KPA EtherCAT Studio 2 Advantages

KPA EtherCAT Studio 2 supports all functionality of KPA EtherCAT Studio 1 and provides a set of new features that widen the abilities of the application, makes the work with it advanced, easier, and user oriented.

In version 2 we revised architecture an do our best to avoid all limitations of previous version and improve the extend Studio functionality.

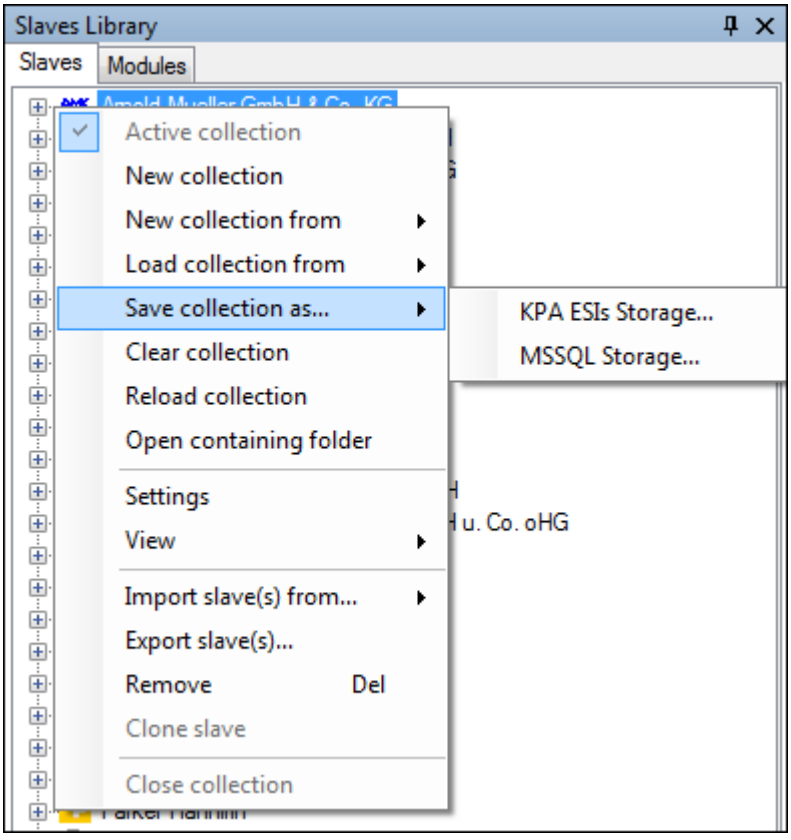
In comparison with the Studio 1 the following features were implemented in Studio 2:

Slave Library

uESI

KPA EtherCAT Studio 2 gives an opportunity to create user's slaves descriptions (uESI-s) based on ESI-s (EtherCAT Slave Information XML files) provided by vendors. uESI feature allows the user to edit slave's description: rename the slave, change PDO-s configuration and other parameters, add uESI attributes etc.

A set of uESI-s is called Slaves Library collection. The user can load it from ESI-s and load/save it from/as KPA ESIs Storage (XML file) or MS SQL Storage. It is possible to edit the collection: export, remove and clone a separate uESI or import uESI-s/ESI-s from different sources.

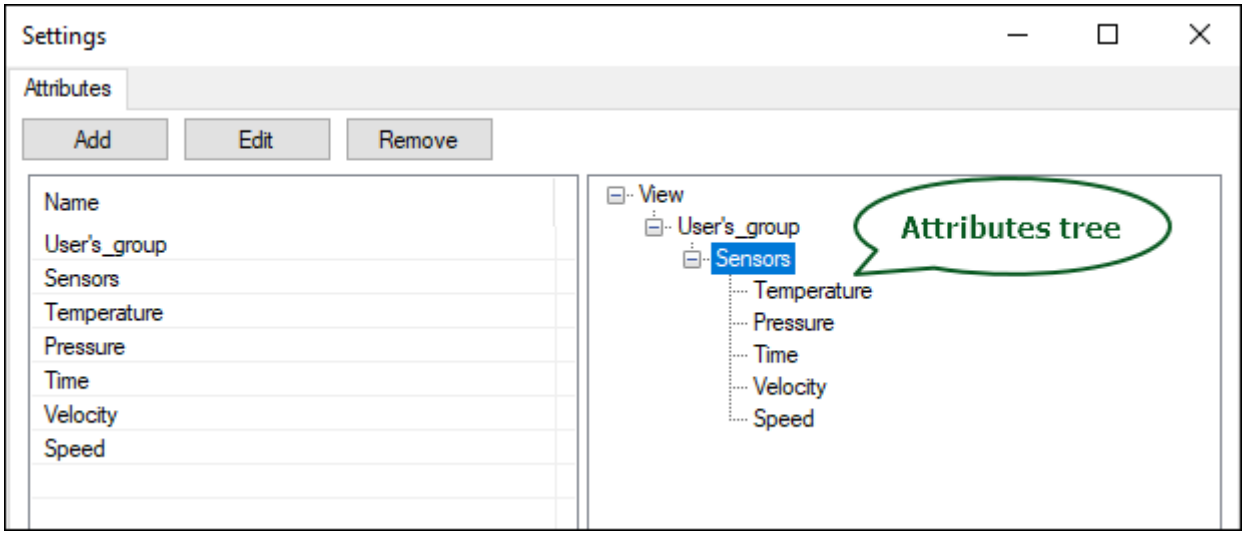


The user may create a few collections but only the active one is used while scanning the bus configuration and adding a slave to the Configuration Tree with the help of the shortcut menu.

uESI attributes

It is possible to add attributes to uESI-s collection, assign them to slaves and then use these attributes according to the user's needs, for example:

- to build the collection tree
- to find a uESI in the collection
- to select a uESI while applying another ESI



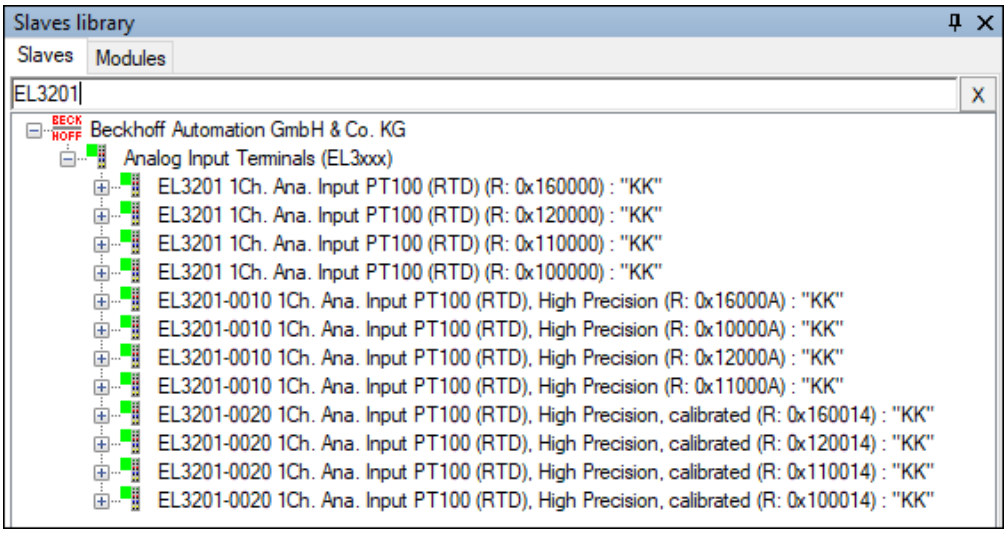
Library loading performance

In comparison with Studio 1 in Studio 2 the Slaves Library loading became faster and the Salve Library takes up less space thanks to new function that allows to read ESI partially and load only those setting that are required.

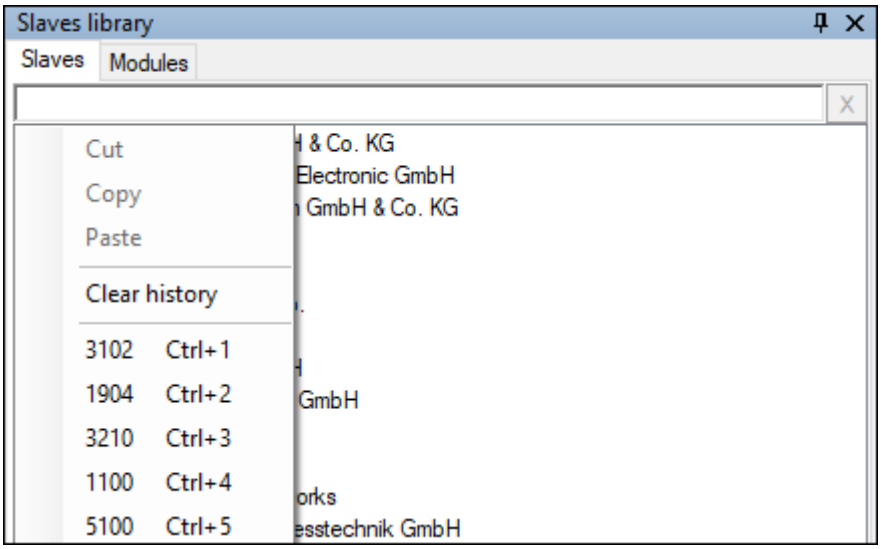
Search

Appears the possibility to search slaves by its name or part of it or call up the history of searches.

To find the necessary Slave, user should enter the Slave name or part of it into the search bar of the Slave Library pane.

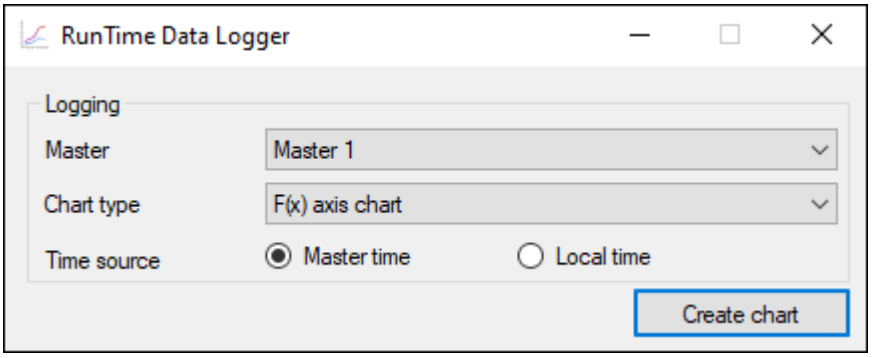


The search history saves the last nine quires. To call up the history of searches, right-click the search bar.

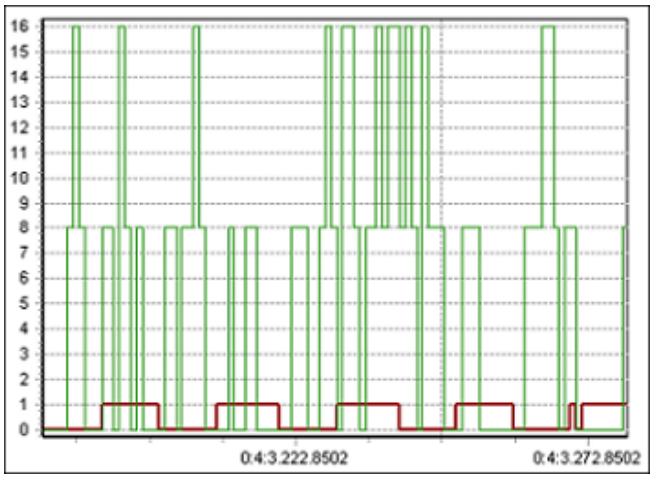


Run time data logger

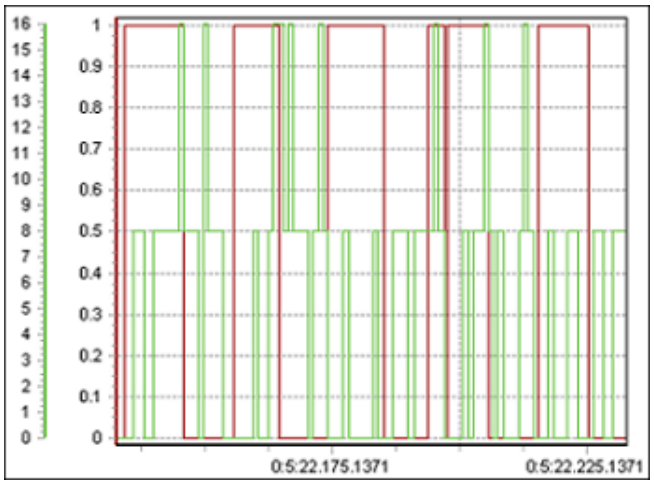
This tool, in comparison with the Data logger presented in Studio 1, permits to observe signals variation in run-time mode. As well there is an opportunity to set the type of chart: Line, Multiple axes or F(x). The set of displayed signals is selectable. It is possible to set Viewing interval before logging begins. After logging stops, logged data (changing signals) may be reviewed again. Just move on the time line.



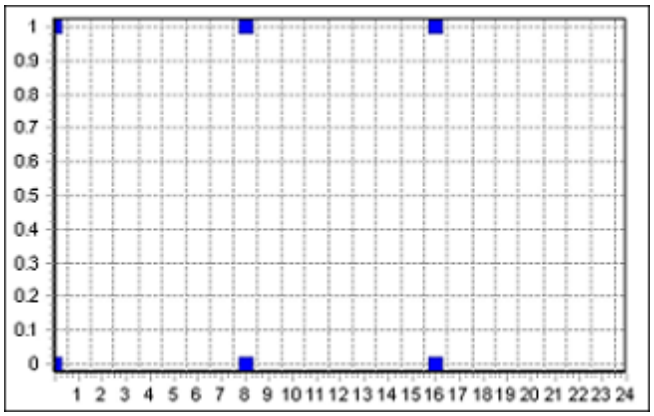
- Line chart – to display all signals in the same coordinate system. Vertical axis displays signals values, horizontal axis displays time values.



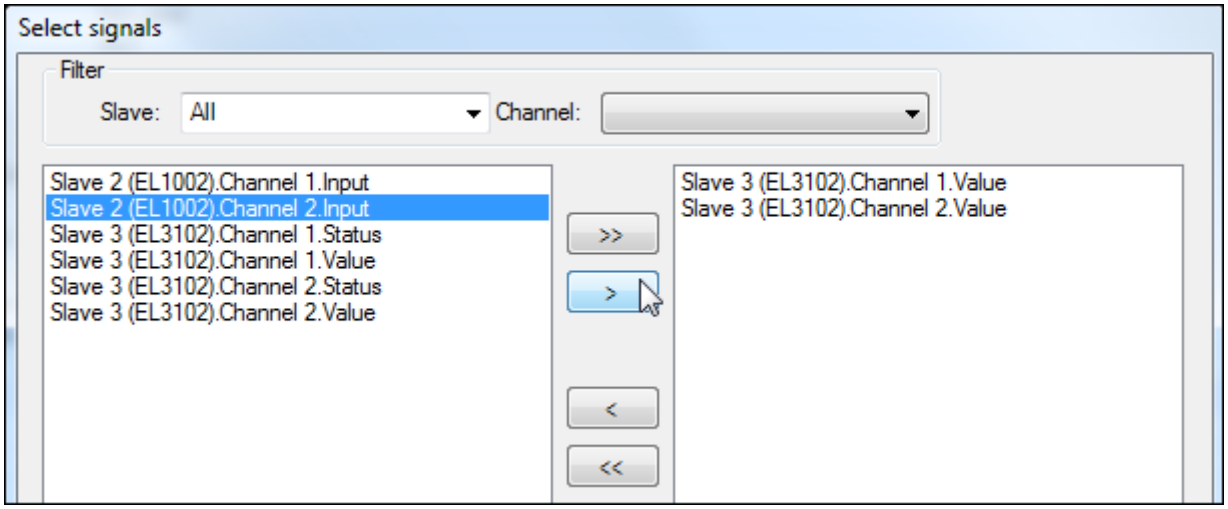
- Multiple axes chart – to display each signal in its own coordinate system. There are several vertical axes each representing values of one signal, and horizontal axis represents time values.



- F(x) chart – to display signals values as a scatter chart where each axis represents the values of a certain signal. For this type at least two signals must be selected for displaying. Then signals may be assigned to the axes.



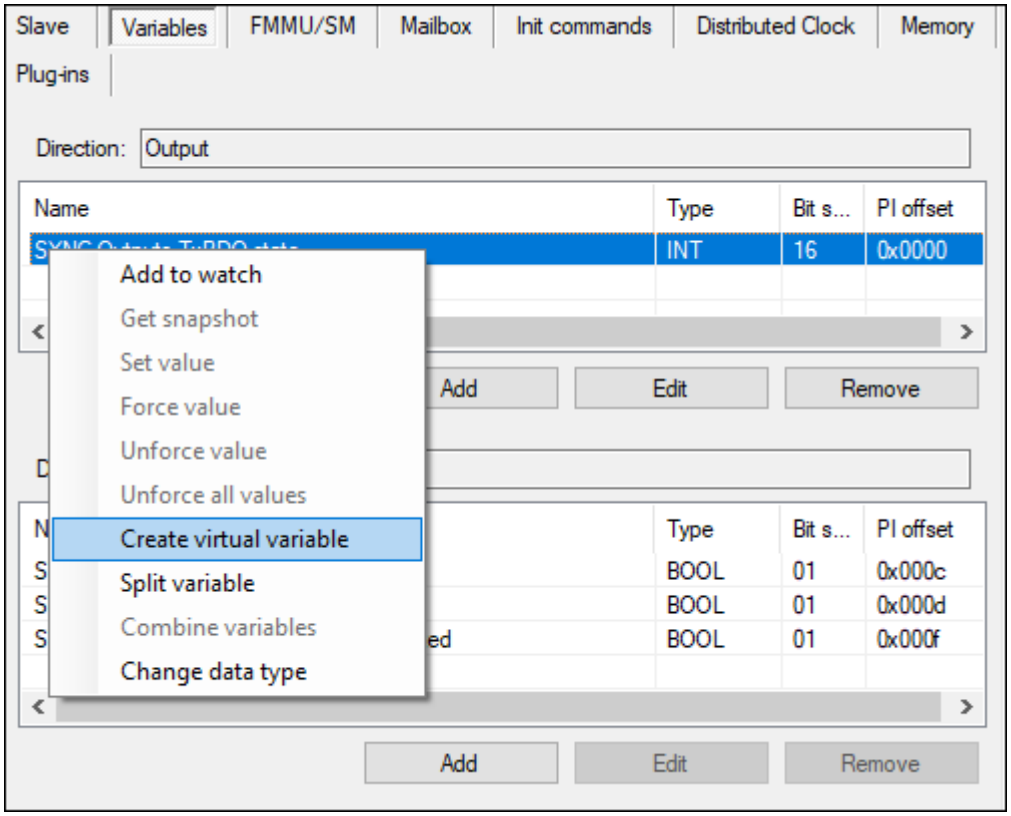
The set of displayed signals is selectable.

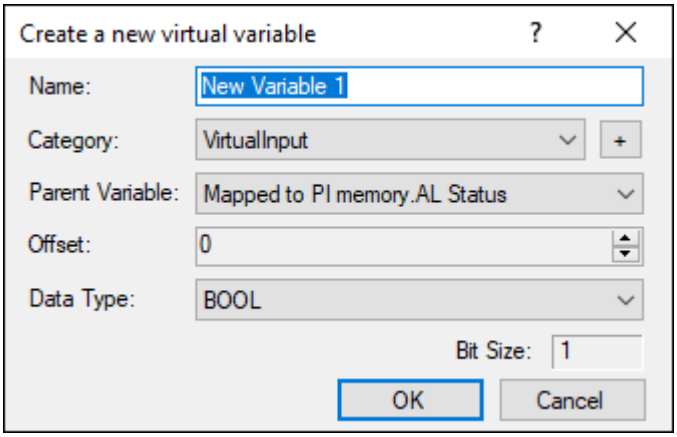


The Tool gives an opportunity to set Viewing interval before logging begins. After logging stops, logged data (changing signals) may be reviewed again selecting the point on the time line and saved as *.emlog file.

Custom and virtual Master/Slave variables

There is an opportunity in Studio 2 to create custom Master and Slave variables. All variables are displayed in Master's/Slave's Variables tab.





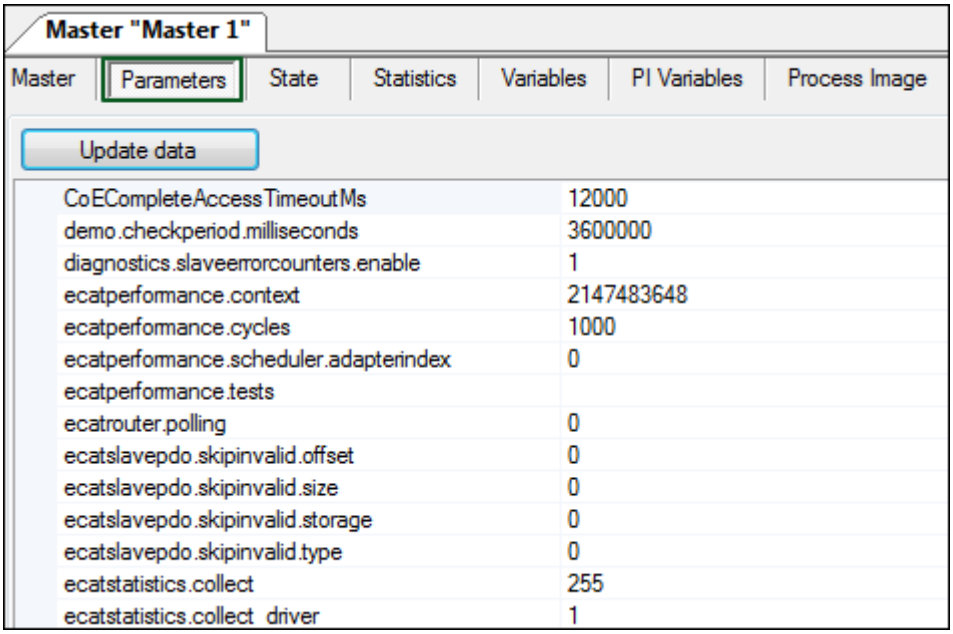
Using the buttons Add, Edit, Remove, it is possible to manage the list of variables. There are several examples of these variables usage:

1. For customer's application needs.
2. Master diagnostics. You may create a pre-defined Master variable (see Master documentation) and monitor changing its value to analyze behavior/state of the bus.
3. For plugin's usage. Customer's plugin may store some data in these variables to be used for auxiliary calculation/processing.

To monitor the variable's value changing you may use the Data Logger or Runtime Data Logger tools that allow to view a chart of the changing.

Getting list of Master parameters

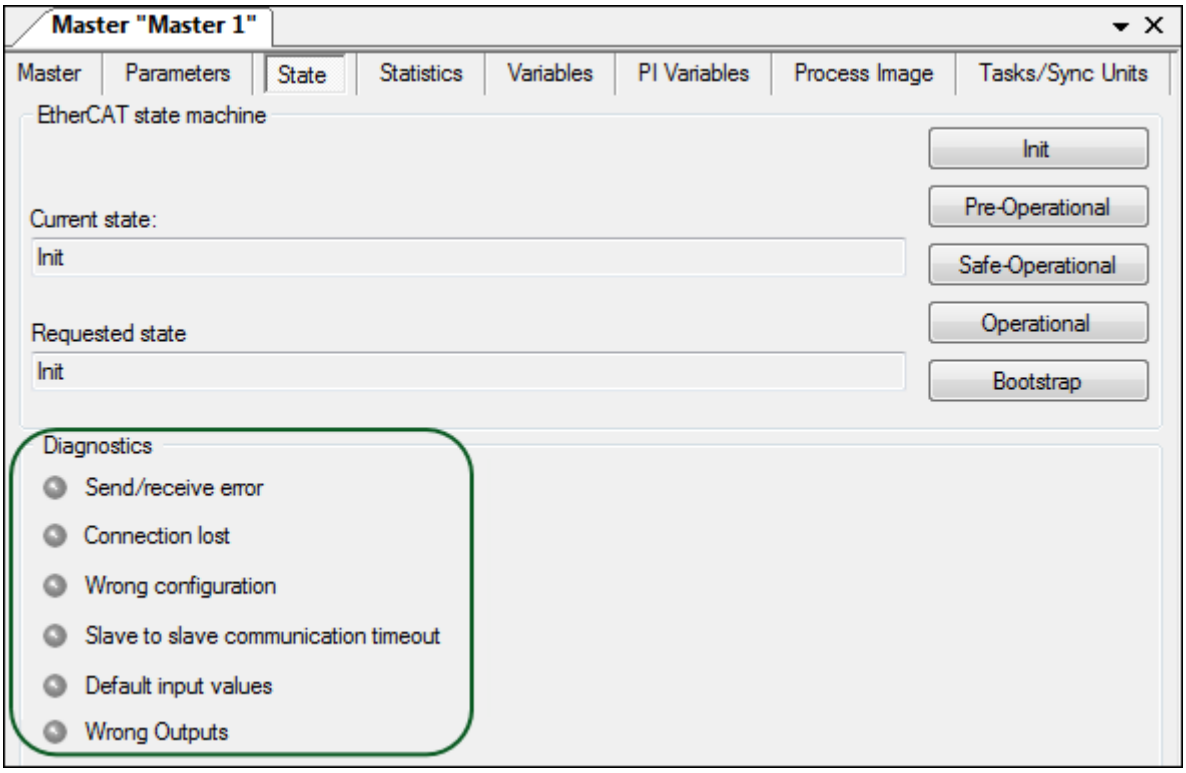
Studio 2 allows to get a list of parameters from Master in online mode and view them on the Parameters Tab.



Diagnostics and Statistics based on Master 2.0 API

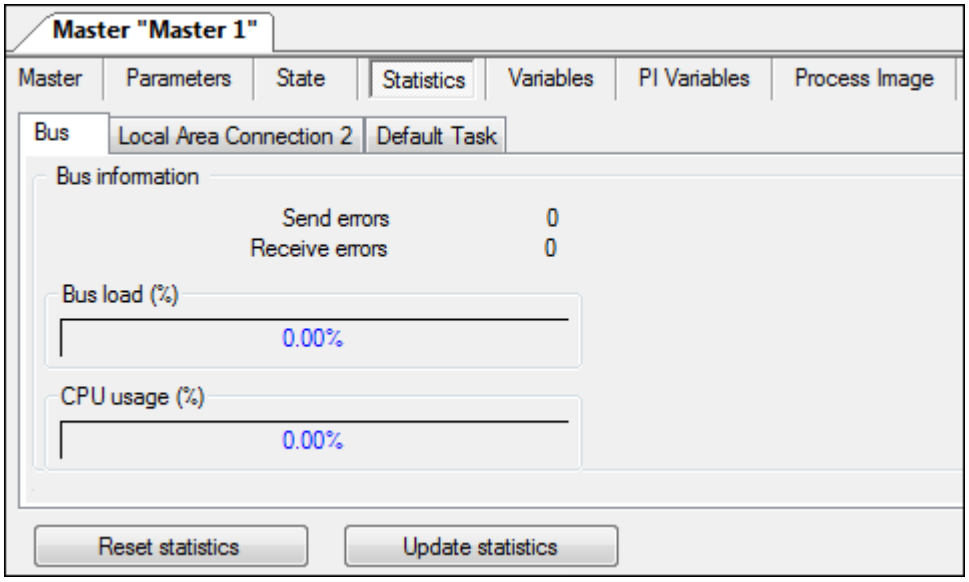
Diagnostics functionality

Diagnostics functionality (diagnostic data from Master and slaves) in Studio 2 has been implemented based on Master 2.0 Event Handler. Representation of Master's diagnostic data (Master's State Tab) has been updated as depicted below.



Statistics functionality

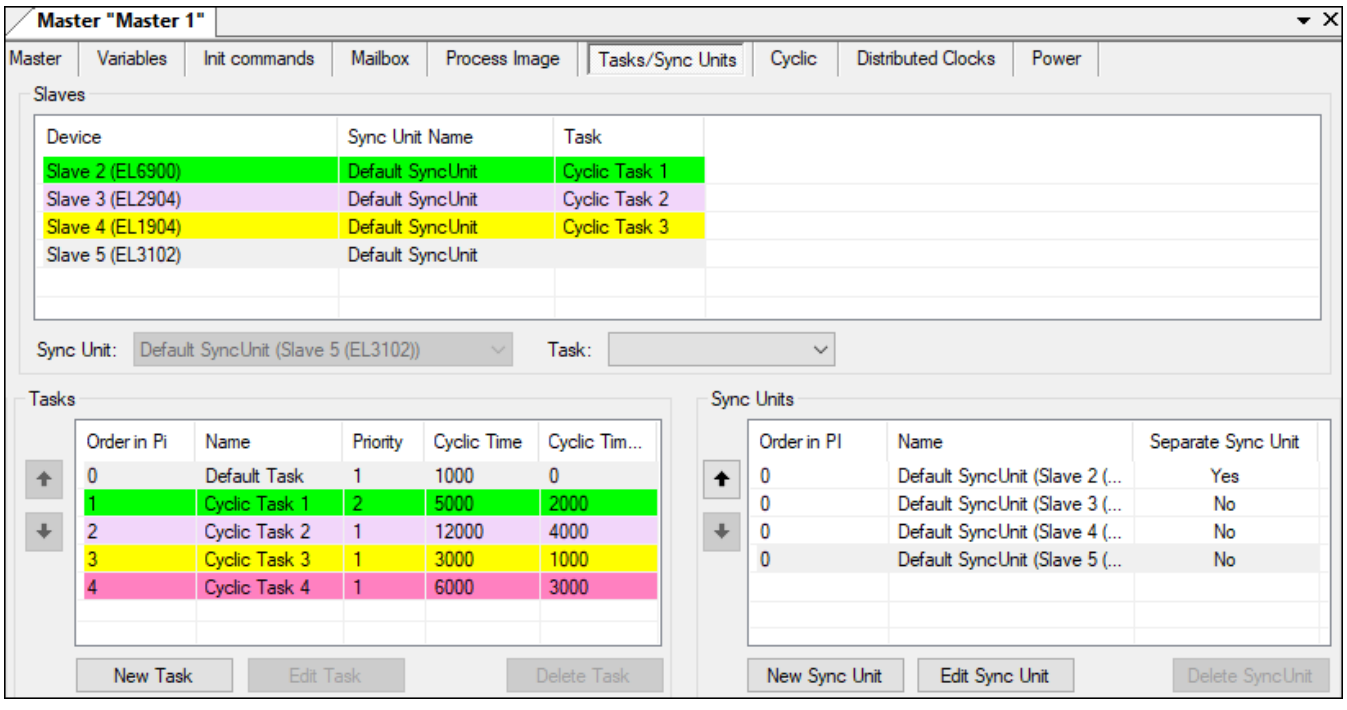
Statistics functionality in Studio 2 has been implemented based on Master 2.0 API. New statistics is displayed in Master's Statistics Tab and represents statistics separately (in different sub-tabs): from the bus, from main and redundant NICs that are used by Master (or only main NIC if redundant one is not used), for Default and user-created tasks.



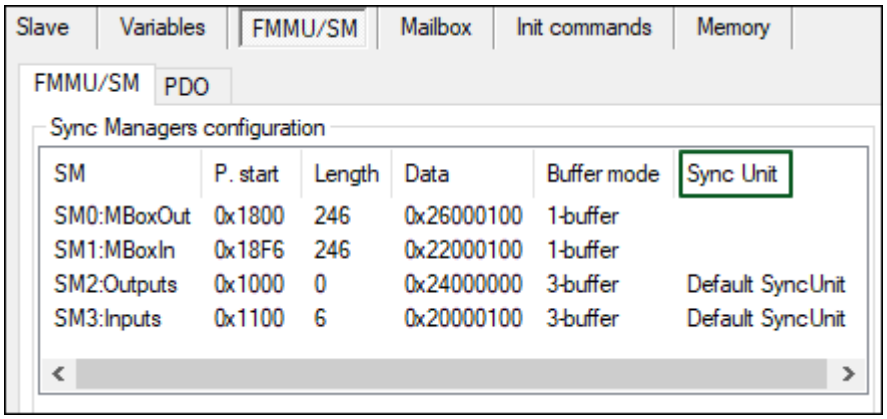
Updated Diagnostics and Statistics data are represented in Studio 2 while working with Master 2.0 or higher. In case of working with previous Master versions (for example v1.5) Studio represents the obtained data in the old style.

Tasks / Sync units Tab

Studio 2 provides an opportunity to configure PI data update in certain time by using tasks and sync units. The corresponding tab has been added and it allows to create tasks and sync units and assign them to slave's sync units (set in ESI file).

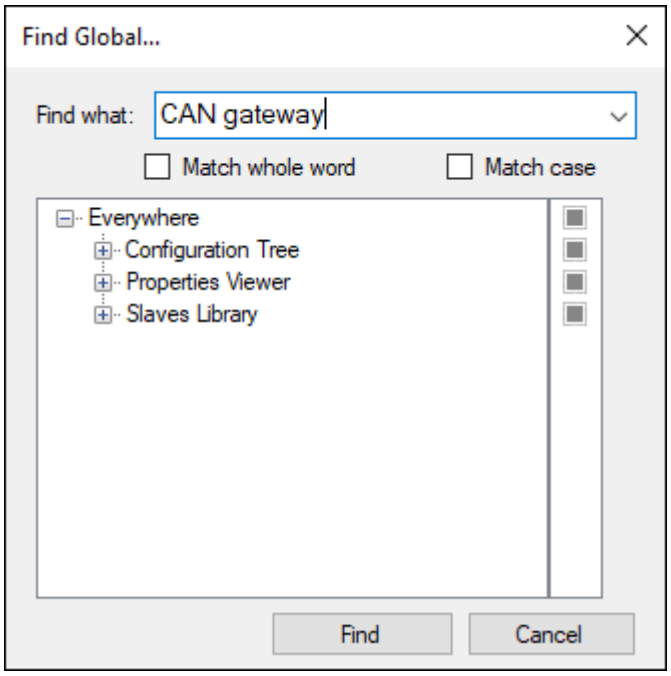


In Studio 2 Slave's sync units are displayed in the slave's FMMU/SM tab:



Global search

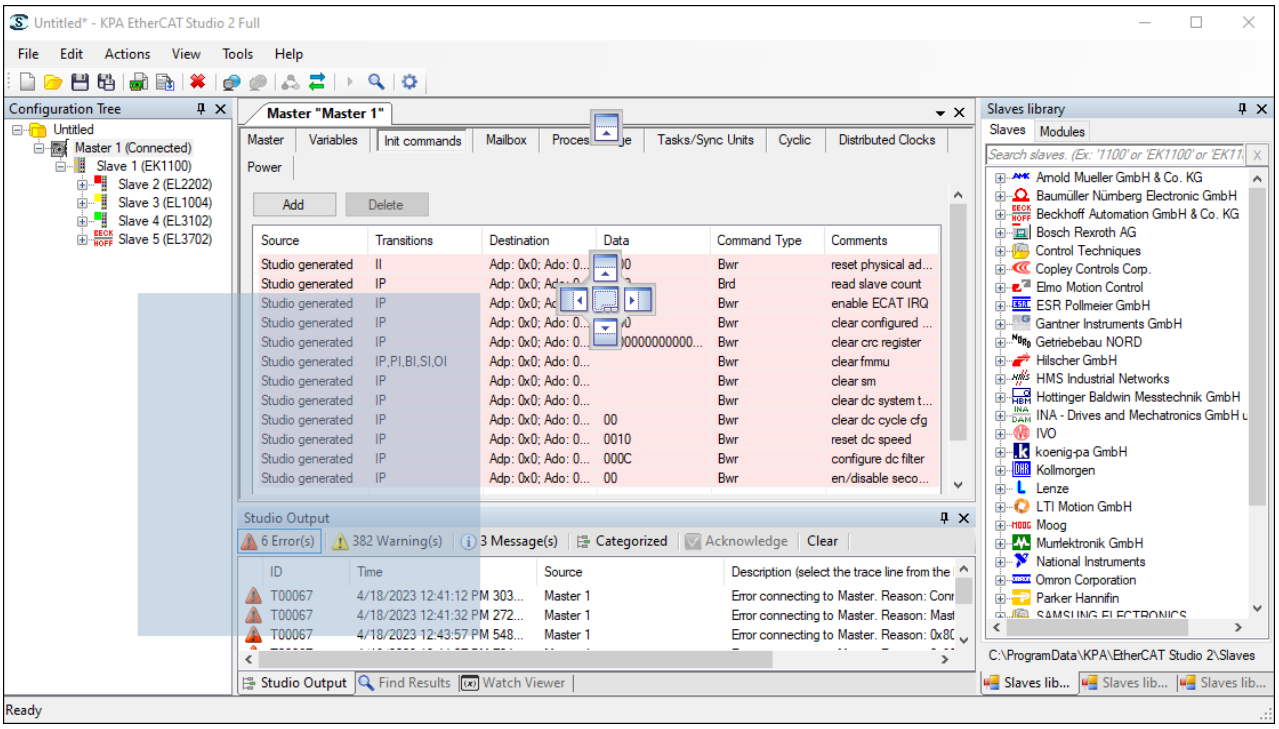
This feature provides a text search among the EtherCAT objects (e.g. slave name, PDO/PDO Entry name, Master/slave variables etc.). To set parameters of search and run it, click the Find button on the buttons toolbar.



The result of search is shown in the separate window Find Results and allows viewing the result by double-click the item.

Dockable windows

In Studio 2 all parts of main window (Configuration tree pane, Configuration window, Slaves Library pane, Outputs window, Watch Viewer window) are dockable – may be docked to one of the sides of the main window or used as separate windows.



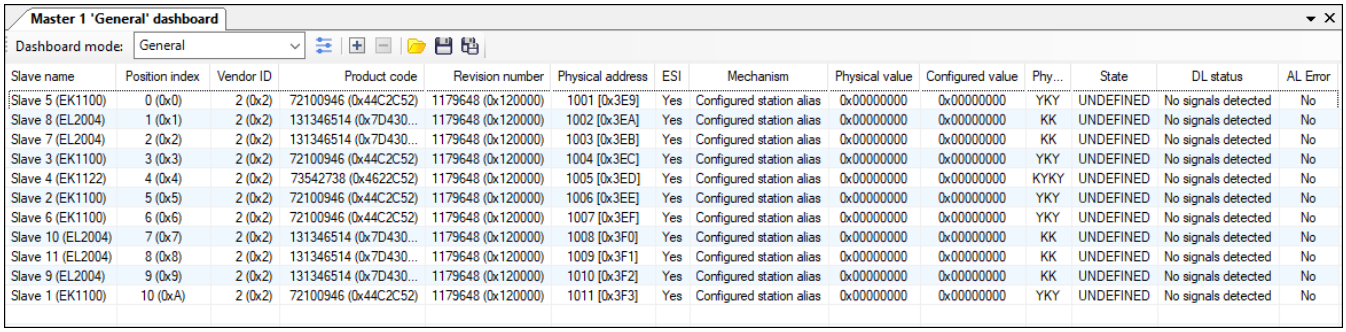
New automation interface (API).

In Studio 2 a new extended API based on EtherCAT Specification has been implemented.

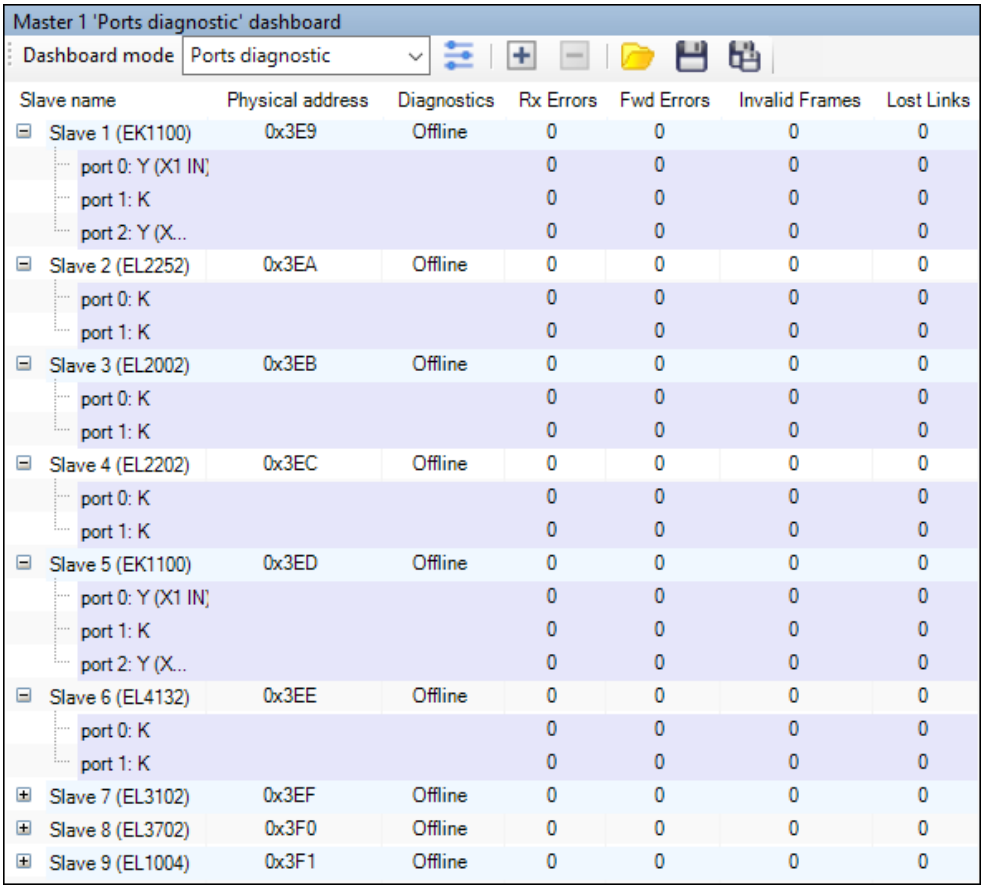
Dashboard

In a version 2 of KPA EtherCAT Studio appears a new Dashboard tab. The window was added to display bus slaves properties and bus ports parameters. Ports searching includes diagnostic, in online mode the user can detect the errors in the ports.

User can select General (slave properties) or Port statics (ports parameters) mode.



Slave name	Position index	Vendor ID	Product code	Revision number	Physical address	ESI	Mechanism	Physical value	Configured value	Phy...	State	DL status	AL Error
Slave 5 (EK1100)	0 (0x0)	2 (0x2)	72100946 (0x44C2C52)	1179648 (0x120000)	1001 [0x3E9]	Yes	Configured station alias	0x00000000	0x00000000	YKY	UNDEFINED	No signals detected	No
Slave 8 (EL2004)	1 (0x1)	2 (0x2)	131346514 (0x7D430...	1179648 (0x120000)	1002 [0x3EA]	Yes	Configured station alias	0x00000000	0x00000000	KK	UNDEFINED	No signals detected	No
Slave 7 (EL2004)	2 (0x2)	2 (0x2)	131346514 (0x7D430...	1179648 (0x120000)	1003 [0x3EB]	Yes	Configured station alias	0x00000000	0x00000000	KK	UNDEFINED	No signals detected	No
Slave 3 (EK1100)	3 (0x3)	2 (0x2)	72100946 (0x44C2C52)	1179648 (0x120000)	1004 [0x3EC]	Yes	Configured station alias	0x00000000	0x00000000	YKY	UNDEFINED	No signals detected	No
Slave 4 (EK1122)	4 (0x4)	2 (0x2)	73542738 (0x4622C52)	1179648 (0x120000)	1005 [0x3ED]	Yes	Configured station alias	0x00000000	0x00000000	KYKY	UNDEFINED	No signals detected	No
Slave 2 (EK1100)	5 (0x5)	2 (0x2)	72100946 (0x44C2C52)	1179648 (0x120000)	1006 [0x3EE]	Yes	Configured station alias	0x00000000	0x00000000	YKY	UNDEFINED	No signals detected	No
Slave 6 (EK1100)	6 (0x6)	2 (0x2)	72100946 (0x44C2C52)	1179648 (0x120000)	1007 [0x3EF]	Yes	Configured station alias	0x00000000	0x00000000	YKY	UNDEFINED	No signals detected	No
Slave 10 (EL2004)	7 (0x7)	2 (0x2)	131346514 (0x7D430...	1179648 (0x120000)	1008 [0x3F0]	Yes	Configured station alias	0x00000000	0x00000000	KK	UNDEFINED	No signals detected	No
Slave 11 (EL2004)	8 (0x8)	2 (0x2)	131346514 (0x7D430...	1179648 (0x120000)	1009 [0x3F1]	Yes	Configured station alias	0x00000000	0x00000000	KK	UNDEFINED	No signals detected	No
Slave 9 (EL2004)	9 (0x9)	2 (0x2)	131346514 (0x7D430...	1179648 (0x120000)	1010 [0x3F2]	Yes	Configured station alias	0x00000000	0x00000000	KK	UNDEFINED	No signals detected	No
Slave 1 (EK1100)	10 (0xA)	2 (0x2)	72100946 (0x44C2C52)	1179648 (0x120000)	1011 [0x3F3]	Yes	Configured station alias	0x00000000	0x00000000	YKY	UNDEFINED	No signals detected	No

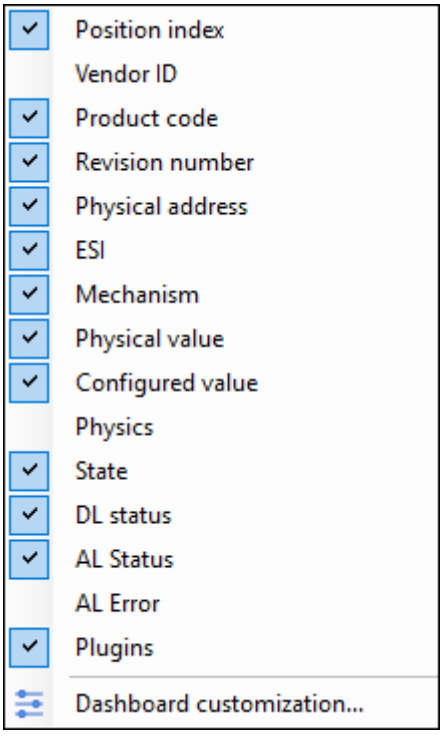


Slave name	Physical address	Diagnostics	Rx Errors	Fwd Errors	Invalid Frames	Lost Links
Slave 1 (EK1100)	0x3E9	Offline	0	0	0	0
port 0: Y (X1 IN)			0	0	0	0
port 1: K			0	0	0	0
port 2: Y (X...			0	0	0	0
Slave 2 (EL2252)	0x3EA	Offline	0	0	0	0
port 0: K			0	0	0	0
port 1: K			0	0	0	0
Slave 3 (EL2002)	0x3EB	Offline	0	0	0	0
port 0: K			0	0	0	0
port 1: K			0	0	0	0
Slave 4 (EL2202)	0x3EC	Offline	0	0	0	0
port 0: K			0	0	0	0
port 1: K			0	0	0	0
Slave 5 (EK1100)	0x3ED	Offline	0	0	0	0
port 0: Y (X1 IN)			0	0	0	0
port 1: K			0	0	0	0
port 2: Y (X...			0	0	0	0
Slave 6 (EL4132)	0x3EE	Offline	0	0	0	0
port 0: K			0	0	0	0
port 1: K			0	0	0	0
Slave 7 (EL3102)	0x3EF	Offline	0	0	0	0
Slave 8 (EL3702)	0x3F0	Offline	0	0	0	0
Slave 9 (EL1004)	0x3F1	Offline	0	0	0	0

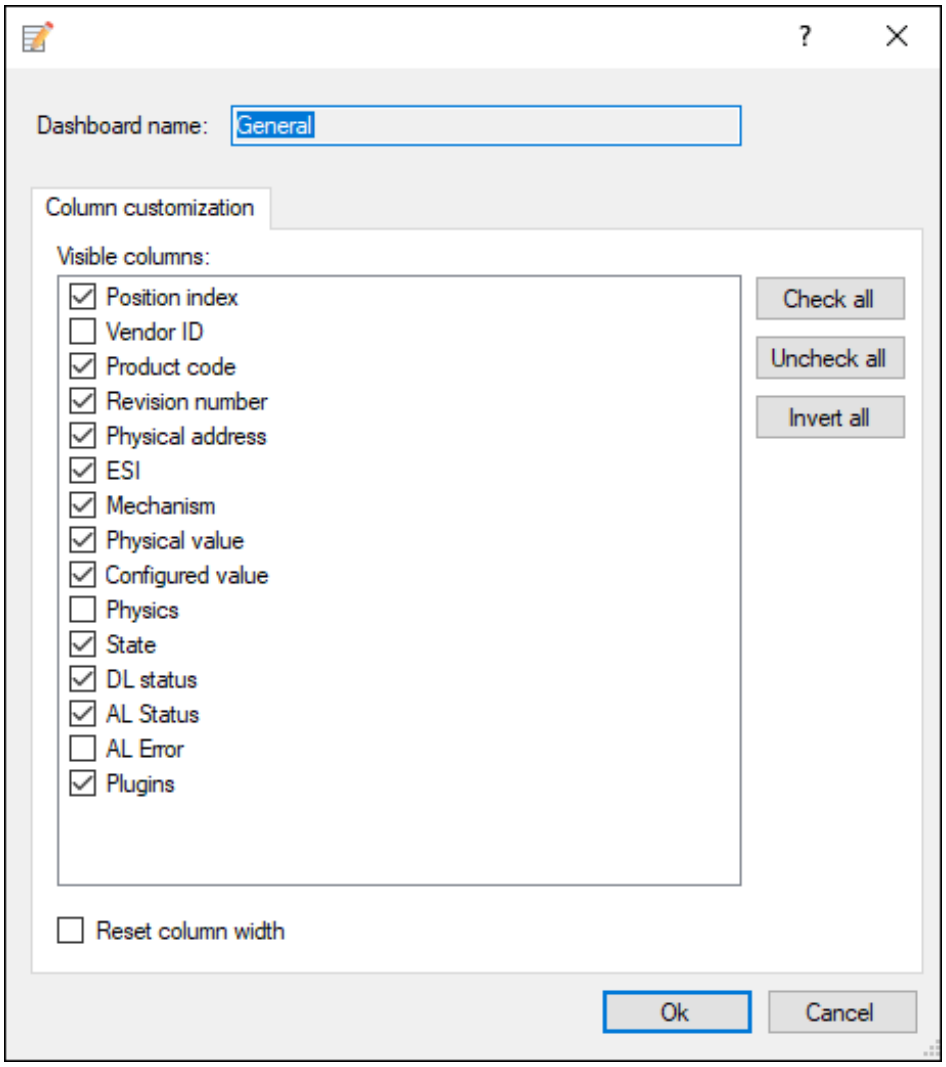
In KPA EtherCAT Studio Premium it is possible to create new dashboard by clicking .

There is an opportunity to load another settings from the folder by clicking . As well, the user can save current settings to the XML file to use them in the future by clicking .

Besides, the user can select which column should be displayed in the dashboard window, right click any column name and fill corresponding check boxes.

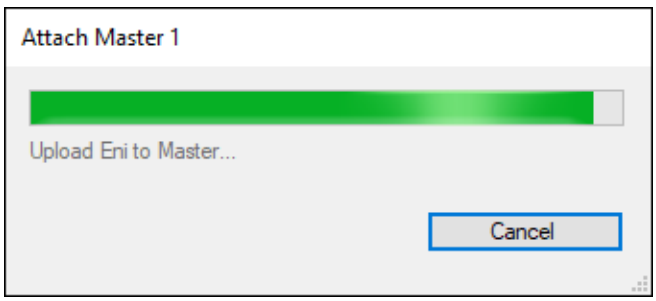


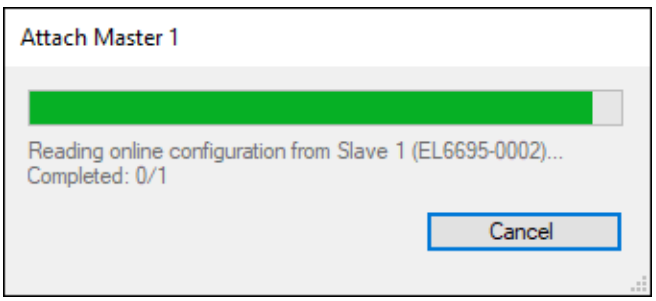
Dashboard customization is accessible in KPA EtherCAT Studio Premium by clicking .



Detailed progress dialogs

In Studio 2 we decide to visulize the project opening, PDO loading, bus scanning, and attaching the Master processes to let user know about the status of the loading. During project opening, PDO loading, bus scanning or attaching the Master, appear the progress dialogs where user can oversee the progress or break up the process.

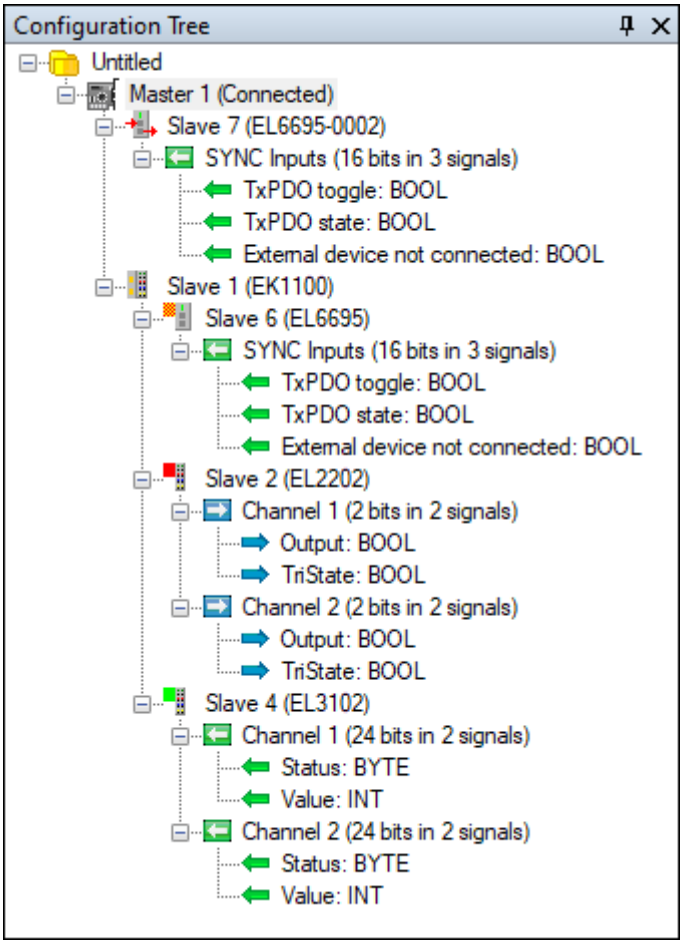




As can be seen, additionally, were added messages about reading OD via SDO while attaching.

Arrays elements

Studio 2 provides the ability to observe array variables in the Configuration tree. The user can see the type, length, and signals quantity there.



Additionally, the user can set default value for array elements.

Plugins

M2M

In comparison with Studio 1 in Studio 2 appears automatic configuration for secondary device during M2M plugin activation and support of arrays for EL6692/EL6695 including arrays > 255 bits.

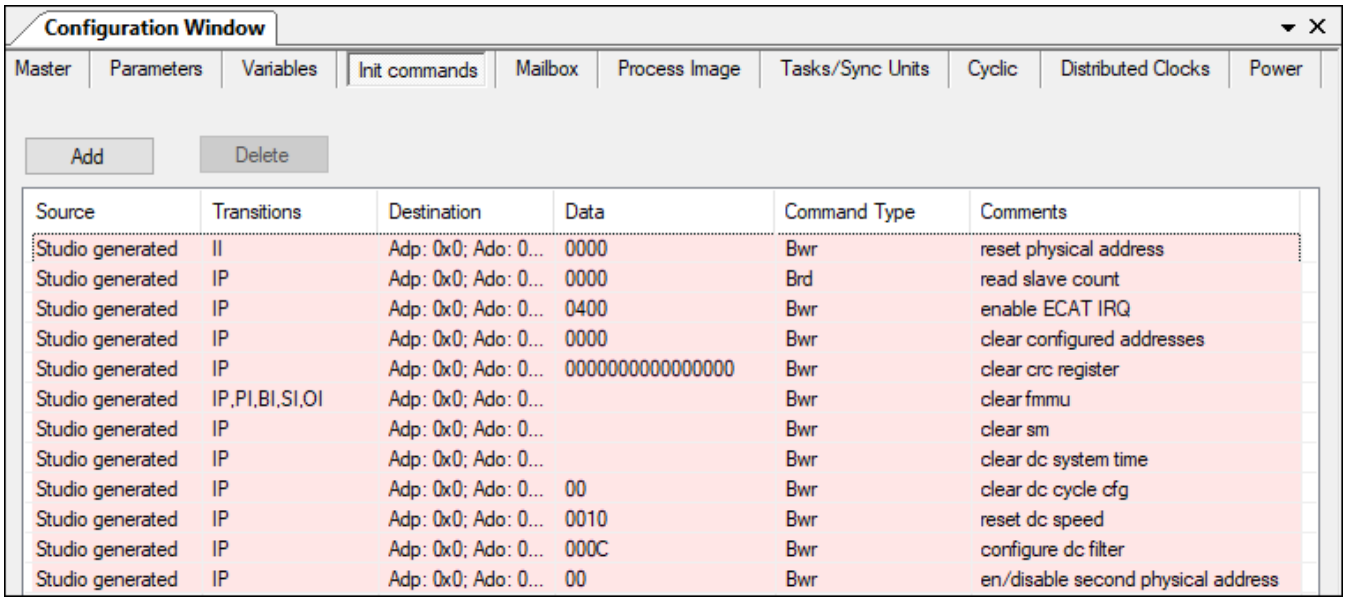
CAN interface

In Studio 2 the ESD CAN-EtherCAT device is supported in the CAN interface plugin. This update allows to configure the ESD CAN-EtherCAT device to work with a CAN bus.

Master Init commands

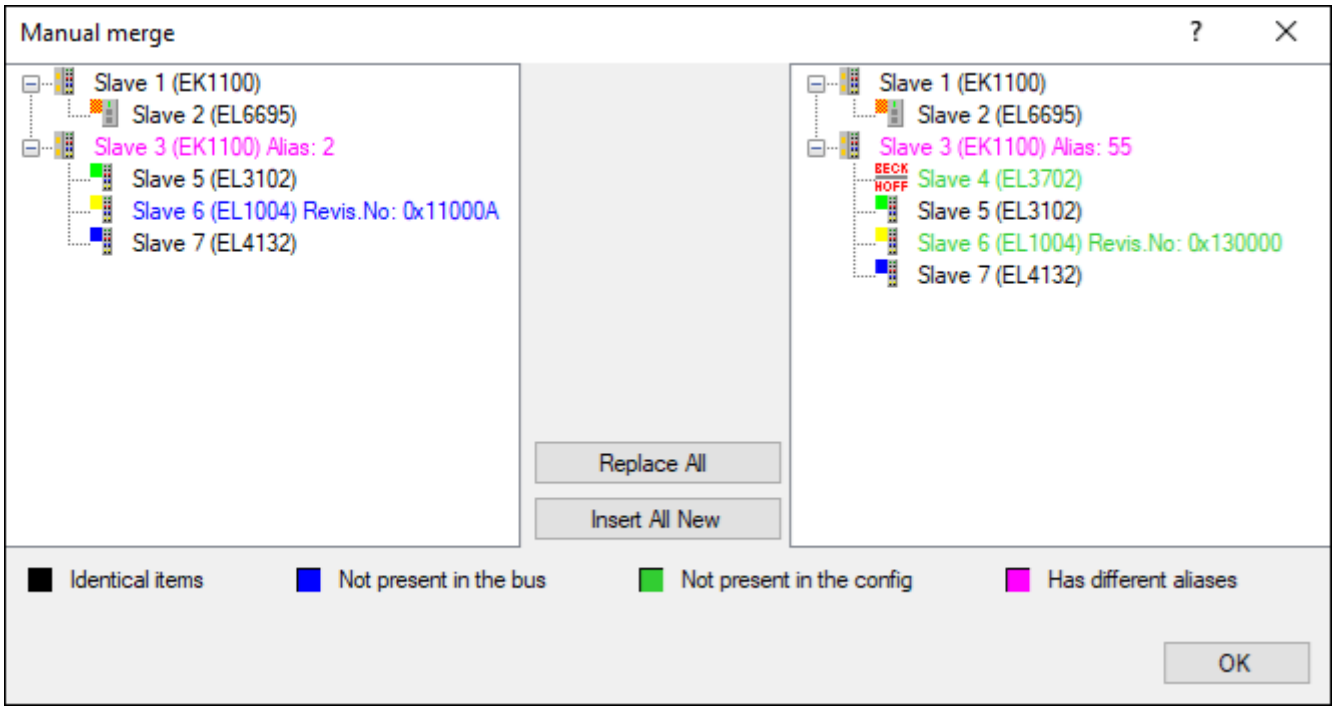
In Studio 2 appears new feature and corresponding tab that provides the possibility to add Init command to Master.

The tab allows to apply commands which are common for all Slaves.



Manual merge

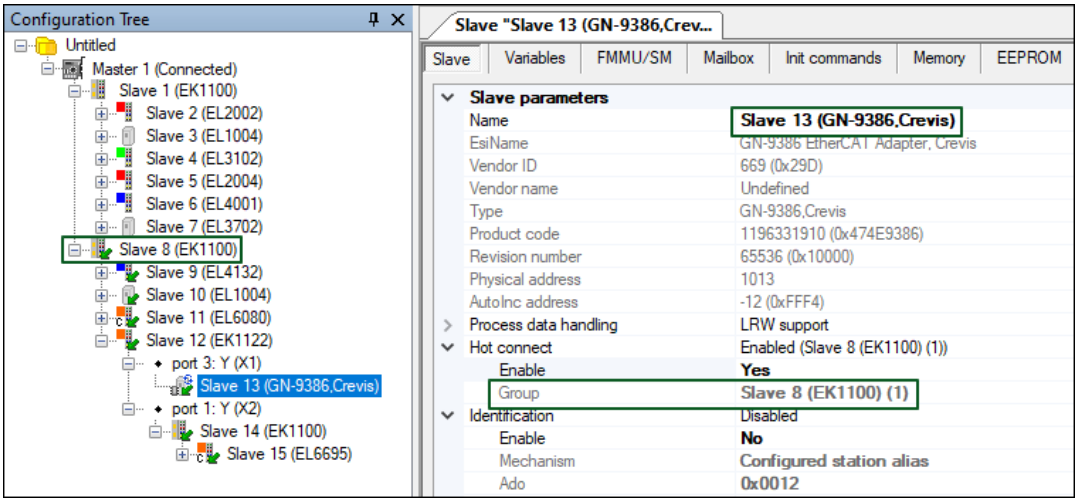
In Studio 2 appears an opportunity of the Slaves manual merge during the bus configuration in online mode. The window allows the user to add slaves to the resulting configuration manually. To replace all items in the manual configuration by the bus configuration items use the Replace All button. The items stand in the same order as on the bus. The Insert All New button allows to add to the current Studio configuration the items that are missed there. The items inserted to the places corresponding to their places on the bus.



The current Studio configuration is displayed in the left pane while the bus configuration – in the right one. The colors of the slaves show the slaves status in the configurations.

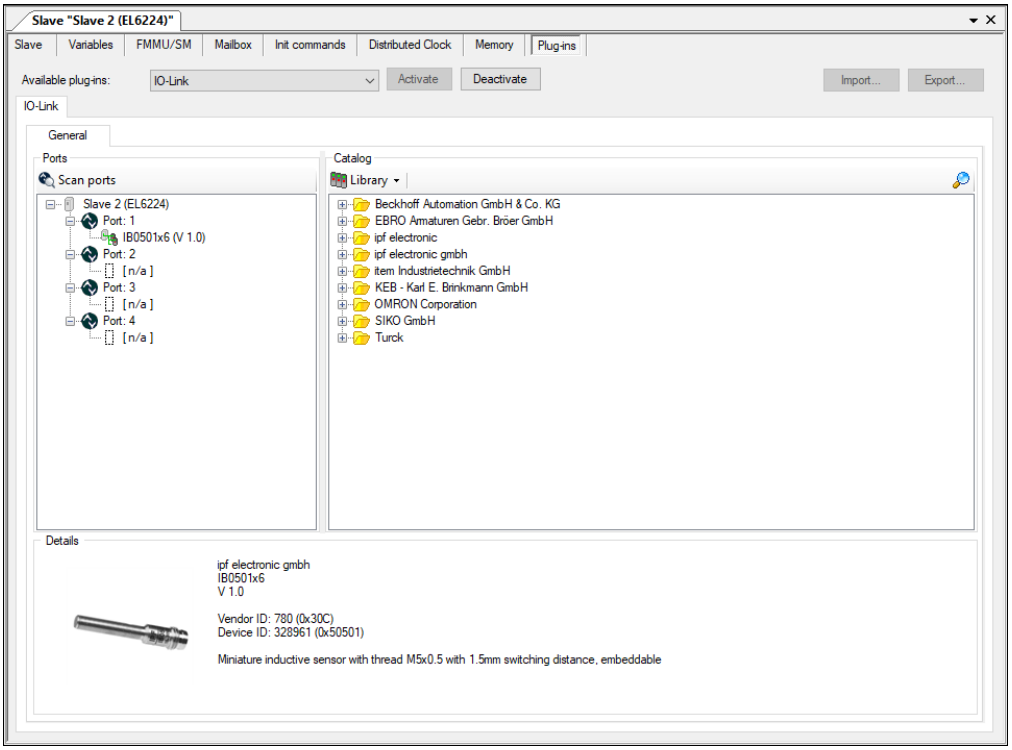
Hot-connected groups

In EtherCAT Studio 2 was added a possibility to create not only hot-connected slaves or segments, but also hot-connected groups.



IO-Link

Support for IO-Link protocol devices was added to enhance flexibility in managing and automating industrial devices. It is now possible to configure IO-Link device directly within the plugin. A built-in expandable library of supported IO-Link devices was also added for quick and easy integration.



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