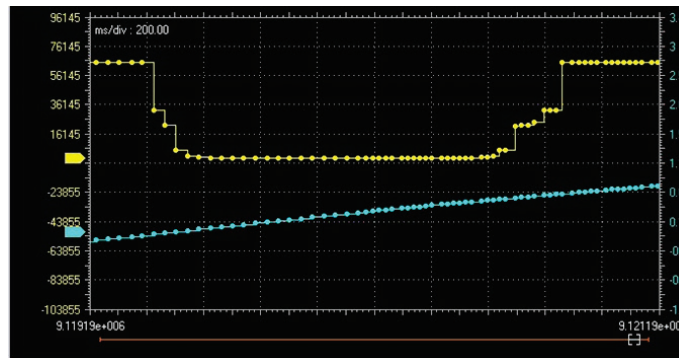


Column	Description
<i>H Red cursor</i>	Value of the variable at the intersection with the line identified by the horizontal red cursor
<i>H Blue cursor</i>	Value of the variable at the intersection with the line identified by the horizontal red cursor

4.4.3 View Samples



If you click on the *Show acquisitions* icon, the tool highlights the single values detected during data acquisition.

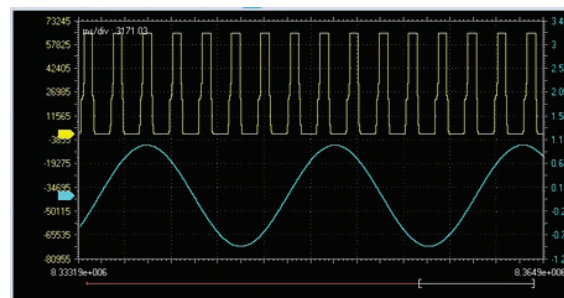
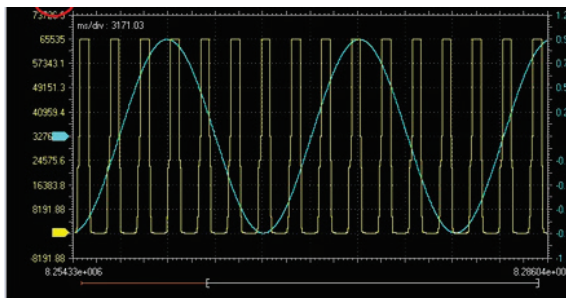


You can click on the same icon again, in order to go back to the default view mode.

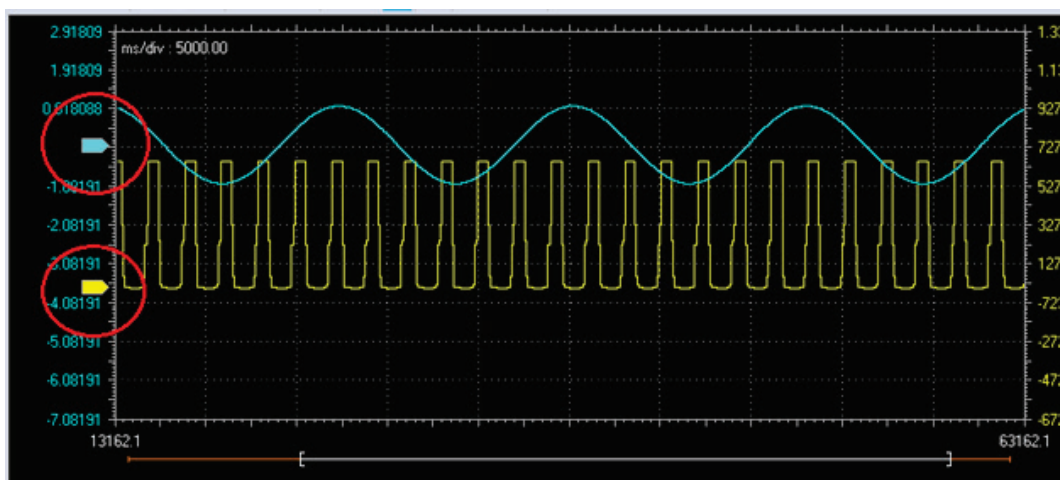
4.4.4 Split Tracks



When you are watching the evolution of two or more tracks, you may want to split the respective tracks. For this purpose, click on the *Vertical split* icon in the Oscilloscope toolbar.



To separate traces you can also manually move them; to do so grab the corresponding-colored flag on the left of the chart and drag it to the desired location.



4.4.5 Change the Zoom

In the Oscilloscope toolbar you can also find icons for zoom in and out, and also to force the Oscilloscope to display all the samples.



These options are axis-related, so you can zoom in, zoom out and show all samples for the **horizontal** axis alone.



The horizontal zoom functions apply to all actual tracks shown in the scope.



You can zoom in, zoom out and show all samples for the **vertical** axis alone.



The vertical zoom functions apply to the track selected in the tracks area.



Click on the *Undo Zoom settings* icon to reverse your latest changes of the zoom view step by step.

Zoom in by marking an area

An easy way to zoom in for a specific detail is to drag a rectangle with the left mouse-button in the graphic display. Release the mouse-button and the display will zoom into the selected area.

Show all values



You can also quickly force the oscilloscope to display all samples for both horizontal and vertical axis (which means show all values) with this icon.

Show all values for selected track

To force the oscilloscope to display the samples of a single track, select the track and click *Graph>Show all values for selected track*.

4.4.6 Set the Scale of the Axes



When you open the Oscilloscope, AxiaManager Scope applies a default scale to the axes. However, if you want to set a different scale, you can do that by opening the *Graph Settings* by clicking on the corresponding icon in the toolbar.

The *Graph Settings* window will open, allowing you to change both the vertical and the horizontal axis as well as further graphical settings.

Graph Settings

Show grid ☒ Horizontal scale 3102.69 ms/div

Show time bar ☒ Time reference ☐ Zero based ☒ Start recording ☐ Absolute

Show tracks list ☒ Time display ms

Name	Unit	Value/div	Offset	Time shift (ms)	Color	Hide
Id Filtered	A	0.0462272	-0.184311		Yellow	☐
Iq Filtered	A	0.0127722	-0.0414391		Cyan	☐
Encoder X4X2: Speed	rpm	242.75	-569.118		Purple	☐
						☐
						☐
						☐
						☐
						☐

OK Cancel Apply

Show grid

Tick this control to display a grid in the *Chart area* background.

Show time bar

The scroll bar at the bottom of the *Chart area* is available as long as this box is checked.

Show tracks list

The Variables window is shown as long as this box is checked, otherwise the *Chart area* extends to the bottom of the graphic trigger window.

Horizontal scale

The horizontal scale is the same for all active tracks. **ms/DIV** specifies the time base (here 3102.9 ms/DIV). This value refers to the number of samples per unit of the x-axis. By unit of the x-axis the space is meant between two vertical lines of the background grid.

The timeline can be adjusted with the parameters **Time reference** and **Time display**.

Tracks list

In the tracks list you can set the colors of each track, the vertical scale and the offset value.

The **vertical scale** can be different for every track, you can specify the desired scale in the edit box labeled *Value/div*. This parameter determines the scaling of the signal on the display. Its value is always referenced to the defined physical units of the signal. Special handling applies to boolean signals, indicated with "B". The boolean value FALSE is always displayed as 0.0, the boolean value TRUE is always displayed as 1.0.

Unit

Unit of measurement, printed in the table of the *Variables* window.

Value/div

Δ value per unit of the y-axis. By unit of the y-axis is meant the space between two horizontal lines of the background grid.

The **offset** is set in absolute numbers and is always referenced to the defined physical unit of the parameter. The value of the desired offset can be entered directly and accepted with **ENTER**.

The **color** of the displayed signal is set with the color dropdown menu.

Hide

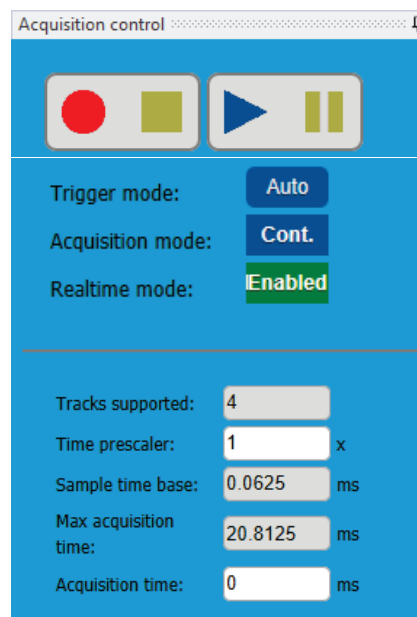
Check this flag to hide selected track on the graph.

- Press *Apply* to make your changes effective, or press *OK* to apply your changes and to close the options tab.

4.5 Control the Data Acquisition

The *Acquisition Control* window includes commands, which can be used to control the acquisition process. This paragraph focuses on these commands.

Note that all the commands in the toolbar are disabled if no track has been added to the Oscilloscope.



Icon	Command	Description
	<i>Run/stop acquisition</i>	Starts/stops the track acquisition.
	<i>Stop acquisition display</i>	Stops the graph display.
	<i>Pause acquisition display</i>	Lets you pause the graph display.
	<i>Start acquisition display</i>	The currently acquired data is displayed in the chart area.

In the *Acquisition* menu more functions are available:

Command	Description
<i>Download last acquisition</i>	Lets you download your last acquisition.
<i>Continuous capture</i>	Selects the acquisition mode <i>Continuous capture</i> ( 4.5.3).
<i>Single sequence capture</i>	Selects the acquisition mode <i>Single sequence capture</i> ( 4.5.3).
<i>Auto trigger mode</i>	Selects the <i>Auto trigger</i> mode ( 4.5.2).
<i>Normal trigger mode</i>	Selects the <i>Normal trigger</i> mode ( 4.5.2).
<i>Force trigger</i>	Selects the <i>Force trigger</i> function ( 4.5.2).
<i>Import project from target</i>	Reloads all remote logs from target ( 4.5.7).

4.5.1 Start and Stop Data Acquisition



Run/stop acquisition:

When you add a parameter to the Oscilloscope via drag-and-drop, data acquisition begins immediately. Alternatively, you can start the acquisition by clicking on *Acquisition > Run acquisition* or press **F3**.

The acquisition status changes from "Idle" to "Recording".

Note that the graph display is only displaying the track when you start acquisition display.



Start acquisition display:

If you press this button the acquisition becomes visible in the chart area.



Pause/restart acquisition display:

You can suspend the acquisition by clicking this button. The curve freezes (while the process of data acquisition is still running in background), until you click this button again.



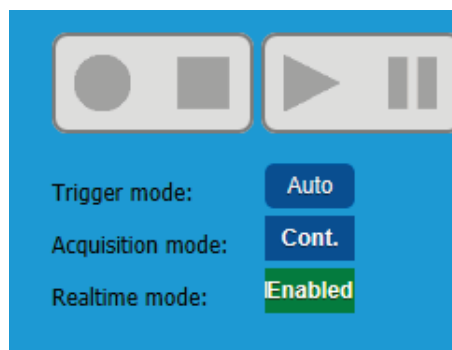
Stop acquisition display:

To stop the graph click on this button.

In this case, when you click on *Restart acquisition*, the evolution of the value of the parameter is plotted from scratch.

4.5.2 Select Trigger Mode:

In order to trigger on an event, the data acquisition must be activated with *Run/Stop Acquisition* button.



Trigger mode:

The trigger mode can be selected in the *Acquisition* menu. Select either *Auto trigger mode* or *Normal trigger mode*.

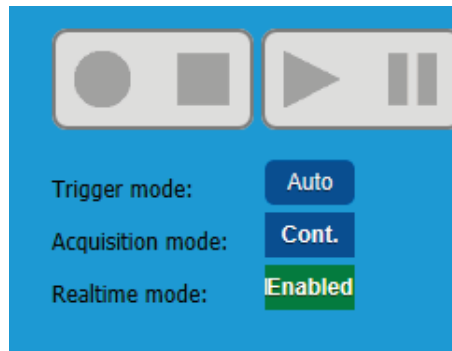
Auto (automatically selected if no *Trigger source* is selected)

In the *Auto trigger mode*, a new display is shown with each filling of the buffer.

Normal (automatically selected if a *Trigger source* is selected)

In *Normal trigger mode* a new display is generated after the trigger has occurred and the storage buffer completely filled.

4.5.3 Select Acquisition Mode



The acquisition mode can be either selected by a mouse click on the button to the right of the “Acquisition mode” text or in the [Acquisition](#) menu. Select either *Single sequence capture* or *Continuous capture*.

Single

(automatically selected if realtime mode is set to `Disabled`)

For the *Single sequence capture* mode of operation, the buffer is completely filled once after the occurrence of the trigger incident and then the display updated.

If you intend to use the trigger function (see chapter 4.5.6), the Acquisition mode should be set to “Single”.

Continuous

(automatically selected if realtime mode is set to `Enabled`)

In *Continuous capture* mode the display runs through continuously and the current acquired data is visible in the display. The screen can be started/stopped with the Run/Stop data button.

If the buffer is full, the oldest data are deleted and replaced with current new data.

4.5.4 Select Realtime Mode

The *Realtime* mode can be selected by a mouse click on the button to the right of the “Realtime mode” text.

Disabled

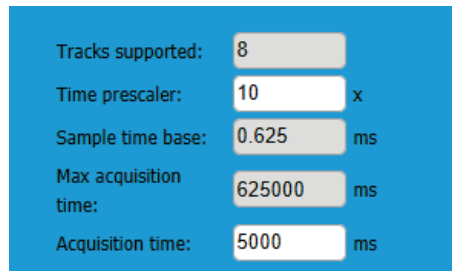
In order to be able to use the trigger function, the Realtime Mode has to be disabled. By entering a Trigger source (see chapter 4.5.6) other than “none”, the Realtime Mode switches to “Disabled” automatically.

If you set the *Realtime* mode to `disabled`, the Acquisition mode will switch to `Single`.

Enabled

If you set the *Realtime* mode to `enabled`, the Acquisition mode will switch to `Continuous`., but can be changed back to `Single` manually.

4.5.5 Set Acquisition Time



Tracks supported

This is a display panel showing the max. number of supported tracks. The value is depending on the transmission speed of the connection (USB or Bluetooth) and the number of tracks.

Sample time base

This is a display panel showing the sample time actually possible. The value is depending on the transmission speed of the connection and the number of tracks. The *Sample time base* can be changed in the *Time prescaler* entry field.

Time prescaler

Set a time prescaler in this entry field to determine the acquisition time. The prescaler is a factor which influences the value in the *Acquisition time* entry field. If the *Sample time base* is 0.0625 ms and you enter the factor "10", the sample time base changes to 0.625 ms.

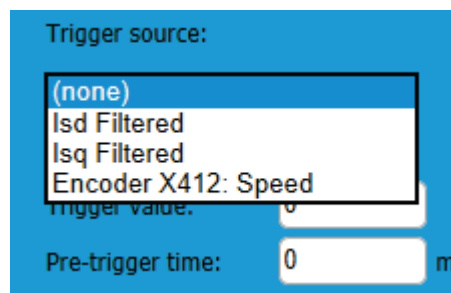
Max. acquisition time

This display panel shows the max. available acquisition time. The value is depending on the number of the variables you want to watch. The number in this field represents the maximum time you can collect samples for each variable.

Acquisition time

Displays the length of the acquisition. The max. acquisition time is shown in the above display panel. The recording stops the acquisition, whenever the buffer has been completely filled.

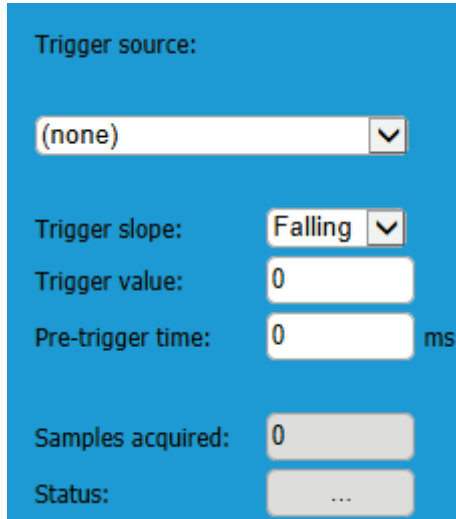
4.5.6 Select Trigger Source



Select the track for which triggering is to be carried out. The drop-down menu offers the selection of a track added to the track area.

Selecting a track causes the trigger mode to change from *Auto* mode to *Normal* mode. Auto mode is only possible if you select trigger source *none*.

Trigger slope



The setting of the trigger edge positive/negative is carried out with the *Falling / Rising* selection.

Trigger value

In this entry field you can enter the trigger level. When the trigger source exceeds this level the acquisition will start. The possible setting value is referred to the unit of the selected track. The value 0 refers to the zero point of the selected track.

Pre-trigger time

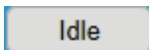
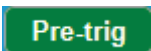
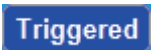
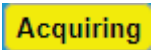
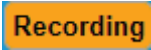
Here, you can enter a time span before the trigger. This makes it possible to make the track visible before the trigger value was exceeded.

Samples acquired

This display panel shows the number of samples acquired.

Status

This read-only display shows the state of the Trigger function. It can assume the following values.

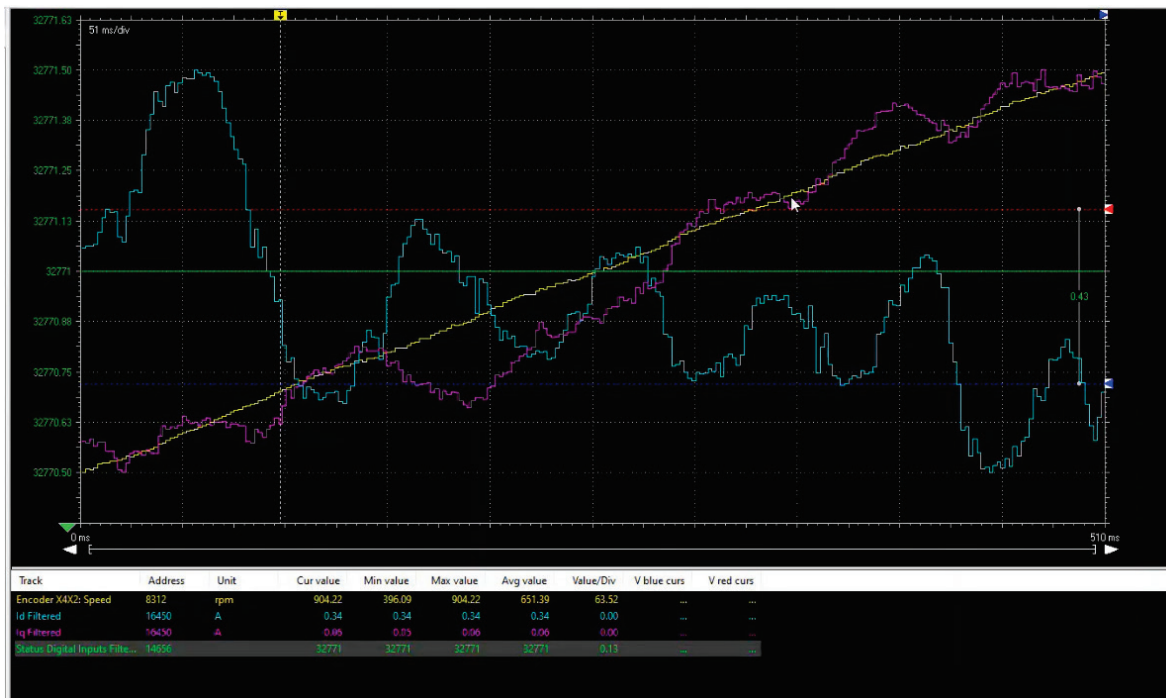
	System is not triggering. Triggering has not been started yet or it has been stopped by user or a halt condition has been reached.
	No samples taken, as the trigger has not occurred during the current acquisition.
	Samples collected, as the trigger has occurred during the current acquisition.
	Sample(s) collected, as the trigger has occurred during the current task execution.
	The acquisition has started.
	The <i>Samples acquired</i> display indicates that a number of samples has been collected satisfying the user request or memory constraints, thus the acquisition process is stopped.
	Communication with target interrupted. The state of the trigger cannot be determined.

Example:

Let us say you intend to acquire the Speed parameter from the point when it rises above 500 rpm. You also want to see how the speed curve acted 100 ms before it exceeded the threshold of 500 rpm. In this case, the settings should be as follows:

Parameter	Value
Trigger mode	Normal
Acquisition mode	Single
Realtime mode	Disabled
Acquisition time	e. g. 510 ms (depending on the number of selected tracks and time prescaler value)
Trigger source	Encoder X4X2: Speed
Trigger slope	Rising
Trigger value	500 [rpm]
Pre-trigger time	100 [ms]

By pressing the *Run/stop acquisition* button, the acquisition starts. When the motor is started and the speed rises above 500 rpm, the trigger starts and the acquisition is displayed in the *Graph area* (same function as the *Start acquisition display* button). The acquisition stops after 510 ms. The resulting curves could be as follows:



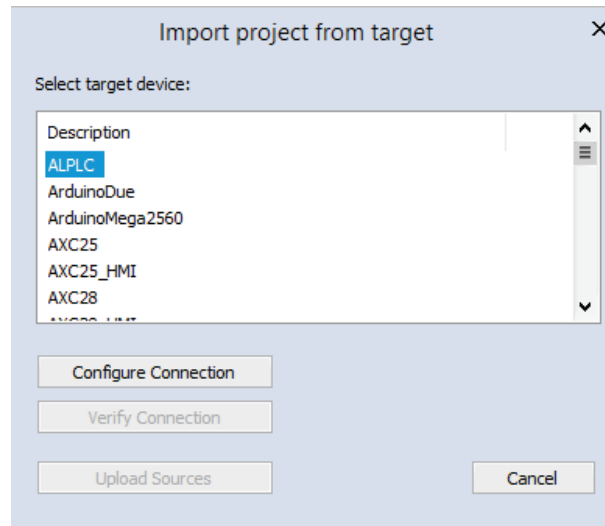
The yellow cursor shows the trigger point of the motor speed.

4.5.7 Import Project from the Target Device

Depending on the target device you are interfacing with, you are able to upload a working AxiaManager Scope project from the target itself.

In order to upload the project from the target device, follow the procedure below:

- Click the *Acquisition>Import project from target* menu, which opens the Target list dialog box.



- From the shown list select the target device from which you want to upload the project.
- Configure Connection* with correct parameters ( 3 for more details).
- You can test the connection with the target device by *Verify Connection* button. AxiaManager Scope tries to establish the connection and reports the test result.
- If the connection is available confirm the operation by clicking on the *Upload Sources* button. When the application upload completes successfully, the project is open and ready for editing.

5 Manage AxiaManager Scope Files

This chapter focuses on AxiaManager Scope files.

An AxiaManager Scope file (.bse file) includes all the required elements to properly work with graphs including all settings needed to run the oscilloscope.

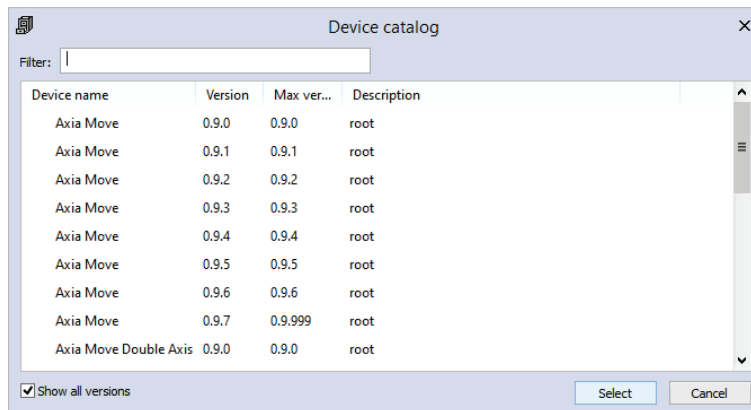
The following paragraphs explain how to organize the graph files.

5.1 Create a New File

To start a new project, click  **File>New** of the AxiaManager Scope's menu or click the button *New acquisition ...* in the *Welcome* page (when no project is open).



This causes a dialog box to appear, which lets you create a new acquisition.



You are required to select the Axia device from the *Device catalog*. You can set a filter by typing the Axia device you want to select in the *Filter* field.

The list of devices depends on the contents of AxiaManager Scope catalog, which contains the list of all available devices.

5.2 Open an Existing File

To open an existing project, click  **File>Open** of AxiaManager Scope's menu, or click the button *Open acquisition ...* in the *Welcome* page (when no project is open). This causes a dialog box to appear, which lets you load the directory containing the project and select the relative project file.



This causes a dialog box to appear, which lets you load the directory containing the project and select an existing acquisition.

5.3 Load Offline Tracks

Click on **File>Load offline tracks...** to reload previously stored recordings. The method of loading tracks helps you to analyze acquisitions made in other projects or applications.

To load such files, AxiaManager Scope can be started in stand-alone-mode.

5.4 Save the Acquisition

When you make any change to the acquisition you are required to save it in order to persist that change. To save the file, you can select the corresponding item **File>Save**.

You are required to enter the name of the new acquisition in the *Name* text area.

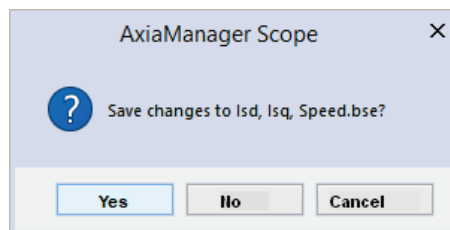
The file suffix of AxiaManager Scope files is **.bse**.

5.5 Save to an Alternative Location

You can use the **File>Save As ...** command to rename the file, change its format or modify the location of where you want to save the file.

5.6 Close the Acquisition

You can terminate the working session either by explicitly closing the acquisition or by exiting AxiaManager Scope. In both cases, when there are changes not yet persisted to file, AxiaManager Scope asks you to choose between saving and discarding them.



To close the file, select the item **File>Close**; AxiaManager Scope shows the *Welcome* page, so that you can rapidly start a new working session.

5.7 Print the Graph

Follow this procedure to print a view of the data plotted in the Oscilloscope:

- Either pause or stop the acquisition.
- Only the elements included in the view will be printed, so move the time slide bar and adjust the zoom, in order to include in the view the elements you want to print.
- Select the item **File>Print Graph...**

5.8 Export Tracks

The Export function enables a data export in different formats. Possible formats are:

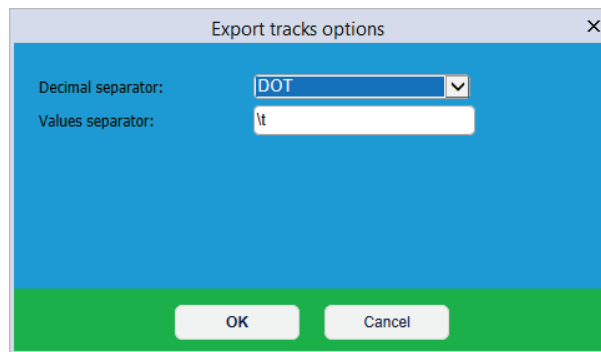
- *.tsv: TSV tab separated file (for data view).
- *.OSCX: Oscilloscope XML files

You can use the export function to send data for offline analyzation or for further processing in different applications, e. g. in Microsoft Excel.

Click on *File> Export tracks...* to export the track, change its format and modify the location of where you want to save the exported track.

Click on *File> Export tracks (visible samples only)...* to save only the visible samples for a better focus on the selected view.

In the menu *File> Export tracks options...* you can select the separating character for decimals and an individual value separator. This makes the data export easier for further processing and clearer presentation.

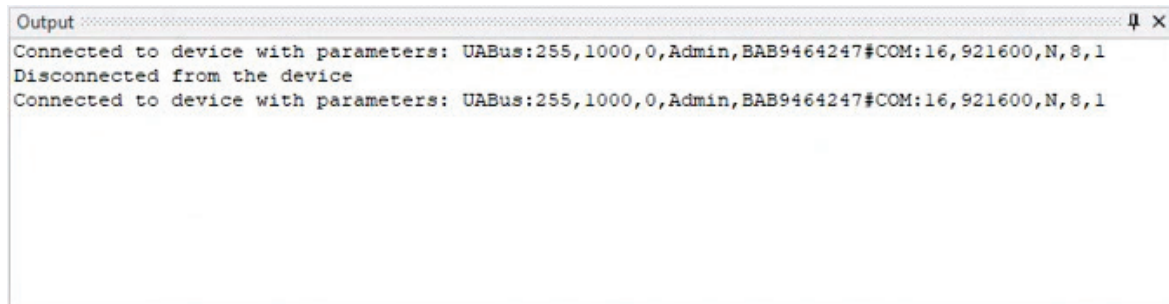


6 User Interface Reference

This chapter lists all functionalities of AxiaManager Scope. It is intended as a reference guide, where you can look for functions in the windows, menus and toolbars.

6.1 Using the Output Window

The *Output* window is the place where AxiaManager Scope reports its output messages.

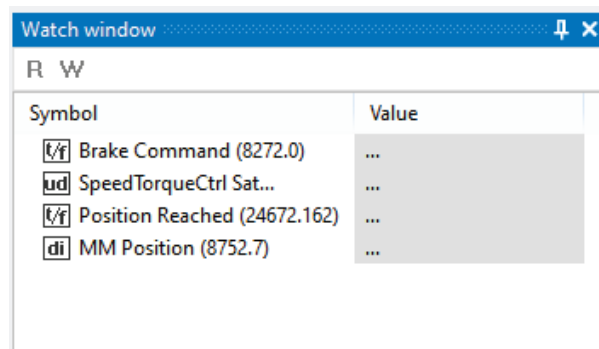


Reading/writing parameters or polling operations can be logged to show their results in this window by selecting *Menu > Options > Debug log*.

6.2 Using the Watch Window

Use the *Watch window* to view READ, WRITE and Application error message reports.

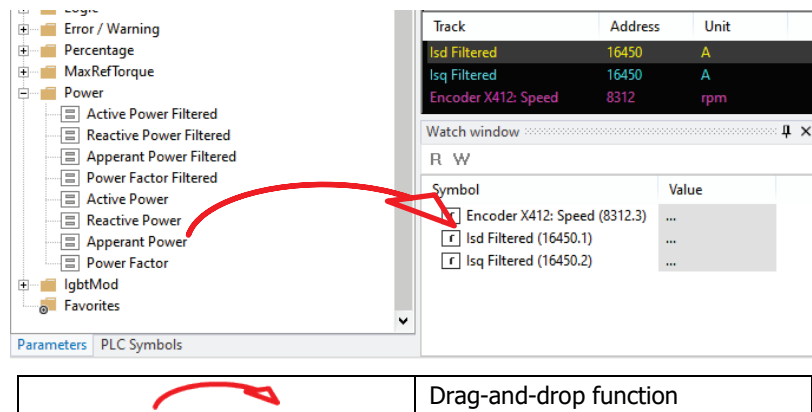
The *Watch* window allows you to monitor the current values of a set of objects. Being an asynchronous tool, the Watch window does not guarantee synchronization of values. Therefore, when reading the values of the variables in the *Watch* window, be aware of the possibility that they may refer to different execution cycles of the corresponding task.



The information shown includes the PLC symbol, the object name and its value. If the target device is disconnected, the *Value* column contains three dots.

Add objects to the Watch window

In order to add an object, select it in the *Parameters* window and drag-and-drop it in the *Watch* window.



Remove objects from the Watch window

If you want an object from the *Watch* window, select it by clicking on its name once, then press the *Del* key.

Read/Write message reports

The watch function reads the object values periodically. This action is carried out asynchronously, so it may be necessary to refresh the value reading by pressing one of these buttons:



Press this button to read the selected watch item.



Press this button to write the selected watch item.

6.3 Menu Bar Reference

In the following tables you can see the list of all AxiaManager Scope's commands. You may find some disabled commands or even some unavailable commands if there is no logical relation to the active project.

6.3.1 File Menu

Command	Icon	Key	Description
<i>New</i>		<i>Ctrl+N</i>	Creates a new AxiaManager Scope project.
<i>Open...</i>		<i>Ctrl+O</i>	Opens an existing AxiaManager Scope project.
<i>Save</i>		<i>Ctrl+S</i>	Saves the current open project.
<i>Save As ...</i>			Saves the current open project specifying new name, location and extension.
<i>Close</i>			Closes the open project.
<i>Load offline tracks...</i>			Lets you load offline track a library to the graph.
<i>Export tracks...</i>			Lets you export an AxiaManager Scope track to a library.
<i>Export tracks (visible samples only)</i>			Lets you export the visible samples of an AxiaManager Scope track to a library.
<i>Export tracks options...</i>			Opens the <i>Export tracks options</i> window.
<i>Print graph...</i>		<i>Ctrl+P</i>	Prints the currently active graphs.
<i>Exit</i>			Closes AxiaManager Scope.

6.3.2 Edit Menu

Command	Icon	Key	Description
<i>Remove selected track</i>		<i>DEL</i>	Deletes the selected track from the graph.
<i>Add custom track</i>		<i>Ctrl+T</i>	Adds a custom track to the graph.
<i>Remove all trigger source tracks</i>			Removes all trigger source tracks from the graph.

6.3.3 View Menu

Command	Icon	Key	Description
<i>Output</i>			Shows or hides the <i>Output</i> window.
<i>Graph controls</i>			Shows or hides the <i>Graph controls</i> window.
<i>Acquisition control</i>			Shows or hides the <i>Acquisition control</i> window.
<i>PLC Symbols</i>			Shows or hides the <i>PLC Symbols</i> panel.
<i>Parameters</i>			Shows or hides the <i>Parameters</i> panel.
<i>Watch window</i>			Shows or hides the <i>Watch</i> window.
<i>Main toolbar</i>			Shows or hides the <i>Main</i> toolbar.
<i>Status Bar</i>			Shows or hides the <i>Status</i> bar.

6.3.4 On-line Menu

Command	Icon	Key	Description
<i>Set up communication...</i>		<i>F12</i>	Lets you set the properties of the connection to the target.
<i>Connect</i>		<i>F11</i>	AxiaManager Scope tries to establish a connection to the target.

6.3.5 Acquisition Menu

Command	Icon	Key	Description
<i>Run acquisition</i>		<i>F3</i>	Starts the track acquisition.
<i>Stop acquisition</i>		<i>F4</i>	Stops the track acquisition.
<i>Download last acquisition</i>		<i>F5</i>	Lets you download your last acquisition.
<i>Pause acquisition</i>		<i>F6</i>	Lets you pause the track acquisition.
<i>Continuous capture</i>			Selects the acquisition mode <i>Continuous capture</i> .
<i>Single sequence capture</i>			Selects the acquisition mode <i>Single sequence capture</i> .
<i>Auto trigger mode</i>			Selects the <i>Auto trigger</i> mode.
<i>Normal trigger mode</i>			Selects the <i>Normal trigger</i> mode.
<i>Force trigger</i>			Selects the <i>Force trigger</i> function.
<i>Import project from target</i>			Reloads all remote logs from target.

6.3.6 Graph Menu

Command	Icon	Key	Description
<i>Toggle grid</i>			Choose whether to display or not the Toggle grid in the oscilloscope window.
<i>Dynamic grid</i>			Activate/deactivate the dynamic grid function in the oscilloscope window
<i>Show measure bars</i>			Show or hide measure bars in the oscilloscope window.
<i>Show acquisitions</i>			Highlight the single values detected during data acquisition
<i>Vertical split</i>			Split the graph view to show the graphs in single windows.
<i>Undo zoom settings</i>			Reverse the latest changes of the zoom view.
<i>Show all values</i>			Force the oscilloscope to display all samples for both horizontal and vertical axis.
<i>Show all values for selected track</i>			Force the oscilloscope to display the samples of a single track.
<i>Horizontal zoom in</i>		<i>Ctrl+Shift+F12</i>	Zoom in for in horizontal axis.
<i>Horizontal zoom out</i>			Zoom out in horizontal axis.
<i>Horizontal show all</i>		<i>Ctrl+→</i>	Show all samples in horizontal axis.
<i>Vertical zoom in</i>		<i>Ctrl+←</i>	Zoom in for in vertical axis.
<i>Vertical zoom out</i>		<i>Ctrl+Shift+←</i>	Zoom out in vertical axis..
<i>Vertical show all</i>		<i>Ctrl+↑</i>	Show all samples in vertical axis.

6.3.7 Options Menu

Command	Icon	Key	Description
<i>Change language...</i>			Open the <i>Select Language</i> menu. You can change the language of the environment by selecting a new one from the list shown in this panel.
<i>Debug log</i>			Opens a dialog where you can select the types of logs to be listed in the <i>Output</i> window.

6.3.8 Help Menu

Command	Icon	Key	Description
<i>About...</i>			Credits and version information.

6.4 Main Toolbar Reference

In the following tables you can see the list of all AxiaManager Scope's toolbars. The buttons making up each toolbar are always the same, whatever the currently active document. However, some of them may produce no effect if there is no logical relation to the active document.



Icon	Command	Description
	<i>New</i>	Creates a new AxiaManager project.
	<i>Open...</i>	Opens an existing AxiaManager project.
	<i>Save</i>	Saves the current open project.
	<i>Save As ...</i>	Saves the current open project specifying new name, location and extension.
	<i>Load offline tracks</i>	Lets you load offline track a library to the graph.
	<i>Remove selected tracks</i>	Deletes the selected track from the graph.
	<i>Add custom track</i>	Adds a custom track to the graph.
	<i>Connect</i>	AxiaManager Scope tries to establish a connection to the target.
	<i>Communication settings</i>	Lets you set the properties of the connection to the target.
	<i>Open function editor</i>	Opens the current project in AxiaManager PLC. This enables you to take the sources of the selected tracks and modify them in the AxiaManager PLC. The modified sources are directly usable after returning back to AxiaManager Scope.

7 Run AxiaManager Scope via command prompt

It is possible to start AxiaManager Scope in batch script (unattended mode) if you follow these steps:

1. Configure Acquisition Settings:

- Start AxiaManager Scope and open an existing .bse file.
Or:
- Configure a new acquisition with the necessary settings (e.g., inverter communication, channels, etc.).
- Test the acquisition to ensure it works as expected.
- Save the current project to a .bse file.

2. Run AxiaManager Scope from a command prompt:

- Open a command prompt (cmd.exe).
- Use the following commands:
`AxiaManagerScope.exe "C:\Users\Public\Desktop\batch.bse" 1
/DOWNLOADDATA
/EXPORTTRACKS:"C:\Users\All\Public\batch.csv"
/SAVE`

Where:

- The first argument is the .bse file path containing the acquisition settings. This is mandatory.
Remember to adjust the file path and file name according to your specific setup.
- `/DOWNLOADDATA` automatically triggers record and playback without any user interaction. This is mandatory.
- `/EXPORTTRACKS:"filename.csv"` specifies the CSV file to download extracted data. This is optional.
- `/SAVE` saves the .bse file again. This is optional.

¹ Replace "C:\Users\Public\Desktop\batch.bse" with the actual path to your saved .bse file.

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