

# KPA Studio

## Change Log

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# 1 KPA EtherCAT Studio, version 1.12.437.0, released 2022-05-23

## 1.1 Features

### 1.1.1 PDO configuration improvement

From now on virtual PDO are editable.

### 1.1.2 Hot Connection improvement

From now on the Hot Connect option is enabled for segments with EK1122 and without process data.

### 1.1.3 Online modules configuration improvement

Online modules configuration reading fixed when max module instance count is exceeded.

## 1.2 Fixed bugs

- Modules PDO are not assigned to SM after project reopening.
- Exception is thrown if Studio cannot read license file.
- Slaves in configuration are set as hot-connect after reopening project, which has slave with physics "YYKY - KYYY".
- Unhandled exception is thrown when incorrect file type is opened in the EEPROM Editor tool.
- Process data are not assigned if add module to slot.
- The Studio does not respond during the attach if the master was closed during the previous attach.
- License exceptions were fixed.
- The "Invalid input configuration" error occurs at reconnecting a hot-connected slave after EK1122.
- Place module on the next slot if current slot's max instance count is exceeded.
- "Show" button is shown partly in "About" dialog if high value of DPI is set in Display settings.
- An error appears while drag and drop EK1122 to EK1100.
- Modules' plugin is not loaded for slave.
- An error appears while import S2S from KPA ENI.
- The slaves in the configuration tree stay disconnected after reconnection one of the slaves (all slaves are hot-connected).

## **2 KPA EtherCAT Studio, version 1.12.426.0, released 2021-09-09**

### **2.1 Features**

#### **2.1.1 Slaves library search from the main menu**

From now on the command **Find in slaves library** is available in the main menu (Actions/Find in slaves library). Also, you can use a hot key combination **Ctrl+F**.

### **2.2 Fixed bugs**

- Configuration tree:
  - Incorrect port order in Configuration tree for EK1122.
  - There is no space between a slave name and alias value in Configuration tree.
  - Disconnected/missing states are not shown.
  - Segment is not marked as disconnected/missing if a physical value of its alias is not equal to a configured value.
- Impossible to load an array of SINT data type.
- Incorrect size of ENUM loaded to CoE object from ESI.
- Cannot attach Master if all slaves are mandatory with identification in the configuration.
- Exception is thrown on attempt to attach to the bus when a slave with configured alias = 0 in Configuration tree is absent on the bus.
- MDP Modules plug-in:
  - Duplicated modules are loaded to plug-in library.
  - Process data are not assigned if add a module to the slot.
- Different configured and physical aliases are not shown in Compare configurations dialog, when 'Show explicit device identification value' option is enabled.

## **3 KPA EtherCAT Studio, version 1.12.417.0, released 2021-02-11**

### **3.1 Features**

#### **3.1.1 Identification timeout for hot-connected slaves**

From now on it is possible to set a timeout of getting slave identification for hot-connected slaves.

During this time Master is waiting for a response upon the request for identification value of hot-connected slave.

It is possible to set the timeout to all hot-connected slaves in configuration (in Studio Options) as well as to certain hot-connected slave (on Slave Tab).

For details, refer to Studio Help.chm (the sections Options and Slave Tab in Offline mode).

## 3.2 Fixed bugs

- Modules plug-in: can't load the plug-in for Beckhoff AX slaves.
- Virtual COM plug-in:
  - COM Port tabs are disabled after attaching to Master.
  - Different sub-index values in the plug-in and slave's Object Dictionary of EL6021/EL6022.
- Profibus PDOs are not shown in the configuration tree.
- Exception is thrown on attempt to apply another slave's revision.

## 4 KPA EtherCAT Studio, version 1.12.412.0, released 2020-12-24

### 4.1 Features

#### 4.1.1 MDP Profibus data import from .escn

From now on it is possible to import data for MDP Profibus Master Gateway Profile 3100 plug-in from .escn file (a project file generated by Studio). During the import, the certain device is selected.

### 4.2 Fixed bugs

- Incorrect bus topology is created after scanning the bus with EL6695.
- Imported S2S signals are lost after Studio project is saved and reopened.
- Minor bug fixes.

## 5 KPA EtherCAT Studio, version 1.12.407.0, released 2020-11-27

### 5.1 Features

#### 5.1.1 Master Compare and Manual merge dialogs improvement

- From now on **Revision number** and slave **Alias** (if Explicit Identification is enabled) are displayed in slave name.
- Added **Help** buttons which open the description of the dialog in Studio Help.chm.
- Added a possibility to resize the windows in order to improve the work with big buses.

#### 5.1.2 Studio options extension

- Added **Skip Alias Reading** parameter which allows to skip reading slave's identification value during the scan bus or Master attach operation when there are no hot-connected slaves on the bus.
- Added **Leave Zero Aliases** parameter to not generate an alias value if a physical value is 0.

### 5.1.3 EP6001 serial interface terminal support

Studio plug-in Virtual COM supports serial interface terminal EP6001.

The settings Half duplex and Point-to-point connection was added to COM port settings on Virtual Serial COM tab.

### 5.1.4 How to test communication with Modbus via VCOM plug-in

The topic **How to test communication with Modbus** was added to Studio Help (Plug-ins / Virtual Serial COM plug-in). It demonstrates how to test communication with Modbus which was configured via Virtual Serial COM plug-in.

## 5.2 Fixed bugs

- In the Master merge dialog, another segment is marked in pink color instead of needed.
- A lot of traces **T00095** (about multiple descriptions of slaves) appear while project opening.
- A lot of traces **T03093 E-bus power lag** appear for the same slave while project opening / slave scanning.
- Incorrect generating CoE init commands to write settings configured in Virtual Serial COM plug-in.

## 6 KPA EtherCAT Studio, version 1.12.385.0, released 2020-04-29

### 6.1.1 LDP/MAP v. 7 support and tracing

From now on Studio plug-in MDP Profibus Master Gateway Profile 3100 supports import files in LDP/MAP format of version 7.

Also, added fault messages to improve the work with MDP Profibus Master Gateway Profile 3100. They are shown in Studio Outputs window.

## 6.2 Fixed bugs

- Power Tab:
  - Incorrect display of slaves with a lack of power: all slaves in the tree after the first one detected with a lack of power, are also marked as “not enough power” (in red).
  - Slave disappears from the Power tab after changing of its revision.

## 7 KPA EtherCAT Studio, version 1.12.377.0, released 2020-03-02

### 7.1 Features

#### 7.1.1 Export ENI for Master Redundancy

From now on it is possible to export Master configuration with the extension for Master Redundancy functionality (according to the EtherCAT Technology Group specification).

The command **Export Master Redundancy Configuration ETG Standard** has been added to Master's shortcut menu.

### 7.1.2 LVDS power calculation

One of the possible physical interfaces for EtherCAT slaves connection is Low Voltage Differential Signaling (LVDS, also called: E-Bus). The corresponding interface is used to establish communication between so-called “modules” devices typically available for almost all production lines of Beckhoff E-bus devices (EL1002, EL2004, etc).

In general, the “coupler” devices (EK1100) is used as the current/power supply device and has limited powering capabilities defined in ESI file (according to ETG standards). As well as each connected module has limited current consumption. Therefore, connection of huge amount of LVDS slaves (usually marked as ELxxxx devices by Beckhoff and defined in ESI file with physics “K”) onto EtherCAT coupler EK1100 (and similar devices) leads to lack of power possibilities of certain coupler. Such case may lead to increasing of amount of wrong working counters (WKC) per datagram and/or losing of connections of part or even whole segment (coupler EK1100 with connected ELxxxx slaves).

The Power tab has been added to Master tabs. It allows monitoring power supply and consumption of LVDS slaves on the bus to avoid power lack issues in the configuration. Also, slave's power capability is displayed on the Slave Tab (E-bus power and Power consumption properties).

For more details see Studio Help.chm (the Power Tab chapter).

### 7.1.3 Master attach improvement

The procedure of Master attach has been improved. From now on it takes less time.

### 7.1.4 Slave's Explicit Identification improvement

The command **Write all aliases** (menu Actions) has been renamed to **Write all aliases to EEPROM**. From now on this command writes aliases (Configured value) of all slaves into their EEPROM.

Also, when the Configured station alias mechanism is enabled for the slave, besides Configured and Physical values, **EEPROM value** (alias set in EEPROM) is displayed on the Slave Tab (the Identification section).

## 7.2 Fixed bugs

- Slave's Explicit Identification.
  - The function **Make all slaves mandatory with identification** does not work.
  - If the Configured station alias mechanism is set:
    - The same physical values are shown in **Configuration Tree**.
    - The **Merge** window does not appear while attaching Master if the set configured value differs from physical value.
    - By clicking **Write all aliases** the **Physical value** is not updated.
  - If the EEPROM Alias mechanism is set:
    - Explicit identification values are not displayed when it is configured in Studio's Options → Studio → View → Show explicit device identification value.
    - In Online mode the **Write** button is disabled if the EEPROM Alias mechanism is set.
  - Slave with different aliases in configuration and in its EEPROM is not highlighted in magenta if the **Hot connect** functionality is disabled.
- Cannot scroll down the list of signals on channel's **Information** tab.
- The trace 'T03093 E-bus power lack.' appears twice for a slave while scanning the bus.

## **8 KPA EtherCAT Studio, version 1.12.361.0, released 2019-12-26**

### **8.1 Fixed bugs**

- Different PDO order in the project before and after saving.
- Wrong EtherCAT topology detection.
- PI offsets of CAN variables and DC cyclic command offset are intersected.

## **9 KPA EtherCAT Studio, version 1.12.354.0, released 2019-09-24**

### **9.1 Fixed bugs**

- It is impossible to set communication with EL6002 via Virtual Serial COM plug-in.
- MDP Modules plug-in:
  - After reopening a project with MDP slaves, some PDOs generated by MDP Modules plug-in are displayed incorrectly on the FMMU/SM tab.
  - For some MDP slaves, the MDP Modules plug-in tab is not displayed.

## **10 KPA EtherCAT Studio, version 1.12.349.0, released 2019-06-20**

### **10.1 Features**

#### **10.1.1 Export in null-terminated format**

The list of types of Master configuration Export has been extended with two null-terminated types for KPA and ETG Standards. The types are available from Master right-click menu in the Export list. It allows to simplify generating ENI for example for the users who run Master on FreeRTOS.

### **10.2 Fixed bugs**

- For some devices (e.g. Panasonic A6B), it is impossible to read CoE objects from SDO.
- The error T00111 'Can't load slave' appears while opening an **.ecsn** project which includes OrphanPdo tags.
- Incorrect offline reading SDO from slave's ESI.
- It is impossible to import S2S configuration from ENI created in TwinCAT3
- Can't get access to S2S Connector through Studio Automation Interface.
- A value of 'Configured station alias' is read from EEPROM, but a value of 'EEPROM alias' is always 0.
- Wrong vendor name is displayed for MDP Modules in the plugin's library.

## 11 KPA EtherCAT Studio, version 1.12.336.0, released 2019-03-05

### 11.1 Features

#### 11.1.1 M2M plug-in for EL6695

The list of device types for which the M2M plug-in is available was extended. From now on the plug-in is also available for the EtherCAT bridge terminal EL6695.

For more details, see Studio Help (description of the M2M plug-in).

### 11.2 Fixed bugs

- It is impossible to open a project if the configuration (saved in the project) was created by scanning the bus, not by adding slaves from the Slaves Library.
- Slave's OD list is empty if it was loaded via SDO Info of RIOR slave.
- Unexpected behavior of alignment signals for Sync Managers with MinSize>0 (set in ESI).
- Module is not loaded automatically if the slave has several slots.
- It is impossible to write a value into the 6th and 7th bits of 0x0806 register

## 12 KPA EtherCAT Studio, version 1.12.311.0, released 2018-07-27

### 12.1 Fixed bugs

- Virtual COM plug-in:
  - Data size of the init commands for sending the parameters Data Frame, Fifo Threshold and Baudrate exceeds one byte.
- Exception is thrown while setting a value or by double click CAN Interface variable in Process image if it has ArrayOfByte datatype.
- Memory entries are placed in Process Image in a wrong order.
- Reading of the list of mailbox SoE IDNs fails with "Buffer size limit" error.

## 13 KPA EtherCAT Studio, version 1.12.300.0, released 2018-04-20

### 13.1 Features

#### 13.1.1 Virtual Serial COM improvement

A possibility to configure COM port settings manually has been added into the Virtual Serial COM plug-in. Using the **Source data** property, the user may select the way of configuring the COM port from the list:

- Getting the settings from the plug-in's SlaveSettings.xml file.
- Configuring manually.

The corresponding values of COM port parameters are displayed on the plug-in's tab with the destination addresses which are used for generating CoE init commands.

For more details, see Studio Help (description of the Virtual Serial COM plug-in).

## **14 KPA EtherCAT Studio, version 1.12.281.0, released 2017-12-22**

### **14.1 Features**

#### **14.1.1 Virtual Serial COM support**

KPA provides Studio Virtual Serial COM plug-in. It allows the user to enable serial interface usage, to specify required COM settings (baudrate, parity, databits etc.) and set the number of Virtual COM port that will be used for communication.

The Virtual Serial COM plug-in works in conjunction with KPA Virtual Serial COM driver (added into KPA MRT package). Therefore, for a proper work both the driver and the plug-in must be installed and additionally licensed as the products' feature.

For more details about the plug-in, see Studio Help.

#### **14.1.2 Mailbox EoE improvements**

From now on slave's MAC address is generated automatically with the use of slave's physical address as a unique identifier. Also, the user can set it manually as in previous versions.

### **14.2 Fixed bugs**

- The Alias attribute of slave is presented in exported ENI if EEPROM alias identification was disabled for slave.

## **15 KPA EtherCAT Studio, version 1.12.259.0, released 2017-07-17**

### **15.1 Fixed bugs**

It is impossible to load project's data if plug-ins' error occurs while opening the project.

## **16 KPA EtherCAT Studio, version 1.12.254.0, released 2017-06-30**

### **16.1 Features**

#### **16.1.1 MDP Profibus Master Gateway Profile 3100 plug-in improvements**

##### **Slave type support**

From now on it is possible to use slave type to identify slaves supported by the plug-in.

The Type tag can be added to the plug-in's supported devices list (XML file located on the path C:\ProgramData\KPA\EtherCAT Studio\plugins\MDPPlugin\SupportedDevices.xml) to make the plug-in available for slaves with this type.

The default SupportedDevices.xml has been also updated correspondingly.

### **Naming convention improvement for**

New naming convention template has been added to the Settings of MDP Profibus Master Gateway Profile 3100. From now on it is possible to configure the plug-in to create PDO and PDO entries with names in the same style as at creating configuration with the help of the Profile tab.

To apply new template, in the plug-in's settings use the following values:

for EtherCAT Channel Name - Box\_ \$SLAVEINDEX\_ &DIRECTION

for EtherCAT Signal Name - M&MODULEORDER\_ \$SIGNALNAME

## **16.1.2 Slaves library update**

OMRON ESIs have been added into default slaves library (created during Studio installation).

## **16.2 Fixed bugs**

- MDP Modules plug-in:
  - Module's PDO-s without 'SM' attribute in ESI are always assigned to Sync Managers in PDO assignment group box.
  - Alignment PDO-s of Modules are always assigned to the first Sync Manager not taking into account their actual assignment in ESI.
- The error T03049 appears while scanning the configuration when Direct/Requesting explicit ID mechanism is activated in slave.

# **17 KPA EtherCAT Studio, version 1.12.247.0, released 2016-12-14**

## **17.1 Features**

### **17.1.1 Silent installer is implemented**

Studio can be installed without GUI.

### **17.1.2 Increase of the range of "Mailbox timeout"**

The range of "Mailbox timeout" in Global Studio options is increased to 60000 ms.

### **17.1.3 Offered selection of indices/sub-indices defined in device Profile during Module configuration**

Instead of manual entry of indices/sub-indices in device Profile during Module configuration, KPA EtherCAT Studio offers a list of corresponding values to select from.

### **17.1.4 Only send/receive cyclic cycle data points are exported into MDF file**

Only send/receive cyclic cycle data points are exported into MDF file.

### **17.1.5 Information about "Raw byte" flag in "Force value" window for BITARR signal added to Studio help**

Information about "Raw byte" flag in "Force value" window for BITARR signal added to Studio help.

### **17.1.6 DBC file search starts from the project's location for previously saved projects**

Instead of starting from disc C, as it happens when a new project is in use, the system starts dbc file search from the project's location.

### **17.1.7 Master instance id should be shown in Master About window**

For Master v.1.6, in order to distinguish master instances, the names can be visualized in Master About window to make in clear which instance is responsible for which functionality.

## **17.2 Fixed bugs**

- At consequent adding of a module with OCTET\_STRING data type, which has already been added once, the sub-indices were not displayed in full.
- Values of SMs size and address are not loaded into EEPROM file when EEPROM is generated from ESI via EEPROM Editor Tool.
- Postfix ("Out" or "In") is not added to name of PDO in PDOs configuration block if PDO configuration is uploaded from slave.

## **18 KPA EtherCAT Studio, version 1.12.235.0, released 2016-12-14**

### **18.1 Fixed bugs**

- For slaves not supporting SDO Info (reading OD from ESI) MDP module's CoE indexes are not displayed on the Mailbox CoE tab at adding MDP module into Studio configuration (MDP Modules plug-in).

## **19 KPA EtherCAT Studio, version 1.12.225.0, released 2016-08-31**

### **19.1 Features**

#### **19.1.1 Full functionality license**

From now on Studio supports full functionality license. This license is available for Studio x86/x64 and activates all Studio features.

#### **19.1.2 Updated list of ESI's**

The list of ESIs provided with Studio package has been updated.

### 19.1.3 Support of Scaling “+/-20”

Modes of Scaling Signals Values have been extended. Now Studio also supports Scaling "+/-20" mode.

## 19.2 Fixed bugs

- From time to time license for Studio x64 cannot be applied.
- Module`s PDO set as Exclude in ESI may be assigned to a Sync Manager in Studio.
- End terminal is taken into account during calculation of slaves' number (GroupMemberCnt parameter) for hot-connect configuration.
- MDP Profibus configuration is cleared and default settings are applied during auto-merge.
- Header and working counter of EtherCAT datagram are not taken into account during calculation of Ethernet frame size.

## 20 KPA EtherCAT Studio, version 1.12.222.0, released 2016-07-01

### 20.1 Features

#### 20.1.1 Update of IECATMaster interface

New methods have been added into IECATMaster interface:

AddSlaves(...) – gets all slave from a source set as parameter and adds them to the end of Master configuration.

Possible parameters:

- AddSlaves(IECATMaster master),
- AddSlaves(IECATProject project),
- AddSlaves(IECATProject project, string ,masterName),
- AddSlaves(string projectPath),
- AddSlaves(string projectPath, string masterName)

MergeSlaves(...) – gets all slave from a source set as parameter, compares them with slaves in current Master configuration and adds only slaves that are not in the configuration. Possible parameters:

- MergeSlaves(IECATMaster master),
- MergeSlaves(IECATProject project),
- MergeSlaves(IECATProject project, string ,masterName),
- MergeSlaves(string projectPath),
- MergeSlaves(string projectPath, string masterName)

### 20.2 Fixed bugs

- Signals sorting by name in "Information" tab leads to rebuild of Signals list but signals' values are not updated.

## **21 KPA EtherCAT Studio, version 1.12.217.0, released 2016-05-03**

### **21.1 Features**

#### **21.1.1 FoE functionality improvement**

FoE functionality has been improved. From now on Studio handles call-results from Master in NON-Blocking mode (supporting FoE Busy service). Also, added visualization of FoE Read operation.

#### **21.1.2 AfterMasterAttachedEvent via NET. Remoting**

AfterMasterAttachedEvent event has been added to IECATMaster. This event shows that Master has attached. It is available via Net.Remoting.

#### **21.1.3 AfterMasterDetachedEvent via NET. Remoting**

AfterMasterDetachedEvent event has been added to IECATMaster. This event shows that Master has detached. It is available via Net.Remoting.

### **21.2 Fixed bugs**

- Plug-in "MDP Profibus Master Profile 3100": licensing fault.
- PDO-s without 'SM' attribute in ESI are assigned in "PDO assignment" group box by default.
- While uploading PDO-s configuration on attach, PDO added by Modules plug-in is not removed if PDO with the same index is found.

## **22 KPA EtherCAT Studio, version 1.12.210.0, released 2015-12-04**

### **22.1 Features**

#### **22.1.1 Import of slave's configuration from ENI**

An opportunity to import slave's PDOs and Mailbox Init commands from ENI has been added. A new item "Import config from ENI" is available in slave's right-click menu (in Configuration pane) and allows to select ENI for importing slave's configuration.

### **22.2 Fixed bugs**

- Modules' CoE init commands are not imported to slave after modules were added to slave configuration in "MDP Modules" plug-in.
- Import of S2S connections from an ENI is failed when there are several mixed connections (entry to PDO) configured in the ENI.
- PDOs are not reordered if Profibus configuration is changed after Studio's project opening.
- PDO mapping defined in EEPROM is not read using Slave Information Interface.

## **23 KPA EtherCAT Studio, version 1.12.189.0, released 2015-09-02**

### **23.1 Features**

#### **23.1.1 MDP Profibus Master configuration import/export**

The plug-in "MDP Profibus Master Gateway Profile 3100" has been improved. From now on it is possible to import Profibus configuration only (from \*.ldb / \*.map file) as well as all Profibus plug-in data (from \*.xml file) and export Profibus plug-in data in XML file.

For more details refer to Studio Help (EtherCATStudioNET.chm).

### **23.2 Fixed bugs**

- EEPROM Editor tool: the checksum is not recalculated while EEPROM writing if EEPROM was generated based on ESI file.
- S2S Communication Editor: no connections are imported from ENI file if it contains PDO Entry with DScale range having degree sign.
- CANopen Master plug-in: Master cycle time is written into 0x1c32 index in inverse order during Mailbox command generation.
- DL Status of unplugged/missing device is tried to be read from memory each Master's Statistics display period.
- For projects with complex slaves (junctions, extensions etc.) in configuration while adding a new slave its signals are not added to Process Image.
- It is impossible to open project file that was created (saved) after manual modification of slave's PDOs in the project.
- It is written "Infromation" instead of "Information" in the file types filter item in "Save as" dialog for exporting KPA ENI.
- Filter in "Save as" dialog for exporting KPA ENI from the toolbar differs from the filter used in dialog called from Master's context menu.

## **24 KPA EtherCAT Studio, version 1.12.173.0, released 2015-06-02**

### **24.1 Features**

#### **24.1.1 KPA EtherCAT Studio x64**

From now on it is possible to use (install and running) KPA EtherCAT Studio as a 64-bit application as well as 32-bit one.

#### **24.1.2 Application binding support**

An opportunity to bind Studio license to application ID has been added. For more details contact our Sales Department at [sales@koenig-pa.de](mailto:sales@koenig-pa.de).

## 24.2 Fixed bugs

- Sometimes "Configure-on-the-fly" dialog is displayed on the background while attach.
- MDP Modules plug-in: the flags "Mandatory" and "Fixed" are not set for PDO created by the plug-in if they are set in module's PDO description in ESI.

# 25 KPA EtherCAT Studio, version 1.12.155.0, released 2015-05-15

## 25.1 Features

### 25.1.1 Rename of plug-ins

The following plug-ins were renamed:

- "Modules" to "MDP Modules";
- "MDP" to "MDP Profibus Master Gateway Profile 3100";
- "KPA EtherCAT 4 CAN Gateway" to "MDP 4 CAN Gateway".

### 25.1.2 Setting "Keep last value" for all inputs/outputs variables

An opportunity to set "Keep last value" property for all inputs/outputs variables in a project has been added. The corresponding flag is displayed on Process Image Tab.

### 25.1.3 NIC-s configuring without physical connection to Master Server

An opportunity to set/delete/update Main/Redundancy NIC-s without physical connection to Master Server has been added.

### 25.1.4 Support of BITARR data types

From now on Studio supports base BITARR data types such as BITARR8, BITARR16, BITARR32.

### 25.1.5 MDP Modules plug-in improvement

The following improvements have been implemented in MDP Modules plug-in:

- Devices in the modules library are grouped according to their class if module classes are defined in ESI file.
- It is possible to read detected Module Ident list from slave. The corresponding flag "Upload detected Module Ident list" was added in MDP Modules Tab.

## 25.2 Fixed bugs

- Error reading object dictionary from EDS file is returned when value of DefaultValue parameter is less than value of SubNumber parameter.
- Order of slaves is changed while moving of configuration from "Master compare" dialog into "Configuration pane".
- Data Logger: it is impossible to save a log file as a dat-file.
- EEPROM Editor:
  - EEPROM validation error occurs if EEPROM size is not multiple of 128.
  - EEPROM is not read from a slave after it has been written to this slave.

- MDP Profibus Master Gateway Profile 3100 plug-in:
  - If a module does not have inputs and outputs its configuration data is not added to slave's configuration data.
  - Reserved Bit 7 of "SI\_flag" byte in CoE init command for 0x80n0 object is "0" instead of "1".
- MDP Modules plug-in:
  - Offset of the first Modules' entry in Process Image is set for the Slave-To-Slave connection after update if mapped object is created by Modules.
  - Properties from ESI file are set for PDO entry created by the plug-in after updating configuration.
- CAN Interface plug-in:
  - Part of signal's name is shown as a variable name in Process Image when signal is linked to CAN Message with Extended ID.
  - Standard and extended CAN messages with the same ID are considered as not unique while loading DBC file.
  - The last bit of the CAN message ID is not exported to the driver data if the message is extended.
  - Messages with the same ID but different length cannot be added into "CAN messages configuration" area.
- Studio changes initial Master autorecovery timeout while attaching to running Master.
- Slaves with physics "YY Y" are shown without auxiliary pins in Configuration pane.
- Slaves connected to the port B of the 'YY Y' slave are not shown in the configuration tree after scanning configuration.
- Version "1.X.X.X" is removed from "Compatible master versions" collection in Options if closing Studio is canceled.

## **26 KPA EtherCAT Studio, version 1.12.111.0, released 2014-07-22**

### **26.1 Fixed bugs**

- PDO assignment and configuration read from a slave is not applied if the slave has a PDO with no entries.
- EEPROM Editor: EEPROM is not read from a slave after writing it to the slave.
- If high value of DPI is set in Display settings the following items of interface are not displayed fully:
  - FMMU/SM tab;
  - Slave configuration and Library trees of Modules plug-in.
- Nothing is shown in Topology Viewer if there is an YYKY device in configuration.
- Actual topology is not built in configuration tree if there is an YY Y device in configuration:
  - if there are some slaves on ports D and B: error "Can't find good pinout to connect all devices." appears at attach or linear configuration is built after bus scanning;
  - if there is a slave on port B: error "Can't find good pinout to connect all devices." appears at appending port D of 'YY Y' device.

## **27 KPA EtherCAT Studio, version 1.12.102.0, released 2014-04-18**

### **27.1 Features**

#### **27.1.1 Import signals information from CSV file**

It is possible to import signal's data from CSV file that contains signals' name, data type, size and offset.

"Import signals info from CSV" item has been added to slave's right-click menu in Configuration tree.

For instructions on how to use this functionality see "Import signals information from CSV" section of Studio Help.

#### **27.1.2 Disabling slave's Distributed Clock settings**

An opportunity to disable Distributed Clock settings for slaves supporting Distributed Clock functionality has been added.

"Not used" item has been added into "Name" drop-down list in the "Operation mode" area of slave's Distributed Clock tab. If "Not used" item is set, no Distributed Clock information is exported to ENI file and slave is not used as reference clock or external synchronization device.

#### **27.1.3 Improvement of upload Module Ident list**

If Slave configuration in Modules plug-in is created manually, Module Ident list is not read from the slave during Master attaching (check-box "Upload detected Module Ident list" is unchecked).

#### **27.1.4 Conversion of integer CAN signals**

An opportunity to convert integer CAN signals with fractional factor to LREAL or REAL EtherCAT type depending on bit size has been added. This feature is enabled by setting "Convert to real type integer signals with fractional factor" flag in the "DBC Messages Settings" window.

CAN signals of "Signed" and "Unsigned" types with fractional factor are converted to REAL EtherCAT type if signal's bit size is less or equal to 32 bit and to LREAL in other cases.

### **27.2 Fixed bugs**

- If PDO entry with zero size is presented in configuration, and the following entry in configuration is used in Slave to Slave connection, the entry with zero size replaces the actually mapped entry in Slave to Slave connection after reopening the project. PDOs behave in the same way.
- Modules plug-in:
  - PDOs of identical modules are placed in Process Image one after another while updating the plug-in's data.
  - Modules with idents loaded from slave's objects dictionary are not added to configuration of the plug-in if the slot is defined in ESI by "ModuleClass" object.
- MDP plug-in does not parse the following parameters of GSD file: Freeze\_Mode\_supp, Sync\_Mode\_supp, Fail\_Safe, and SI\_flag.

## **28 KPA EtherCAT Studio, version 1.12.88.0, released 2014-02-10**

### **28.1 Features**

#### **28.1.1 Modules plug-in improvements**

##### **Reading Module Ident list from slave**

An opportunity to read detected Module Ident list (OD object 0xF050) from slave while attaching was implemented. New slave configuration is based on read Module Ident list.

##### **Downloading ModuleIdent in Configured Module Ident List Object**

The corresponding init command is generated for downloading ModuleIdent in Configured Module Ident List Object (objects 0xF03x).

#### **28.1.2 Converting signals to Intel format in CAN Interface plug-in**

It is possible to convert all PI signals in CAN Interface plug-in to Intel format. "Convert all signals to Intel format" check-box was added to "DBC Messages Settings" dialog.

#### **28.1.3 Edition of DP slave's/modules data in MDP plug-in**

It is possible to edit parameterization data of DP slaves and modules according to parameters defined in GSD file.

#### **28.1.4 Swapping QWords for 64 bit signals**

An opportunity to change flag SwapQWord for 64 bit signals was implemented. Check-box "Swap QWord" has been added to Signal Properties tab and it is enable for 64 bit signals.

#### **28.1.5 New logic of configuring DC functionality**

Logic of configuring Master DC functionality was updated with the following features:

1. Only the first DC slave may be set as Reference Clock.
2. It is impossible to set hot connected slave as reference clock or external synchronization device.

#### **28.1.6 Wrong Outputs diagnostic flag**

"Wrong Outputs" flag was added to the Diagnostics group-box of the State Machine tab. This flag indicates that Master returns the corresponding error.

#### **28.1.7 Physical slave's identification for Hot-connected slaves**

When making all slaves hot-connected with identification, identification values set in slaves' EEPROM (Physical values) will be used as slaves identification.

#### **28.1.8 Support of scaling signal value "0-15"**

Studio supports signal's scaling value "0-15" and allows selecting this value in signal's Information tab.

### 28.1.9 Running Studio without Administrator rights

User with any access level (Administrator, user) may launch the Studio.

## 28.2 Fixed bugs

- The dialogue "Compatible master version" appears at attaching Master if before it closing Studio was aborted.
- Error message "PDI watchdog expired" is not shown in Studio Output pane when "PDI Watchdog expired" event happens (red indicator in slave's Diagnostics tab).
- Values of indexes not having subindexes and expanded indexes with their subindexes are not updated cyclically if check box "Automatically" is set on the slave's "Mailbox: CoE" tab.
- MDP plug-in:
  - Value of ExtUserPrmData parameters with 16 and 32 bit integer data types is swapped before adding to resulting prm data.
  - If some octet of module's config data is defined in GSD using decimal format, it is not converted to hex while parsing GSD.
  - Extra signals with size of data of EL6731 configured by MDP plug-in via GSD files are added to PI after reloading project.
  - If several "Ext\_User\_Prm\_Data\_Const" values with the same offset are used in GSD, every next one is added to resulting prm data.
  - Prm data parameters are not displayed in the "Edit" dialog of DP Slaves added to configuration by scanning Profibus configuration
  - "0x" is shown for prm data of module in the Information area of MDP plug-in for If module does not have any prm data.
  - Parsing of GSD file fails if it contains ExtUserPrmData parameter with data type "Bitarea(0-7)".
  - If default value of ExtUserPrmData parameter is defined in GSD in decimal format, it is not converted to hex value.
  - Prm data is not set for DP modules after parsing GSD file if it is defined by ExtUserPrmData parameter without assigned PrmText.
  - Parameterization data parameters are not presented in the "Edit" dialog for devices imported to .xml files.
  - Values set for parameters of some DP module are shown in the Edit dialog for all next DP Modules.
  - Values set for parameters of some DP Slave are shown in the Edit dialog for all next DP Slaves.
- Modules plug-in:
  - PDO is not aligned if attribute "Alignment" is set for ModulePdoGroup. No alignment signals added for PDO if attribute "Alignment" is set for ModulePdoGroup.
- CAN Interface plug-in:
  - If unreferenced message is defined in the DBC-file, received or unreferenced message with next ID isn't loaded.
  - The transmitting node is not added to Available CAN messages tree if it is defined only in message section of dbc-file.
  - Not all Unicode symbols are recognized during parsing signal's unit from DBC file.
  - List of signals receivers separated by comma is read from DBC file as one node.
  - If "Vector\_\_XXX" is placed in the list of network nodes, network node with this name is created.

- Integer signals with fractional factor are not converted to LREAL if bit length of signal is not multiple of 8.
- Studio hangs and becomes not responding while parsing DBC file containing several "Tab" symbols in a row.
- Signals with size from the range 2..7 are converted to type "BITARR" instead of "BITn" if EtherCAT base data types are not used.

## **29 KPA EtherCAT Studio, version 1.12.75.0, released 2013-10-30**

### **29.1 Fixed bugs**

- MDP plug-in:
  - Parameter defined in GSD file with not bit data type is appended to resulting parameter data instead of being inserted to referred offset.
  - Parameter "Signed" is not taken into account while parsing a signal from GSD files.
  - UDINT signal is created in the library of MDP plug-in if type Real was defined in GSD file.
  - UINT signal is created in the library of MDP plug-in if type QWord or DWord was defined in GSD file.
  - Signals of identical modules from ldb/map configuration are placed in a row even if they are separated by different module.

## **30 KPA EtherCAT Studio, version 1.12.74.0, released 2013-10-09**

### **30.1 Features**

#### **30.1.1 EEPROM Editor improvement**

EEPROM validation has been revised.

### **30.2 Fixed bugs**

- FoE upload/download operations failed after changing online position of hot-connected slaves.
- MDP plug-in:
  - DP Slaves are not sorted according to their Profibus addresses while importing configuration from ldb\map files.
  - Configuration created by MDP plug-in is cleaned at updating if slave supports Modules plug-in.
- Profibus Slave plug-in:
  - Module with the biggest size in the library is added to configuration if not "Byte" or "Word" input signal is imported from NTF.
  - Module with the biggest size in the library is added to configuration if "Byte" or "Word" input signal type is defined in another letters case.

## 31 KPA EtherCAT Studio, version 1.12.71.0, released 2013-09-25

### 31.1 Features

#### 31.1.1 MDP plug-in improvement

##### Naming convention

Token %Direction% has been added to convention rules for complex names of Channels in MDP plug-in. Possible values of the token are %Input% or %Output%.

##### Creation/editing of Profibus configuration tree

From now on it is possible to add a slave from Library to Configuration with the help of right-click menu. The following items were added to the right-click menu:

- "Append to DP Master" – for adding slave to the end of profibus configuration;
- "Insert before DP Slave" – for adding slave before selected one.

From now on it is possible to add a module from Library to Configuration with the help of right-click menu. The following items were added to the right-click menu:

- "Append to DP Slave" – contains the list of DP Slaves corresponding to selected module (for adding module to the end of slave's configuration);
- "Insert before DP Module" – contains the list of corresponding DP Slaves with already added modules, where each DP Slave item includes the list of its modules from configuration (for adding module before selected one).

Also, to remove slaves from Profibus configuration the following opportunities were added:

- to clear Profibus configuration tree by one action;
- to remove slave from Profibus configuration tree with the help of mouse right-click menu.

#### 31.1.2 Grouping devices in modules library by module class

Modules library tree displaying in Modules plug-in has been improved. Now, modules defined by module class in ESI file are grouped by their module classes in modules library. Modules defined by identifier are displayed without grouping.

#### 31.1.3 Slave-to-Slave communication Editor improvement

From now on Slave-to-Slave communication Editor allows to map Pdo to Entry or Entry to Pdo.

#### 31.1.4 LDB/MAP format 3.0 support

From now on EtherCAT Studio supports format 3.0 of LDB/MAP files.

#### 31.1.5 Reverting naming convention of signals/channels imported from LDB/MAP file

Naming convention of signals and channels imported from LDB/MAP file was reverted to version implemented in Studio v 1.11.212.0 and has the following format:

	Format	Example
Channel	Box_%DPSlavePosition%_%Direction%	Box_0_Output
Signal	M%DPModulePosition%_%SignalName%	M1_Pin5
Signal (without module prefix)	%SignalName%	Pin5

## 31.2 Fixed bugs

- MDP plug-in: signal with unsigned integer type is created in slave's configuration tree instead of type defined for signal in GSD/GSE file.
- Modules plug-in:
  - names of modules are displayed in the modules library tree instead of their types;
  - information about type of the module selected in the modules library pane is not displayed in the information area;
  - modules' PDOs are mapped to process image in order of adding them to slave's configuration instead of order defined in ESI file;
  - it is impossible to add module from Library to position, from which module was deleted, until plug-in's update.
- S2S communication Editor: only one mapping is presented in ENI if both the input channel and the first signal from it were connected to some outputs.
- Mailbox. CoE:
  - Object Dictionary reading from ESI/ODF file takes too much time;
  - at Mailbox:CoE tab reopening objects values read from slave are used instead of cached values;
  - Studio hangs while reading OD object of large bit size.
- EEPROM Editor: EEPROM validation error occurs if size defined in EEPROM does not correspond to real EEPROM size.

## 32 KPA EtherCAT Studio, version 1.12.58.0, released 2013-07-01

### 32.1 Features

#### 32.1.1 MDP plug-in renamed to Modules

MDP plug-in has been renamed to Modules.

#### 32.1.2 MDP Extended plug-in renamed to MDP

MDP Extended plug-in has been renamed to MDP.

#### 32.1.3 MDP plug-in improvement

Signal creating logic has been changed. From now on offset calculation is started from the module beginning, Byte offset is deleted from Creating signal window.

From now on it is possible to adjust displaying names of Profibus DP Slaves/ Modules and EtherCAT Channels/Signals. The opportunity to specify corresponding Naming convention is added to the Profile's settings that become available by clicking on Settings button in MDP tab.

From now on it is possible to clear Profibus configuration at once and to remove slave from configuration with the help of right-click menu.

### 32.1.4 KPA EMIR CAN Gateway plug-in renamed to KPA EtherCAT 4-CAN Gateway

KPA EMIR CAN Gateway plug-in has been renamed to KPA EtherCAT 4-CAN Gateway.

## 32.2 Fixed bugs

- After opening project containing signal with empty string set for "default\_name" parameter, all signals within channel with such signal have identical names equal to the name of the last signal in the channel.
- M2M plug-in: signals loaded from primary side automatically have identical names after project reopening.
- PDO entries loaded from the slave by "Read PDO(s) from Slave" operation have identical names after project reopening.
- PI size restriction is not reset if configuration with allowed size of PI was left while comparing configurations on attach.
- Every Master in the project is affected by restriction, if Process Image size is exceeded on one of them.
- New network node is created for a signal if Unit and Receiver is defined for a signal in DBC file and Receiver name contains Unit name.
- "0" is exported to ENI file (KPA format) as inner text of <MasterTimeAsRef> tag in Master's <DC> section, if Master is set as External Sync device, until some slave is not selected as External Sync device.
- MDP:
  - Not all EtherCAT data types are available while adding signals to a module.
  - Window for creating signal isn't closed by pressing Esc key.
  - Message box with text "Bit length should be 1" appears after trying to create BITARR signal with bit length more than one.
  - Control "Order in configuration" is enabled for DP modules imported from ldb/map files.
  - "Show 'Configuration-on-the-fly' dialog" check-box is still set after unchecking "Scan online Profibus configuration" check-box.
  - Project is not set as modified after changing state of "Scan online Profibus configuration" check-box.
  - Project is not set as modified after changing state of "Show 'Configure-on-the-fly' dialog" check-box.
  - GSD files with extensions .gsg, .gsf, .gsp, .gsi, .gss are not presented in the dialog for opening GSD files
  - Message box with description of an error is not shown if some error occurred while parsing GSD file.
  - One is set as address of the slave after adding it to configuration that already contains 123 slaves, if one is set as master address.
  - Slave from the library isn't added to configuration if it was drag-and-dropped to the node corresponding to the slave imported from LDB/MAP.
  - It's impossible to remove module from configuration with the help of right-click menu.
  - Module's order in configuration shown in the information area of MDP plug-in tab isn't updated while changing it.

## 33 KPA EtherCAT Studio, version 1.12.47.0, released 2013-04-11

### 33.1 Features

#### 33.1.1 Support of KPA EMIR CAN Gateway devices

KPA EMIR CAN Gateway ESI file has been added to the Slaves Library.

From now on the EMIR CAN Gateway plug-in is available for KPA EMIR CAN Gateway devices on the Plug-ins tab. It is intended to configure KPA EMIR CAN Gateway device with/without EMIR CAN Gateway driver. The EMIR CAN Gateway plug-in interface consists of:

- **CAN channel** drop-down list – to choose a channel for configuration.
- **Channel settings** tab – to set channel's Baudrate (directly or using Transfer Layer parameters), to set channel's Filter and/or Mask and to check current configuration.
- **DBC configuration** tab – to specify length of EMIR CAN Gateway driver queue, DBC messages settings and create CAN messages configuration.

#### 33.1.2 New MDP Extended plug-in

MDP Extended plug-in has been added with the opportunity to configure Profibus DP Master (profile 3100). The plug-in allows:

- to scan online Profibus configuration via AoE at Master attach;
- to create Profibus DP Master configuration using GSE(GSD) file;
- to import Profibus DP Master configuration from a LDB( MAP) file;
- to add/remove signals to/from modules in current Library.

#### 33.1.3 AoE support improvement

From now on it is possible to send AoE Read, AoE Write, AoE Write Control, AoE ReadWrite commands. The following items are added to AoE tab:

- **Command** drop-down list – to select command type;
- **Target port** – to specify a port to which the command is addressed;
- **Timeout** – to specify timeout for the command (ms);
- Specific command's properties;
- **Send Command** button – sends the command;
- **Result** text box – displays result of the AoE Command execution.

Also, the following opportunities have been added:

- to set AoE NeT ID for Master – **AoE** section on the Master tab;
- to add AoE init command from Init commands tab – click on **Add/Import** button and select AoE command's type.

#### 33.1.4 Explicit Device Identification support

An opportunity to identify an EtherCAT slave explicitly has been added. The following identification mechanisms are supported:

- **Requesting ID** (for complex slaves with application microcontroller and ID-Selector);
- **Direct ID** (for simple slave without microcontroller but with ID-Selector);

- **Configured station alias** setting by Configuration Tool (if local ID-Selector is not present or equal to Zero).

The **Identification** section was added to the Slave tab. That allows users to enable the functionality and set Explicit device identification value.

### 33.1.5 LDB/MAP format 2.0 support

From now on EtherCAT Studio supports format 2.0 of LDB/MAP files.

### 33.1.6 CAN Interface plug-in improvement

An opportunity to set CAN Interface Bus timing registers manually has been added. **"Manual Baudrate"** item was added to **Baudrate** list to enable setting Baudrate value via Bus timing registers. By pressing the **Manual Baudrate** button, the window for setting Bus timing registers' values opens.

Min and max values of a signal added to CAN messages configuration are converted to corresponding Double type min and max values if in a DBC file the min value is equal to max value.

The logic of adding messages to CAN messages configuration has been improved. From now on it is possible:

- to move message separately to Transmitted or Received folder – "**<Tx**" or "**<Rx**" buttons and "**Move message to Rx**" or "**Move message to Tx**" items of right-click menu;
- to move all messages separately to Transmitted or Received folder at a heat – the "**Move all messages to Rx**" or the "**Move all messages to Tx**" items of right-click menu;
- to drag and drop a message from Available CAN messages to a certain position in CAN messages configuration.

Also, it is possible to change the order of messages inside CAN messages configuration by dragging.

It is possible to edit name of a CAN signal added to Process Image.

### 33.1.7 CANopen Master plug-in improvement

The following opportunities have been added to CANopen Master plug-in:

- to add/skip Node-ID to/in CANopen Slave Name on configuration scanning dialog. By default Node-ID is added to CANopen Slave Name;
- to add/skip COB-ID to/in PDO Name on configuration scanning dialog. By default COB-ID is added to PDO Name;
- to edit names of CANopen Slave and CANopen Slave PDOs.

### 33.1.8 Side of Master in M2M plug-in's name

From now on the side of EtherCAT Bridge terminal (EL6692) is displayed in the M2M plug-in's name. For example, for primary side – M2M (Primary).

### 33.1.9 New format of Profibus Master's PDO Entry

Format "%Profibus Module Name/Type%\_ %Profibus Module Address%"\_"%Profibus Signal Name%" is used for PDO Entry naming.

### 33.1.10 Profibus modules editing

From now on it is possible to change Profibus modules name and address on its Information tab.

### 33.1.11 MDF file time stamp correction

From now on it is possible to edit time stamp of MDF file. The “**Time stamp correction**” field has been added to Logging options dialog of Data Logger Tool and allows correcting a Time stamp at which recording was started.

### 33.1.12 “Retries” parameter in ENI file

“Retries” parameter of init command has been added to ECatCmdType section of ENI file. It defines how many times Master should retry sending the command. Possible values:

- for “set device state to PREOP” command **Retries value = TransitionTimeout / MasterCycleTime;**
- for the rest of commands **Retries value = 3.**

### 33.1.13 New event after Master attachment

New event onMasterAfterAttachEvent, thrown after Master is fully attached, has been added. It is available via Automation Interface.

### 33.1.14 New event after project loading

New event onAfterProjectLoaded thrown after project loading has been added. It is available via Automation Interface.

### 33.1.15 Scaling Signal Value functionality for 16 and 32 bit signals

From now on Scaling Signal Value functionality is available for 16 and 32 bit signals. “**Scaling**” section has been added to signal’s “Information” tab with drop-down list for range selection and description of selected value.

If DScale attribute is not defined for a signal, range "None" is displayed for such signals.

### 33.1.16 Signal’s value swapping

From now on attribute "SwapData" of EntryType:DataType is parsed from ESI file.

An opportunity to edit swapping mode has been added to signal’s Information tab: Swap data property with “**Swap Word**” and “**Swap Dword**” flags.

### 33.1.17 Force/unforce signal’s value in any Master’s state

It is possible to force/unforce signal’s value in any Master’s state (Init, Pre-Operational, Safe-Operational, Operational) except Bootstrap state.

### 33.1.18 Slave-to-Slave Communication Editor improvement

From now on it is possible to select a mode of Slave-to-Slave communication. The **Mode** drop-down list has been added to Slave-to-Slave Communication Editor, available values: via Master; None – disables the functionality.

In Online mode the Studio gets Slave-to-Slave connections from Master and compares it with connections configured in S2S Communication Editor. In case of differences, the Studio allows the user to choose which configuration to use.

From now on you can establish Slave-to-Slave connection in S2S Communication Editor using keyboard keys:

- Tab and ↑, ↓ keys** – to move cursor.
- ←, → keys** – to expand/fold items of configuration tree.
- Enter** – to select item and press on the buttons.
- Context menu key** – in Outputs area opens context menu with fit Input PDOs/PDO entries.
- Delete** – to remove selected connection from the list of set S2S connections.

### 33.1.19 KPA format extension for DC oversampling

KPA format of export Master configuration to C-header file has been extended with special #define lines for DC oversampling implementation

```
#define Slave_1_RxPDO4_target_position__axis_2__OsFac 0x1 – without oversampling  
#define Slave_1_RxPDO4_target_position__axis_2__OsFac 0xN – N× oversampling
```

### 33.1.20 Process Data configuring improvement

An opportunity to reload the list of mappable objects at adding or editing PDO entry has been added. The Update list button was added to "PDO Entry Adding" window.

PDO access type is shown in the list of mappable objects at adding or editing PDO entry. The **Access** column was added to the "From dictionary" table on "PDO Entry Adding" window.

### 33.1.21 ARRAY structure of PDO Assign Objects

From now on the PDO Assign Objects (0x1C12 and 0x1C13) are being defined as ARRAY type if a type unspecified in specification is received from the slave.

### 33.1.22 Chart Viewer in Offline mode

From now on Chart Viewer tool is available in Offline mode also.

### 33.1.23 Disabled diagnostics fault messages

An opportunity to disable displaying diagnostics fault messages has been added. Depending on which messages you are going to disable, it is necessary to **set "0"** for the corresponding properties in Studio Options:

- for the messages which appear when errors counter incrementation threshold is reached – it is **Errors counter incrementation threshold**.
- for the messages which appear when slave errors counter threshold is reached – it is **Slave error counter threshold to display fault message** (for Rx errors, Invalid frames, Lost links or Forwarded Rx errors)

### 33.1.24 Information about export type

From now on after configuration exporting the message appears in Studio Output pane with the export type.

### 33.1.25 Information about project saving

From now on after project saving the message appears in Studio Output pane with the path to the project file.

### 33.1.26 Actions menu update

Items of **Actions** menu that refer to Identification functionality have been renamed. "Static" was replaced to "mandatory". Updated item's names are "**Make all slaves mandatory with identification**" and "**Make all slaves mandatory without identification**".

### 33.1.27 New location of data

Location of the following files and data have been changed:

- data of Data Logger, Sample Rate Editor, Fixed PI Editor, Projects Comparator, EEPROM Editor, ESI and EEPROM Comparator are saved in %Data Folder%/KPA/EtherCAT Studio/plugin;
- Images of Topology Viewer tool are moved to %Data Folder%/KPA/EtherCAT Studio/plugin/TopologyViewer;
- files TopologyDevicesLibrary.xml, MessageSeverityTable.xml, MemoryFieldDescriptionMapper.xml, MessageHelpIDTable.xml, HelpContextMapping.xml are moved to %Data Folder%/KPA/EtherCAT Studio;
- folder "%Setup\_Folder%/data/help/" with its content is moved to the Studio's root folder and named "docs" (e.g. "C:/Program Files/KPA/EtherCAT Studio/docs").

Where the %Data Folder% in dependence on Operation System is:

- C:\Documents and Settings\All Users\Application Data – for Windows XP;
- C:\Program Data – for Windows 7.

### 33.1.28 Faults Help access from Start menu

From now on StudioFaultsHelp.chm is also available from Start menu/KPA/EtherCAT Studio/Documentation/Faults Help.

## 33.2 Fixed bugs

- Error showing that reading license file failed appears at Studio start-up if no license has been applied.
- Project cannot be opened if it contains Factor with decimal symbol different from the current one, set in regional options.
- Diagnostics:
  - Master exception is not caught if it occurs while slaves diagnostics getting.
  - After switching Master diagnostic mode on/off this mode is switched on/off on every Master in the Project.
  - Master diagnostic mode is not switched off while detaching the Master.
  - Descriptions of Master error codes 0x805X are missed in EtherCAT Studio Dictionary.
- Modular Device:
  - "Upload from slave PDO configuration" flag is not reset on successful PDO reading from modular device
  - "In\_"/"Out\_" prefix is added before PDO Entry name while PDO configuration reading from slave via SDO info.
- CANopen Master:
  - Postfixes "Inputs" and "Outputs" are added to PDOs name for PDOs read by CANopen Master plug-in.
  - Default names are not defined for CANopen status channel signals and all signals of CANopen status channel are renamed to "Alignment" after project reopening.

- Profibus Slave
  - Signal's sub-index is not incremented while import from ldb/map files.
  - Index of PDO entries in "PDO Content" of Outputs (PDO 0x1600) is "" instead of "0x7000". Index of PDO entries in "PDO Content" of Inputs (PDO 0x1A00) is "0x7000" instead of "0x6000".
  - If a PDO contains few entries only the first one is added to child PDO while oversampling and others are skipped.
- Process Data configuring:
  - Error T03040 appears while parsing alignment signals with BitLen=0.
  - If the opened project contains PDO read from slave, there are PDOs with identical indices in PDO assignment list.
- "PDO(s) assignment and configuration comparing" dialog:
  - PDO assignment order is based on SM Physical Start Address instead of the order set in ESI file.
  - «%Index%:%SubIndex%» is used as PDO Entry name if Entry's description cannot be read from slave.
  - Type BITARRAY is set for a PDO Entry if its description cannot be read from slave.
  - Master is not stopped after applying Slave PDO assignment and configuration.
- Checksum is not updated after loading EEPROM from a \*.bin file.
- SYNC0 Shift time defined in ESI file is not shown on "Distributed Clock" tab if SYNC0 is disabled.
- One init command is generated if it should be sent on several transitions with different timeouts.
- SoE Init Commands for IDNs S-0-0001 and S-0-0002 are generated if the commands are not defined in ESI file.
- S2S Communication Editor:
  - S2S connected channels are removed during attaching Master.
  - S2S connection signs are not shown after project with connected objects opening.
  - It is impossible to remove single connected output if there are few outputs connected to input.
  - S2S connection becomes invalid when MDP plug-in refreshes its data.
- Control buttons are not shown within Frame Logger form while using of large value of DPI within settings of Windows
- Vendor Image (ImageData16x14) is not parsed from ESI file if hex binary string contains unpaired data.
- Transitions timeouts:
  - "From Init to PO" timeout is used for Back To PreOp transitions.
  - It is impossible to set BackToSafeOp timeout time.
  - Two timeouts are used for PreOP→SafeOP and SafeOP→Op transitions instead of one timeout.
  - Two timeouts are used for Init→PreOp and Init→Boot transitions instead of one timeout Init→PreOp/Boot.
- Emergency message is not shown in Emergency tab if the same not acknowledged message exists.

## **34 KPA EtherCAT Studio, version 1.11.212.0, released 2012-07-25**

### **34.1 Features**

#### **34.1.1 CAN Interface plug-in improvement**

DBC messages settings have been extended and the following check-boxes were added to DBC messages settings:

- **Set Min/Max values in DBC** – if the flag is set, Min/Max values for signals added to CAN messages configuration (signals in Process Image) are automatically converted to min/max of LREAL; if the flag isn't set (default value), Min/Max values from DBC file are used for all signals in Process Image.
- **Convert to LREAL integer signals with fractional factor** – if the flag is set (default value), signals with fractional value of Factor and integer data type in DBC file are automatically converted to LREAL data type in Process Image; if the flag is not set, data type from DBC file is used for all signals of messages added to CAN messages configuration (in Process Image).
- **Use data types with bit size divisible by 8 for integer signals (EtherCAT base data types)** – if the flag is set (default value), signals with integer data type in DBC file but are not fit to ETG integer base data type are automatically converted to higher available ETG data type in Process Image; if the flag is not set, ETG BITn and KPA BITARR data types are used for all signals of messages added to CAN messages configuration (in Process Image).

#### **34.1.2 Slave-To-Slave Communication Editor improvement**

From now on it is possible to import S2S connections from ENI file. "Import connections from ENI" button is added to S2S Communication Editor.

Interface of the Editor has been updated to make it more usable.

#### **34.1.3 Updated Slaves Library**

ESI files "Yaskawa SGDVE1\_CoE rev3.05.xml", "WAGO\_750\_354.xml" and "AKD EtherCAT Device Description (XML).xml" have been added to Slaves Library.

#### **34.1.4 FMMU/SM settings' view in online**

From now on it is possible to view FMMU/SM settings in online mode by double click on selected item in FMMU/SM tab.

#### **34.1.5 Export to ENI file with CDATA**

From now on the strings of Master configuration (NIC, RNIC, Master Name, Slave Name, etc.) are exported to ENI file with CDATA.

#### **34.1.6 Show alignment signals possibility**

An opportunity to Show/Hide alignment signals has been added and available from Studio Options. By default alignment signals are hidden.

#### **34.1.7 Default color settings in Topology and Process Image Viewers**

"Set default" button has been added to settings window (called by Settings button) in Topology Viewer and Process Image Viewer.

### 34.1.8 Name limitation at creating signal in M2M plug-in

From now on the length of signal name field at creating Input/Output signal in M2M plug-in is up to 255 symbols.

## 34.2 Fixed bugs

- CAN Interface plug-in:
  - Message size in PI instead of size in DBC is taken into account during the COB-ID generation.
  - Identical PI offsets are generated for all slaves within configuration which have configured CAN Interface.
  - Made changes are not exported to ENI file until process data update is called from Studio.
  - Indexes of the NodeState and DiagFlag entries of the PDO 0x1A80 are 0x1AXX instead of 0xA0XX.
- CANopen Master:
  - Node state input variables are placed after Diagnostic Inputs instead of the beginning of the diagnostic PDO.
- Projects comparator:
  - index of OpCode command (SoE user init command) is shown as the command's value instead of current one in comparing tree;
  - index of SoE IDNs list source is shown instead of current value in comparing trees.
  - SoE Operation mode Index is written in comparing trees instead of value.
  - SoE IDNs list filter Index is written in comparing trees instead of value.
  - SoE drive parameter "IDNListSourceFile" is missed in comparing trees
  - Flag "Export DC settings to configuration file" is missed in comparing trees.
  - No slaves are shown in comparing tree if project contains Master with enabled DC.
  - PDO's indexes in comparing trees are written in lower case instead of upper case.
- IPv6 addresses are presented in list of Net ID addresses on the AoE tab.
- MDP:
  - Module defined by the attribute Default of ModuleIdent is not assigned to the slot by default.
  - Error occurs while MDP slave initializing if attribute "Alignment" of ModulePdoGroup equal to "0" is defined in Slots description.
  - Error occurs while module adding if entry with no data type is defined for it.
- \*.ecsn files are tried to be disassociated from Studio even if they have been already disassociated.
- Project saved by "Save" operation is not displayed in "Recent projects" list after creating a new project.
- Default path to data instead of set in "KPA\_ECANT\_STUDIO\_DATA\_PATH" environment variable is used.
- PDOs read from ESI are not removed before PDO configuration upload.

## **35 KPA EtherCAT Studio, version 1.11.197.0, released 2012-05-21**

### **35.1 Features**

#### **35.1.1 MDP support: reading modules from ESI**

From now on it is possible to configure device using Modular Device Profile (MDP) described in ESI (in accord with ETG.5001 Modular Device Profile).

#### **35.1.2 Data Logger improvement**

Logging options window has been updated:

- Start logging was carried out to logical units: "start logging immediately" and "start logging using trigger".
- Logging limitations were carried out to separate section.

Also, from now on trigger is shown in the middle of the chart even if frames amount before and after trigger succeeds is not equal.

#### **35.1.3 Memory reading improvement**

From now on it is possible to read registers one by one: corresponding check-box was added on Memory tab in Online mode.

#### **35.1.4 Automation Interface improvement**

Type of interface IECATSlave properties VendorId, ProductCode, RevisionNo, SerialNo were returned to "long". New properties VendorIdETG, ProductCodeETG, RevisionNoETG, SerialNoETG with type "uint" were added.

#### **35.1.5 Sorting Input/Output variables**

From now on it is possible to sort Input/Output variables by Name/Type/Bit size/PI offset in Process Image, Variables and channel's Information tabs.

#### **35.1.6 Project opening logic improvement**

From now on project file is analyzed whether it contains ESI files before trying to load them.

"Opening project" window interface has been improved:

- Buttons "Don't load for all" and "Load ESI for all" were removed.
- Button "Load ESI for selected" was renamed to "OK".
- Unknown devices without ESIs are shown in separate list.

#### **35.1.7 Beckhoff's ESIs update**

Beckhoff's ESIs were updated from [www.beckhoff.com](http://www.beckhoff.com) on April 27, 2012.

### **35.1.8 Auto adjustment SM cycle time of PROFIBUS Master**

From now on cycle time factor for SM of PROFIBUS Master is not adjusted automatically after profile importing and master cycle changing.

Inti command for 0xf800 object is changed: value "00" is set instead of "01" for "IO Multiplier" index.

### **35.1.9 EEPROM reading improvement**

From now on slave's EEPROM is read until data = 0xFFFF.

### **35.1.10 Slaves Library reading improvement**

From now on Studio reads ESI files not only in "slavelib" folder but also in all its subfolders.

### **35.1.11 Adding init command improvement**

From now on only available for selected Mailbox protocol transitions are accessible to be checked on "Adding init command" window.

### **35.1.12 New logic of keeping path to data folder**

From now on the path to data folder is kept in the environment variable which name is specified in BLF.

### **35.1.13 New Images location**

From now on all images from "/data/images" folder have been moved to the Studio binaries resources (into Studio \*.dlls).

### **35.1.14 New XLST files location**

Folder with XSLT files has been moved to Studio's data folder (in All Users/Program Data).

### **35.1.15 Color setting for failed init commands**

Color setting for "Failed init cmds" has been added in "Init cmds list settings" (accessed from "Init commands" tab by List settings button).

## **35.2 Fixed bugs**

- Data Logger tool:
  - Signals added for logging are unselected for displaying in chart legend.
  - List of signals set for displaying in chart legend are reset after new recording.
  - Trigger is not shown in coordinate origin.
  - Data Logger cannot be closed by pressing "Esc" key.
- CANopen Master:
  - Signal is created for PDO even if it is read length is 0.
  - PDO read from CANopen slave is spited into entries while adding to EtherCAT configuration.
  - Index of inputs read from slave in PDO Content starts from 0x1a00 instead of 0x6000.
  - Index of outputs read from slave in PDO Content starts from 0x1600 instead of 0x7000.

- CAN Interface plug-in:
  - Made changes in "CAN databases" window are saved on pressing Alt+F4 or close with taskbar right-click menu.
  - Rx DBC messages are not considered at calculation of Driver's signals offsets within DrvQueueHeader block of ExternalDriverData.
  - Identical PI offsets are generated for all slaves which were configured using CAN Interface.
- Memory reading:
  - Memory is reloaded automatically if register writing has failed.
  - It is impossible to abort "parsing data" operation when rather large block of data was selected for reading.
- Master statistics is reset while scanning the bus when corresponding check box is set in Studio's Options.
- Value of Input signal is rewritten by value of DC command when only slaves without Mailbox FMMU are presented on the bus.
- Mailbox: CoE:
  - In case of OD updating from ESI file:
    - Number of object's subindexes according to ESI file in offline/online mode is not shown as default value of 0 subindex. ("Default Value" column).
    - Actual number of object's subindices is not shown as value of 0 subindex in online mode.
  - Each OD index is read twice when the bus has been disconnected while reading OD structure.
- Attach Master operation is not canceled by pressing "Esc" or "X" in incompatible master version dialog.
- Second column of master properties on "Master" tab is shifted to the right after Studio reopening.
- Master Frame parameters: Source and Destination MAC could be set with size less than 6bytes.
- It is impossible to associate \*.ecsn with KPA EtherCAT Studio as well as to read association.
- Product name is added to string while saving master's traces to a file.
- Master is defined as incompatible if it is version < 1.5.x.x.

## **36 KPA EtherCAT Studio, version 1.10.172.0, released 2012-03-30**

### **36.1 Features**

#### **36.1.1 CANopen Master gateway plug-in renaming**

From now on the plug-in is called "CANopen Master" instead of "CANopen Master gateway".

#### **36.1.2 "Complete Access" usage improvement**

An opportunity to enable/disable "Complete Access" without ESI file changing has been added.

### 36.1.3 Comparison saved and available plug-ins while project opening.

From now on the lists of saved in project and available in Studio plug-ins are compared while project opening. If some plug-ins are missing in Studio, they are displayed in dialog window.

### 36.1.4 Saving Emergency messages to file

From now on it is possible to save Emergency messages to file. "Save to file" operation has been added to right click menu of Emergency tab.

### 36.1.5 Studio licensing check update

PUA licenses are not supported any more.

### 36.1.6 New "lightweight" Studio mode

"Lightweight" Studio mode has been added. Studio in this mode runs silent and does not load any images, slaves library, localization etc.

## 36.2 Fixed bugs

- Init command "clear DC activation" is added to slaves that do not support DC feature.
- Data Logger: trigger is not shown in origin of coordinates.
- EEPROM's PDI control is not checked on "Scan configuration" operation.
- EEPROM Editor:
  - It is impossible to assign equal subindexes for PDO Entries with different indexes.
  - "LINT" is shown as a Datatype of added element of Tx/RxPDO category after selecting of INTEGER32 as a Datatype of this item.
- Loading of project is executed before comparison of SII information while opening the project.
- It is impossible to close message box "Master %Master% slave-to-slave communication settings were changed. Do you want to apply them?" after changing of S2S settings.
- Not allowed value can be set as Ethernet type in Master's Frame parameters.
- OD Export:
  - "Write Only" CoE objects are tried to be read via complete access while OD exporting.
  - Complete access is used while exporting OD without values.
  - Object is not read without complete access while exporting OD with values if reading via complete access failed.
- Studio Output filter buttons (Errors, Warnings, Info, Categories) are displayed with very dark background, when they are checked. The same with Master output and Emergency control.
- Studio does not update Product Revision of slave in Configuration pane after executing of "Apply another ESI Rev" command.
- Parameters of the function IECATMaster::ExportTrasformedMasterConfiguration are mixed with each other.

## **37 KPA EtherCAT Studio, version 1.10.164.0, released 2012-03-06**

### **37.1 Features**

#### **37.1.1 Studio setup update**

From now on Studio setup (\*.msi) based on MSM.

#### **37.1.2 Windows 7 x64 support**

From now on KPA Studio EtherCAT can work with Microsoft Windows 7 x64.

#### **37.1.3 Studio's folders replacement**

Logs, projects, online, slavelib folders and settings.xml file are saved now into "%ProgramData%\KPA\EtherCATStudio\" for Vista or Win7 and "%ALLUSERSPROFILE%\Application Data\KPA\EtherCAT Studio" for WinXP

#### **37.1.4 Studio licensing via KPA Licensing Utilities**

From now on Studio licensing is provided via KPA Licensing Utilities. Licensing Utilities folder is available from **Start** → **All Programs** → **KPA** and contains the Hardware Binding utility.

#### **37.1.5 New export template**

Export template "C header file including slave properties" is included into the Studio setup.

#### **37.1.6 New logic in case of the same plug-ins loading.**

From now on If a few plugins with the same name are detected only the first of them is loaded.

#### **37.1.7 Default color settings in "ESI and EEPROM Comparator" and "Project Comparator" tools**

"Set default" button has been added to "Change colors" window (called from "ESI and EEPROM Comparator"/"Project Comparator" by Colors button).

### **37.2 Fixed bugs**

- Invalid byte order of "BE" signals is given to master while executing "Force value" operation.
- Invalid length is generated for LRW cyclic command when corresponding device is configured by several SMs with one FMMU.
- Values of "Adp" parameter for DC cyclic command is exported into ENI file as signed number.
- "DeviceStateInputs" signals for EL6751 are not exported into ENI file after opening project file.
- Win32Profile5002ProfibusLDB profile adds Dummy signal to Master Status PDO 0x1A80 with invalid size.
- Module with empty name is created for EL6692 while uploading configuration from the slave via SDO info.
- PDO consisting only of alignment signal is shown in PDOs' list of "Select PDOs" window

- "Diagnostic Scanner" tool incorrectly shows slaves' name.
- Studio tries to read "write only" CoE objects via complete access.
- It is impossible to reopen project file if value of "Cycle time" is "10 us".

## **38 KPA Studio EtherCAT, version 1.9.31.0, released 2012-01-19**

### **38.1 Features**

#### **38.1.1 Microsoft Windows 7 x86 support**

From now on KPA Studio EtherCAT can work with Microsoft Windows 7 x86.

#### **38.1.2 CAN Interface plug-in v. 4.0**

New CAN Interface plug-in version 4.0 is released with new External driver data format version 2.0.  
From now:

- Plug-in is installed by Studio setup.
- Plug-in is available in plug-ins list of EL6751 in Studio Premium class.
- Plug-in automatically converts data type of integer signals with fractional Factor to LREAL data type. Also plug-in provides the possibility to change signal's data type manually by opening "Editing CAN signal" window from Signals table or by setting "Use data type from DBC" check box.
- "Byte alignment" mode is used for generating PI offsets in case of BIT signals in message by means of adding auxiliary DUMMY signal to the message.
- DBC message validation on signal's zero Factor is implemented by plug-in. Signals with zero Factor is not loaded.
- Default value of "Driver queue" parameter is "0".

#### **38.1.3 M2M improvement**

From now on all EtherCAT types described in ETG Specification are available at signals creating and automatic loading M2M configuration.

#### **38.1.4 Adding/removing CoE init command from CoE tab**

Possibility to add/remove CoE Init command for each RW/WO object of OD from CoE tab has been added. The right click menu with "Add init command" and "Remove init command" items is shown for the objects. At adding init command the "Adding init command" window opens with the next parameters set by default:

- "PS" transition
- Time out: default value for PS transition according to ESI or Studio's settings.

#### **38.1.5 Possibility to make slaves static with alias**

Possibility to make slaves static with alias has been added. "Make slaves static with alias" item is available from Main menu and Master right-click menu. By the action physical alias is written to temporary alias.

### 38.1.6 Possibility to check revision number for all slaves

From now on it is possible to check revision number for all slaves at one dash. "Check slaves Revision number" option is added to Master parameters in Master tab (disabled by default).

### 38.1.7 New algorithm of Emergency messages showing

From now on only 2 messages' colors are used for displaying Emergency messages:

- RED - for non acknowledged messages
- BLACK - for acknowledged messages (by user) and info messages with error code 0x00XX.

### 38.1.8 New naming convention type

From now on a new naming convention type "Auto-generated slave name "SlaveN (Type)" has been added and being used by default. "Auto-generated slave name "SlaveN (Type)" item is added to Studio Options.

### 38.1.9 Viewing Vendor ID, Product code and Revision number in decimal and hexadecimal format

From now on slave's Vendor ID, Product code and Revision number are shown in decimal and hexadecimal format simultaneously in the Slave tab.

### 38.1.10 Possibility to set default values for Studio Options

Button "Default" has been added to Studio Options and allows to reset parameters to default values.

## 38.2 Fixed bugs

- Error occurs at sharing "DefaultFolder" for Win32 master during Studio installation.
- ESI parser cannot recognize "ImageData16x14" tag when corresponding tag is not described within 1 string.
- Signals of KL modules with the same names are displayed in Configuration tree without any differences.
- ENI file:
  - slave's type is removed from comment string;
  - data header and WKC are not taken into account for calculation "InputOffs"/"OutputOffs" values of cyclic commands;
  - tag <InputOffs> is not equal to <OutputOffs> while exporting via ETG Standard.
  - values of "Send/Recv" parameters within "ProcessData" tag correspond to Input/Output process data instead of Output/Input;
  - values of VendorId, ProductCode, RevisionNo and SerialNo parameters are exported into ENI file as unsigned numbers
- Mailbox functionality is disabled for devices with three or four ports even when current functionality is described in ESI.
- Vendor, Product code and Revision number are shown as DINT instead of UDINT.
- Studio does not display "Ethernet frame max size" master's parameter.
- Default OSFac of PDOs is taken into account if "Apply another ESI revision" operation is executed, while DC mode using.

- S2S Communication Editor:
  - S2S information is not saved in project file if there are no connectable PDOs in Master configuration but "PDOs" Mode is selected after some connection between PDO entries was set;
  - none "physical" names are shown by S2S viewer when corresponding functionality is enabled;
  - list of previously selected PDOs/PDOs entries is not saved within S2S Communication editor;
  - list of S2S wires in S2S Communication editor is not cleared after "Scan configuration" operation;
  - message box with attention "Can't open S2S Communication Editor..." does not appear at opening S2S tool when there are no Outputs or Inputs signals in Master configuration.
  - project is not set as "modified" if some S2S connections were set;
  - unchecked PDOs are available for S2S on "Select PDOs" window.
- Studio hangs when cloning slave after opening and closing Process Image Viewer
- Value of SoE's flag "Show only marked IDNs" has not been saved for cloned device.
- The Value check-box is enabled on Advanced view window (SoE tab) in offline mode and/or Init state.
- Comments are shown as a value of "Validation data" after editing of "User added" init command.
- "Read PDO from slave" button is available when mailbox functionality is disabled.
- "Default value" of a signal is not reset to "0" after channel's flag "Signals keep last value" has been set.
- Studio does not go to offline mode if Master server has been stopped and then exited.
- Watchdog functionality is available for END Terminal (EL9010).
- It is possible to mark PDOs of Ch2. for "oversampling" device when DC mode with Ch1 is used.
- ProfiBUS Slave, ProfiBUS Master: Index of PDOentries is "0x1600" instead of "7000" for PDO "0x1600".
- Studio draws invalid topology for configuration consisting of YY-device and device with any physics
- "Init commands" are shown in tab even if all checkboxes in area of "Display in list" are unchecked.
- Studio switches off master diagnostic mode while attaching to the master.
- Project is set as "modified" after canceling "Clone slave" and "Apply another ESI Rev" operations.
- Project is not set as "modified" if Cycle time factor/Cycle time shift factor was changed via Sample Rate Editor.
- Sample Rate Editor: "Minimize" button and "Minimize" item from the tool window title's right-click context menu are disabled.
- EtherCATStudioNET.Faults.chm is not opened by click on "Help" button when license file is not found.
- Redundancy mode is disabled after reopening project with enabled redundancy mode.

- Aliases are not shown at project reopening.
- Aliases are not shown in Configuration pane after "clone" operation when corresponding flag is enabled in Options.
- Excluded PDO read from ESI is not removed from slave while project opening if PDO with the same index exists in the project.
- Max value of {15:5} Bits of "0120" Offset in hexadecimal Input mode is "FF" instead of "7FF".
- Serial number of unknown slave is not saved to temporary ESI file at scanning configuration.
- Project cannot be saved if signal's value (STRING data type) includes non-printed character.
- Values of "Display Standard IDNs" and "Display Producer IDNs" checkboxes in "SoE IDNs list settings" window are not saved in project file.
- It is impossible to cancel log on operation for Project with access limitation.
- User with user's rights may add/remove signals into/from Chart.
- "Edit user" item of main menu is disabled for user with "Superuser" rights.
- No error is shown at attempt to save Diagnostic Scanner traces to read-only .txt file.
- Objects' default values are not shown by Studio at reading OD from ESI/ODF file.
- Network card cannot be selected from the drop-down list when this card is selected as Redundancy card.
- Incorrect loading signal name/slave name/vendor name/slave group from ESI file if corresponding tags have "end-of-line" symbol.
- Bit size is not taken into account at BITARR values range definition in Hex Input mode in Set Value dialog.
- All items in "Active mailbox protocols" pane (Mailbox tab/ Settings) are disabled for slave with size =128 bytes, which support mailbox protocols (in EEPROM).
- Master configuration is exported to ENI file without ".xml" extension if entered file name contains dot(s).
- ProfiBUS Slave plug-in:
  - CoE Init commands are generated by Studio but not by plug-in at project opening when used \*.gsx file is missed.
  - Allignmnet signal for SM2/3 is not added when some slave's tab is chosen after adding/deleting modules.
- CAN Interface plug-in:
  - CAN Message cannot be simultaneously assigned for Rx and Tx directions of different Nodes while parsing DBC file.
  - CAN DBs parser cannot skip empty string with "space" symbols while parsing.
  - Parameters of PDOs entries of EL6751 edited by user are not read from saved project
  - Parameters of signals of EL6751 are not read from saved project if signal's name is renamed
  - Studio clears lists of CAN messages after selecting any device in configuration pane, if duplicated CAN messages are presented
  - Messages with identical ID and different names are parsed by Tool as valid messages
  - There is not informational message in Studio Output pane while DBC parsing if unknown parameter is met.

- Project is not set as “modified” if any settings/parameters in "CAN Interface" tab were changed.
- Studio resets name of each signal to default while attaching.
- Only 2 low bytes are shown as message's ID in case of using extended format of COB-ID in DBC file.
- Plug-in adds Driver name and ExternalDriverData tag to ENI file even if there are no DBC messages and Driver queue is equal to 0.
- "Bit alignment" mode is used for generating of PI offsets in case of using BIT signals in message.
- Invalid "ExternalDriverData" is generated in case of using USINT signals within message.

## **39 KPA Studio EtherCAT, version 1.9.27.3, released 2011-08-12**

### **39.1 Fixed bugs**

- ETG ENI export: data header and WKC are not taken into account for calculation "InputOffs"/"OutputOffs" values of cyclic commands.
- Values of "Send/Recv" parameters within "ProcessData" tag correspond to Input/Output process data instead of Output/Input.
- When Naming convention type is “Autogenerated slave name “SlaveN”, slave's type is added to slave's name at Master configuration exporting.

## **40 KPA Studio EtherCAT, version 1.9.27.2, released 2011-06-30**

### **40.1 Fixed bugs**

- The same init commands created by Studio and added by User are disabled/enabled simultaneously.
- Exception occurs on Studio start up in silent mode.
- CoE init commands created at editing Setting OD objects values are not shown in Init commands tab
- Studio does not place signals description into cfg-file while exporting for CoDeSys PLC Configuration.
- It is possible to install a new Studio version (WiX setup) if an older Studio version (InstallShield setup) has been installed.
- "Init commands" tab is not displayed at first Studio running.

## **41 KPA Studio EtherCAT, version 1.9.27.1, released 2011-06-10**

### **41.1 Features**

#### **41.1.1 Setting “Sync shift time” for Master DC**

“Sync shift time” edit field has been added to Master Distributed clock tab.

#### **41.1.2 Additional verification for indices which cannot be read from OD**

From now on an additional verification is implemented for indexes which cannot be read from OD within "PDO Entry Adding" operation.

#### **41.1.3 Make all slaves static without alias option**

From now on it is possible to unset “Make all slaves hot-connected with alias” in one dash. “Make all slaves static without alias” item has been added to Main menu/Actions/Master.

#### **41.1.4 “Scan configuration” item in Diagnostic Scanner context menu**

“Scan configuration” item has been added to the right-click menu of Diagnostic Scanner tool.

#### **41.1.5 User Interface improvement**

The icons displayed in Main menu and buttons toolbar has been also added to right-click menus of Configuration pane.

### **41.2 Fixed bugs**

- Studio changes master's state to Init when attaching to running master.
- Source of the Init command is not taken into account on init command disabling/enabling.
- DataLogger adds DST offset to "Time stamp" field while MDF exporting.
- Win32Profile5002ProfibusLDB profile adds Dummy signal to Master Status PDO 0x1A80 with invalid size.
- Invalid destination address is generated by Studio for LRD commands after updating configuration through CANopen plug-in.
- FMMU/SM tab is absent and no signals are shown in configuration pane for slave with physics "YKY".
- Oversampling: size of process data to be transferred is not changed by changing "Using factor".
- Studio requires almost all CPU resources while redrawing PI if "oversampling" device with a lot of assigned PDOs is presented.
- It is possible to mark PDOs of Ch2. for "oversampling" device when using DC mode with Ch1.
- Studio loads default settings for "oversampling" device after saving and reopening project.
- Studio loads "DcSync" mode for "oversampling" device after sets "User defined" mode and saving, reopening project.

- Studio loads settings from previous selected DC mode for "oversampling" device when "User define" mode is using.
- Slave DC settings are not initialized during device adding to configuration.
- Wrong recalculation of System time offset on "DC timing" tab.
- Empty configuration is shown after executing "Scan" operation in Diagnostic Scanner tool.
- It is possible to check/uncheck "Scan online configuration" option for Modular device through context menu in online mode.
- S2S info is not shown in comparing trees of Projects Comparator tool.
- S2S info is saved to project if S2S is not used.
- Exception is thrown while trying to edit EEPROM category which is not present at a slave.
- Tree of the "List of known registers" is disabled after an user with User right logged on the project.
- User with User rights cannot change value of "Start address", "Length" and view format on memory tab in online mode.
- Field "Check slaves Revision number" is available for changing when no slaves are not presented in Master configuration.
- "Cancel" button is disabled on "Reading Memory" status bar.
- Incorrect displaying of configuration tree in Configuration pane after deleting plug-in's slave.
- Plug-in does not return slave into INIT state after scanning CAN bus configuration when master was started earlier.
- PDO configuration isn't read from slave if it has alignment channel.
- Frame logger: there is no limitation for number of Error messages ("Function not implemented") while using Basic Master.
- Active mailbox protocols are still available when "Enable mailbox polling" check box is unchecked.
- Slave's Mailbox tab is disabled if a project without <AoESettings> tag has been opened.
- SoE: exception appears on losing focus from window which includes empty drop-down menu or default value is empty string.
- SoE: "Auto update" feature works in offline mode.
- Owner's alias is set for children while slave cloning.
- Exception appears by selecting "Set value" for any memory register of 1st disconnected hot-connected slave on the bus.
- Parent slave's flags "Hot Connect" and "Use Alias" are not reset if to add EtherCAT junction.
- Exception appears by canceling selection of license file while starting Studio first time.
- 2 additional bytes are added to EoE init command.
- It is impossible to reset all diagnostic counters through main menu item.
- Different representation value of memory offset of entries mapped to PI in Projects Comparator (decimal) and in Studio (hex).
- Message "It's impossible to display them simultaneously" appears when only 1 signal is presented in chart area of Data logger.
- Slave's menu item "Apply another ESI Rev" is not enabled if slave has only 1 revision.

- "Device name" tag is missed in saved ESI file in online folder after attaching without Slave Library.
- Exception appears on executing "Find slave" operation when Slave Library is removed.
- Studio set default value of "Ethernet frame max size" parameter for new Master instead of value set in Studio Options.
- Exception appears while losing connection with locked Master.
- Warnings appear in Studio Output on try to detach locked Master.

## **42 KPA Studio EtherCAT, version 1.9.26.0, released 2011-04-15**

### **42.1 Features**

#### **42.1.1 Function limited Trial mode**

From now on the Trial mode is used instead of Trial setup that allows to run Studio without a license but has some functional limitations:

- "Save" function is disabled;
- "Export" function is disabled;
- Maximum 5 slaves per one Master;
- Continuous running time is 8 hours.

#### **42.1.2 Source column in Studio Output pane**

From now on the traces' source is displayed in separate column "Source" in Studio Output panel.

#### **42.1.3 Export traces in CSV format**

Possibility saving Studio Output traces in CSV format has been added. From now on, while setting parameters of "Save to file" operation, you can also choose CSV format in "Save as type" drop-down list.

#### **42.1.4 External synchronization (IEEE 1588)**

"External synchronization (IEEE 1588)" section has been added to Master Distributed Clocks tab. It allows to configure Distributed Clock synchronization using an External device that supports IEEE 1588 protocol (e.g. GPS or DCF77 receiver).

#### **42.1.5 Oversampling support**

Oversampling features are read from ESI and used for slave's process data configuration by mean of DC modes. The title of Distributed Clock tab is "Distributed clock/Oversampling" instead of "Distributed clock".

#### **42.1.6 AoE settings tab**

AoE protocol settings are read from ESI and exported to ENI. AoE tab has been added to Mailbox tab and it allows to edit Master and Slave Net IDs.

### **42.1.7 Slave-To-Slave Communication for FSoE**

Possibility to establish slave-to-slave communication for PDOs has been added.

### **42.1.8 Topology Viewer improvement**

Topology Viewer was updated. From now on in Topology Viewer window you can choose Master for displaying topology, compare Network and Master configurations, copy the topology as bitmap to clipboard or file, set the property "Always on top", and change color settings for displayed lines.

### **42.1.9 Fix several Sync Managers simultaneously**

Possibility to fix several sync managers simultaneously by tick "Fix all" check-box in Fixed Process Image Editor has been added.

### **42.1.10 Multilingual User Interface**

From now on it is possible to change language of Studio interface. "Language" item has been added to View main menu that allows to select language from the list of supported languages.

### **42.1.11 Slave cloning**

From now on it is possible to add to configuration several slaves at once. "Slave cloning" item has been added to slave's context menu in Configuration pane. It allows to add slaves with default (ESI) and user configuration.

### **42.1.12 Changing time span of charts**

"Time span" field has been added to Variables chart window. It allows changing time span for displaying charts.

### **42.1.13 Changing variable's chart color**

"Change color" button has been added to Variables chart window. It opens palette for choosing the chart color of the variable selected from drop-down list above.

### **42.1.14 "Check PDI" logic improvement**

Master parameter "Check PDI for all Slaves" was renamed to "Check slaves PDI". When "No" is set, "check PDI" init command is not generated. When "Yes" is set, "check PDI" init command is generated for all slaves with ConfigData defined in ESI if its value not equal to 0x00... (means "PDI deactivated").

### **42.1.15 GUI of the EEPROM tab has been changed**

Interface of the EEPROM tab has been changed.

### **42.1.16 Progress bar for Read/write EEPROM operations**

Progress bar for Read/Write EEPROM operations has been added.

### **42.1.17 EEPROM verification after EEPROM writing**

The option "Verify EEPROM writing" has been added to EEPROM tab for verifying EEPROM after it has been written.

#### **42.1.18 Modules described in GSD file with parameter "Preset=1" are automatically added to Profibus slave configuration**

Modules which were described in GSD file with parameter "Preset=1" are automatically added to the Profibus slave configuration.

#### **42.1.19 Profibus Slave plug-in improvement**

The following possibilities have been added to Profibus Slave tab:

- open GSx files in modules' list area with the help of contextual menu;
- add modules from GSx library to configuration of Profibus slave by double-click of mouse;
- add signals from GSx library to configuration of Profibus slave with the help of contextual menu.

#### **42.1.20 Mailbox Bootstrap definition in Master configuration file (ENI)**

When slave has separate mailbox configuration for Bootstrap state this configuration is reflected in Master configuration file (ENI).

#### **42.1.21 TimeStamp EoE attribute support**

Check-box "Device supports time stamping using the DC time stamp" has been added to EoE tab.

#### **42.1.22 Slave name template**

"Naming convention" item has been added to Option tab. It allows to select default slave name template as:

- Slave name from ESI GroupName;
- Slave name from ESI DeviceName;
- Autogenerated slave name "Slave N".

#### **42.1.23 Display of PLC addresses for signals**

"PLC address" column has been added to master's process image tab and slave's Information tab.

#### **42.1.24 "HEX editor" button has been added to "Force value" dialog**

Data Logger Tool: "HEX editor" button has been added to "Force value" dialog which is called from "Recording options" dialog.

#### **42.1.25 Export data to MDF format**

Data Logger Tool: "Convert to MDF format" check-box has been added to "Recording options" dialog.

#### **42.1.26 Default signals names in Data Logger Tool**

Default names of signals with empty physical property name have been added to Data Logger Tool. It helps to recognize signals in Data Logger Tool.

#### **42.1.27 SoE: calling "Advanced view" window by double-click**

From now on it is possible to call "Advanced view" window by double-click on SoE tab.

#### **42.1.28 Update GUI of slave's mailbox tab FoE**

GUI of slave's mailbox tab FoE has been updated.

#### **42.1.29 Update GUI of slave's mailbox tab EoE**

GUI of slave's mailbox tab EoE has been updated.

#### **42.1.30 Displaying "Object type" filter on the CoE tab**

Current value of "Object type" filter is displayed on the CoE tab under the OD source information.

#### **42.1.31 Download master project on attach**

Property "Download master project on attach" has been added to Options (Master section). It allows to save Master configuration on attach to stopped Master and then download it on attach to running Master.

#### **42.1.32 Check slaves Revision number**

"Check slaves Revision number" property has been added to Master tab and enables the check Revision number of all slaves at one dash.

#### **42.1.33 Validation data column of init command**

"Validation data" column has been added to Slave Init Command Tab.

#### **42.1.34 Traces item of project's context menu**

"Traces" item has been added to project's context menu. It contains "Access limitation" and "Projects operations" subitems.

#### **42.1.35 Tooltips with master and slave names**

From now on tooltips with Master and slave names appear in Configuration pane.

### **42.2 Fixed bugs**

- CoE initialization commands of CANOpen plug-in are not added into the EL6751 after saving the project and reopening the Studio.
- CANOpen plug-in tries to read OD even if slave is not in Pre-Operational state.
- SM's size is calculated based on size of mapped objects to PDO even if their size defined in PDO is different.
- Studio skips "Device Emulation" bit while generating "set to INIT/PO" init commands if slave does not support CoE.
- "Use alias" is disabled for slaves with "Physics"='Y'.
- Studio does not go to offline mode if Master server has been exited.
- Running Master is stopped during scan configuration operation.
- A plug-in is added to slave on its initialization even if the plug-in has been deselected before.
- Master was stopped but Studio generates a lot of messages about looking for configuration.
- It is impossible to switch from main window to another by Alt+TAB keys for "Print preview" and "Enter correct value" windows.

- It is impossible to start the second Studio if the Diagnostics Logger is working in the first Studio.
- Exception is thrown if to press "M"/"Properties" key when no one of "memory mapped signal" is selected.
- It is impossible to run EtherCAT Studio when user set large value of DPI.
- No error is shown on applying slave's PDO(s) assignment and configuration if fixed SMs size will be exceeded by the action.
- Exception appears while scanning configuration when master server was previously closed.
- Fixed Process Image Editor: vertical scroll bar of configuration area is moved to the bottom part by checking/unchecking "Fixed" check- box.
- Redundancy property of the previous Master is set for a new Master without redundancy card.
- Other variable is chosen by click on the variable field in PI pane after scroll bar using.
- Specific signals are added to slave's configuration if fixed SyncManager area was not changed on CAN gateway plug-in loading.
- Studio crashes while running it on Japanese Windows XP.
- For slave with physics "YKY", FMMU/SM tab is absent and no signals are shown in configuration pane.
- Master name changes if connection to the specified Master is not successful.
- Exception is thrown after sets value of Master's mailbox cycle time < max, if value of Slave's mailbox cycle time is max.
- Button "Clear all" in "Slave to Slave connections viewer" is enabled when no S2S connection is set.
- It is impossible add greater than 400 signals into S2S Communication Editor.
- Empty slaves' names are shown by Studio in "Master compare" dialog in case of using linear configuration on the bus.

## **43 KPA Studio EtherCAT, version 1.9.25.0, released 2010-10-20**

### **43.1 Features**

#### **43.1.1 Binding and checking of a license through KPA Secure Driver**

License binding and checking is executed through KPA Secure Driver exclusively.

#### **43.1.2 Slave's DC settings reading from ESI file**

Slave's DC settings are loaded from ESI file and shown on slave's "Distributed clock" tab.

#### **43.1.3 Traces categorizing**

From now on traces in Studio Output can be filtered/grouped according to the message source or/and category.

#### **43.1.4 Memory registers mapping to Process Image**

Adding (removing) memory signals functionality is available in offline mode in slave's memory tab. It is possible to add either known (named) registers or any memory area as input signals to monitor signal's value in Process Image.

#### **43.1.5 Progress bar for "Reload slaves library" operation**

Progress bar for "Reload slaves library" operation was added.

#### **43.1.6 Leveling functionality as Sample Rate Editor**

Leveling functionality is now called from menu "Tools" as "Sample Rate Editor".

#### **43.1.7 Tools renaming**

"Diagnostic Scan Tool" was renamed to "Diagnostic Scanner", "Data Logging Tool" to "Data Logger", "Projects Comparing Tool" to "Projects Comparator", "ESI and EEPROM Comparing Tool" to "ESI and EEPROM Comparator", "EEPROM Editor Tool" to "EEPROM Editor".

#### **43.1.8 Information about master's system, class and license should be shown in Studio**

Menu item "Properties" now is available in configuration tree master's context menu. The window called on choosing the "Properties" item contains information about master's system, class and license.

#### **43.1.9 Available external tasks getting from Master**

From now on it is possible to run process task which is available on Master's side. A list of available external tasks is received from Master on starting an external task in Studio.

#### **43.1.10 Studio version and license information is added to files generated by Studio**

Comments with information about Studio version and license are added to the files generated by Studio.

#### **43.1.11 "Remove all" button for Variables Chart**

"Remove all" button was added for Variables Chart.

#### **43.1.12 AL Status codes description enhancement**

AL Status codes description was added for all possible codes defined in EtherCAT specification.

#### **43.1.13 Master name is added to signals in Chart and Watch windows**

From now on Master name is added to signals in Chart and Watch windows.

#### **43.1.14 Profibus Slave plugin should unset flag "PDO Upload"**

Profibus Slave plugin should unset flag "PDO Upload" at plug-in selecting if the flag is set in ESI file.

### **43.1.15 Submenu with revision numbers is added to Insert or Append device pop-up menu for not unique devices**

Submenu with revision numbers is added to Insert or Append device pop-up menu if in ESI file has defined that the device has few revision numbers.

## **43.2 Fixed bugs**

- Files "KPA Studio EtherCAT .Net Help" and "KPA Studio EtherCAT Faults" are displayed in a modal window.
- S2S connections are not read from saved projects.
- Invalid "Length" size of PROFIBUS slave modules with in-out signals is shown while parsing corresponding strings from GSD file.
- KPA Studio hangs for a while after Data logging was stopped.
- Signals for modules which were described in GSD file with 0x4x, 0x 8x or 0xCx identifiers are not shown in Profibus slave plug-in.
- Module added to Profibus Slave configuration does not have a signal if its length > 16 words.
- Master's diagnostic error "Wrong configuration" is displayed right after attaching.
- Process Image is built not according to PDO order if a signal has been added to PDO using any plug-in.
- Warning D00109 "Unable to get AL status code (Invalid slave online index). Slave 'Slave X'." is shown if slave's online position is "-1".
- No error is shown during attaching to master if an error occurs on ENI file creating.
- Variables Chart window is not opened by adding variabres in Init Master's state.
- Zero Physical and AutoInc addresses are set for slaves added to system coupler for which another ESI was applied.

## **44 KPA Studio EtherCAT, version 1.9.24.1, released 2010-05-26**

### **44.1 Features**

#### **44.1.1 Brand labeling**

Brand labeling allows to customize software according to the Customer's wishes.

#### **44.1.2 CAN Interface plug-in**

It allows to configure EL6751 slave using DBCs and provides CAN communication either through the signals specified within the dbc file (signal mode) or by sending/receiving all drive messages (queue mode).

#### **44.1.3 Leveling**

Leveling functionality is now available in Master's Process Image tab. It allows to avoid the peak load of the frame scheduler when different cycle times (e.g. 100µ, 1ms and 10ms) coincide.

#### **44.1.4 Scan and Topology view logic improvements**

Scan and Topology view logic has been improved for devices connected via output ports.

#### **44.1.5 DC timing in slave**

A new tab showing slave's System Time, System Time Offset, System Time Delay, System Time Difference has been added.

#### **44.1.6 Slave status in topology window**

If some error occurs in slave, a special sign is shown above the slave in the topology window. "Diagnostics" tab of the slave is opened by left-clicking on it in the topology window.

#### **44.1.7 Slave status in configuration pane**

If some error occurs in slave, a special sign is shown before the slave in the configuration pane.

#### **44.1.8 Process Image Viewer improvements**

Process Image Viewer now works faster with large amounts of data. Inputs and Outputs can be shown separately or simultaneously. Values of the selected signals are displayed in online mode. Different colors are used for different types of PI items.

### **44.2 Fixed bugs**

- Profibus Slave plug-in reads the size of input/output module only from the first byte in config.
- Profibus Slave plug-in uses a fixed Device type (impossible to use another gsd to simulate some profibus slave).
- CANopen Master gateway plug-in does not provide a signals structure of the read PDO from a CANopen slave.
- Last used master connection settings are not saved in the corresponding list when it is full.

## **45 KPA Studio EtherCAT, version 1.9.23.1, released 2009-11-26**

### **45.1 Features**

#### **45.1.1 Reload device function in Configuration tree**

This function was added for devices without ESI files.

#### **45.1.2 Sync managers plausibility**

Check of correct size, intersection of sync managers before the Attach operation was added.

#### **45.1.3 Grouping of all mailbox protocol's tabs**

All mailbox protocols were grouped in one tab

#### **45.1.4 PDO Upload attribute of CoE in ESI file**

PDO Upload attribute of CoE in ESI file has been supported.

**45.1.5 Multi masters online**

Support of more than one attached master in the project was added.

**45.1.6 Init commands grouping**

All Init commands (Init and mailbox protocols) were grouped in one tab.

**45.1.7 Latch mode for Slave DC settings**

Configuration of Latch mode for Slave DC settings was added.

**45.1.8 SoE configuration**

Configuring of SoE protocol parameters in offline mode was added.

**45.1.9 Su attribute of TxPdo\RxPdo**

Su attribute of TxPdo\RxPdo is now supported.

**45.1.10 User Management menu**

The User Management menu with relevant items is available now for the projects with Access Limitation.

**45.1.11 New ENI tags support**

New ENI tags are now supported in ENI file without KPA extensions.

**45.1.12 Switching EEPROM access init commands**

Switching EEPROM access init commands were added.

**45.1.13 Hex format for REAL signals values in CoE tab**

Hex format is now used to display REAL signals values in CoE tab.

**45.1.14 Hex format for numeric values exported to ENI file**

Hex format is now used instead of decimal for the values being exported to ENI file.

**45.1.15 Bus Diagnostics in Topology viewer**

The communication diagnostics (based on Ports diagnostics) has been added to the Topology viewer.

**45.1.16 Reset all diagnostics counters**

A possibility to reset all diagnostics counters has been added.

**45.1.17 Forwarded Rx errors counter**

The Forwarded Rx errors counter has been added to the Slave Diagnostics.

**45.1.18 Diagnosis handling**

A possibility to handle the diagnosis messages from a Slave via SDO Info has been added.

#### **45.1.19 Font of HexEditor in edit values dialogs**

A possibility to change the font of HexEditor in the edit values dialogs has been added.

#### **45.1.20 Bit alignment**

Bit alignment (as an alignment mode in Process Image tab) is now available.

#### **45.1.21 Configuration creation via Automation Interface**

A possibility to create master configuration via Automation Interface has been added.

#### **45.1.22 Adding access limitation to a project**

A project can be converted to a project with access limitation.

### **45.2 Fixed bugs**

- Value of any sub-index with non-CA command is read twice.
- Two Outputs FMMUs are configured for two Outputs SMs even if only one Outputs FMMU is defined in ESI.
- Writing of sub-object value is not possible via CoE, if the value has been read with error.
- A user from "User" group (projects with Access Limitation) is allowed to delete/change slaves.
- A user from "User" group (projects with Access Limitation) can not stop the unlocked master.
- DC tab of slave is not updated after scanning bus in online mode
- Incorrect parsing of data in the Data Logging Tool while the line is broken (Redundancy is enabled).
- PROFIBUS Slave, PROFIBUS Master: An Index of PDO entry is "0x1600" instead of "7000" for PDO "0x1600".

## **46 KPA Studio EtherCAT, version 1.9.22.0, released 2009-06-02**

### **46.1 Features**

#### **46.1.1 Data logging tool - Recording options and trigger value for signal**

Data logging tool extended with recording options (File size limit, Time limit, Frame sampler) and trigger value (NaN possible for real type) - KPA Master EtherCAT v.1.4.6.5 or higher is required..

#### **46.1.2 Data logging tool - Signals displaying filter in the Data logging tool window**

Added Slave and slave's channel fields to Recording options as signals displaying filter in the Data logging tool window.

### **46.1.3 File access over EtherCAT (FoE) protocol improved usability – added possibility to set file name and password**

Added possibility to download and upload files through FoE in Pre-Operational, Safe-Operational and Operational states in addition to Bootstrap state. File name and password options are now available for change by user.

### **46.1.4 Init commands tab for slave**

The Init commands tab incorporates all commands for slave to be sent by Master.

### **46.1.5 Scaled value is displayed together with raw value, when "DScale" element is defined for signal in ESI**

If "DScale" element is defined for signal in ESI (e.g. <DataType DScale="0-10">INT</DataType>), the value calculated in accordance with the scaling rule will be displayed online (put in <>) together with raw value.

### **46.1.6 "Find device" function in Slaves Library**

"Find device" function is available in right-click context Slaves Library menu.

### **46.1.7 Support of region-specific strings (names) in ESI file**

Slave's name is taken from ESI according to current regional settings that are checked when the Studio starts.

### **46.1.8 EEPROM editor tool**

The tool allows creating EEPROM content or editing existing one loaded from a binary file or read online from Slave EEPROM. It is also possible to generate ESI using EEPROM content.

### **46.1.9 Improved setup with version upgrading**

Installing newer version no longer requires removing the previous.

### **46.1.10 SM parameters validation on attaching to Master**

When the Studio attaches to Master, SM settings will be checked. Should some settings be wrong respective warnings will be displayed.

### **46.1.11 Extended Studio options**

Studio options extended with parameters:

"Launch Master on connect" (the Studio launches the Win32 Master, if the port 5000 is not occupied with another Master);

"Create empty project at start-up" (the Studio will not add a Master 1 to Unknown project created at Studio's start-up);

"Max Sm size" (the Studio uses the parameter to check SM setting at attach).

## **46.2 Fixed bugs**

- Trace message "Automatic configuring of ... M2M bridge ... succeeds" appears when it has failed.
- A new signal is added to the M2M slave after project reopening if slave has no-name signal.

- Any user (administrator, user or superuser) can change state of locked master by Master right-click menu.
- Address of BK1250 becomes 0 while attaching to the Master if "Scan online configuration" is set.
- EL6731-0010 - without modules some CoE Init commands are shown in tab but are not exported to cfg file.
- "Physical property name" and "Physical property value" columns are not shown in Slave "Variables" tab.
- Studio's Help cannot be opened by F1 when log on window is opened (AL project).
- Error T00188 "Error updating PI variables..." occurs if to choose in configuration pane slave EL6731 after EL6731-0010.
- Studio hangs at reading OD online when OD is loaded from big EDS file and Confirmation windows are shown.
- Studio does not set new NIC (after successful scanning configuration) on the next scanning or on attaching.
- Error "Can't open project" appears in Studio Output on attaching to running master if there is unknown device on the bus.
- Question-marks are shown when project is opened for slaves with ESI saved in project that have been read from EEPROM.
- Diagnostic messages do not appear when Master was detached with active acknowledged error and attached again.
- CoE reading fails on second attach.
- Slave's name read from OD via SDO is not shown in the Configuration pane for slave without ESI.
- Saving suggestion does not appear at new project opening when some slaves were added by "Scan configuration".
- Not all unchecked PDOs are shown with mark (excluded).
- Dialog Box with suggestion to use stored configuration appears if the configurations are identical.
- Exception is thrown by reading EEPROM to hex editor when progress bar in progress.
- OD reading from DDF or XML: sub-index of "BIT4" type (EL6731-1003, 0xF800:12) is not shown and no information in Studio output.

## **47 KPA Studio EtherCAT, version 1.9.21.0, released 2009-04-08**

### **47.1 Features**

#### **47.1.1 Dynamic slave to slave communication is supported**

S2S communication can now be set on the fly (KPA Master EtherCAT v,1.4.6.3 or higher is required).

#### **47.1.2 CANopen Master gateway plugin was developed for EL6751**

The CANopen Master gateway plugin allows reading configurations of all CANopen devices.

### **47.1.3 Several plugins support**

If several plugins are supported by a slave, it is possible for the user to choose one. If a slave supports only one, it is automatically loaded by Studio.

### **47.1.4 Detailed registers info (Bit/Bytes value) was added to Slave Memory tab**

A value can be set for the whole register, for a set of bits or for a specific bit. The value description is taken from the MemoryFieldDescriptionMapper xml file, which is located in the Studio default folder.

### **47.1.5 New style of Studio Options window**

From this version the style of the Studio Options window was changed.

### **47.1.6 Win32 Master auto start by Studio on attaching to the Master - used instead of internal Master (Internal Master is no longer used)**

When trying to attach to localhost, if the Master is not running, it is started automatically with default settings (host name: localhost; port number:5000).

### **47.1.7 Communication timeout parameter added to Studio options (used as RPC command execution timeout)**

The Communication timeout parameter was added to Studio options. This parameter determines Studio waiting time for the Master response.

### **47.1.8 Improved Masters compare dialog**

From this version it is possible to get a resulting configuration either manually or automatically.

### **47.1.9 Slaves are sorted in Slaves Library or in the right-click menu (Configuration pane)**

From this version slaves are sorted by A either in the Slaves Library or in the right-click menu of the Configuration pane (when inserting or appending a new device).

### **47.1.10 Physical property name is used in "Variables chart", "Variable snapshot" and "Watch" tab**

If a signal has a physical property name and the feature is enabled, it is used in "Variables chart", "Variable snapshot" and the "Watch" tab.

### **47.1.11 Detailed info in progress bar caption on attaching to Master**

From this version detailed information is shown in the progress bar caption (e.g., bus scanning, online tree building, generating configuration, and uploading a configuration on the Master).

### **47.1.12 Created ESI saved in online folder is not saved in project**

If "Yes" option is set for the Save EtherCAT Information file (ESI) in project file parameter in Studio options, a created ESI is saved in a project.

## **47.2 Fixed bugs**

- Master diagnostic traces mode is not switched on if it has been set offline.

- Cyclic Cmd is not split when Frame size is less than Cmd size.
- Master attaches with previous NIC although new NIC has been set.
- The Master keeps running if No button has been pressed.
- No signals information update is performed in Watch window.
- Fault message with "AL status code and description" is not added to Studio Output.
- "Acknowledge error" button indicates error for a short time on switching between slaves when Slave State tab is active.
- The same watchdog settings adjusted for the first slave were shown for all slaves with enabled watchdog in online mode.
- Create Signal(s) button in Outputs group box is dimmed after signal editing (M2M Plugin).
- It is impossible to reopen project if it has slave without ESI.
- Invalid frames appear in log file during data saving (ECAT Data Logging Tool).
- No tooltips shown (e.g., in the Force value, Set value information windows etc) on some computers.
- Although the Refresh automatically check box has been checked, the CoE tab is not refreshed.
- It is possible to set and force value if Master (in Operational state) is locked.
- Workaround: Studio should set RW access for OD indexes when 0x00 is received as access type via SDO info (slave EL6080).

## **48 KPA Studio EtherCAT, version 1.9.20.0, released 2008-12-17**

### **48.1 Features**

#### **48.1.1 Diagnostic messages available via AI**

From this version diagnostic messages are available via AI.

#### **48.1.2 Physical values available via AI**

From this version physical values are available via AI.

#### **48.1.3 Data logging tool has been added**

The data logging tool has been added to this version.

#### **48.1.4 Project with access limitation**

Now it is possible to create projects with access limitation.

#### **48.1.5 Frame Logger added to the Main menu->Tools and removed from Master Statistics tab**

Frame Logger was added to the Main menu->Tools and removed from the Master Statistics tab.

### **48.1.6 Mailbox timeout setting is used for CoE Init commands when no timeout is defined in ESI**

From this version the mailbox timeout setting is used for CoE Init commands when no timeout is defined in ESI.

### **48.1.7 "Default input values" and "Watchdog timeout" are added to Master diagnostics**

"Default input values" and "Watchdog timeout" were added to Master diagnostics.

## **48.2 Fixed bugs**

- The "Read PDO(s) from Slave" button is not dimmed when a slave is in Bootstrap state.
- The EL6751 RawCAN: \*.rcx file name does not change on project saving if a master's or a slave's name has been changed.
- "DDF" is now used instead of "ESI".
- The problem of the "Error destroying object dictionary handle ..." error message on detaching if Master configuration includes EL6692 secondary (M2M)
- The problem that the exception appears on deleting first EK1100 when Master configuration is EK1100, EL1002, EK1100
- The problem that the "Can't create ECAT control. ..." error message appears on Studio start if some ESI file is corrupted
- The problem that the Studio does not ask the Project File Name and saves it as Untitled when the Master configuration has a configured EL6751 RawCAN
- The problem of wasting memory on update of slave signals list
- The problem when the exception is thrown after trying to delete a signal
- The problem that the accepted bus configuration is wrong when there are EK1521, Chopper (ET1100), EK1122, EK1100
- The problem when the exception is thrown if the "Cancel" button has been pressed in the Merge window (Topology)
- The problem that there are no profiles available after reading OD from EDS or XML.
- The problem that PDOs in PDO assignment list (PDOs comparing Tool) are ranged in the wrong order.
- The problem that the exception is thrown during scan bus operation.
- The problem that the message box "Master error: unknown" appears on attaching to the Master
- The problem that the "expiry date unlimited" message is shown in the About window if the master license is absent
- The problem when the message text is out of screen in Studio and Master Output when Studio is updated to version with message time
- The problem when the exception is thrown during project saving if access to the path is denied
- The problem of Studio crash on attaching the Master if there are two segments on the bus with equal physical aliases

## **49 KPA Studio EtherCAT, version 1.9.19.4, released 2008-11-13**

### **49.1 Fixed bugs**

- The problem of Slave EK1122 disappearing from the configuration if it has been dragged and dropped to the Master.
- The problem of displaying two identical indexes in the PDO list of slave EL6731-0010.
- The problem when the name of a project is marked as "Untitled" if there is no DDF in the Slaves Library for an opened project.
- The problem of displaying the following error message in the Studio Output tab.
- The problem of wrong reading of PDO assignment from BK1250 OD.

## **50 KPA Studio EtherCAT, version 1.9.19.2, released 2008-11-03**

### **50.1 Fixed bugs**

- The problem of displaying a segment in the Master Compare Dialog as if it is connected to port Y of EK1122 (but in reality it is not).
- The problem of displaying commands for EL6692 (primary) in the configuration file to write a configuration for secondary.
- The problem that the Configuration pane becomes inactive when choosing slaves by using the keyboard.
- The problem of adding the wrong number of messages to the Master (Studio) Output pane if the error filter is set.
- The problem that a negative value of messages is displayed.

## **51 KPA Studio EtherCAT, version 1.9.19.0, released 2008-10-27**

### **51.1 Features**

#### **51.1.1 Acknowledged messages**

Acknowledged messages with pop-up windows were added to Studio Output (Options → Studio → View).

#### **51.1.2 Splitter between Outputs and Inputs lists on PI tab**

The splitter between the Outputs and Inputs lists was added to the PI and Variables tabs.

#### **51.1.3 Refreshing Configuration pane by PDO assignment**

It is now possible to refresh the Configuration pane by PDO reassignment.

#### **51.1.4 Variables tab is hidden for slaves without SMs**

The Variables tab is hidden for slaves without SMs.

### **51.2 Fixed bugs**

- The problem of PI viewer update in online mode if a scanned configuration was accepted by the user.
- The problem of saving plug-in 'CAN gateway' data.
- The problem of SMs wrong configuring if there is no DDF for a slave in the Slaves Library and its EEPROM size equals 128 bytes.
- The problem of reading channels' and signals' names from the Object Dictionary if there is no DDF for a slave and its EEPROM size equals 128 byte.
- The problem of reading PDO assignment from the Object Dictionary if there is no DDF for a slave and it supports CoE.

## **52 KPA Studio EtherCAT, version 1.9.18.0, released 2008-10-17**

### **52.1 Features**

#### **52.1.1 Show slave alias option was added**

The Show slave alias option was added (Main menu → Options → Studio → View).

#### **52.1.2 Tool for comparing projects**

A tool for comparing projects was added (Main menu → Tools).

### **52.2 Fixed bugs**

- The problem of FMMU size for EL6692 after saving and reopening a project.
- The problem of adding signals automatically for EL6692 (secondary) except for the last slave in the configuration.

## **53 KPA Studio EtherCAT, version 1.9.17.6, released 2008-10-10**

### **53.1 Features**

#### **53.1.1 DC mode and DC settings taken from DDF by default**

Now DC settings and a DC mode are taken from DDF by default.

#### **53.1.2 Choosing buffer type and enabling/disabling Watchdog Trigger**

From this version it is possible to enable/disable the Watchdog Trigger and choose the type of buffer for Sync Managers' configuration.

#### **53.1.3 Virtual SM support**

From this version virtual SM is supported.

#### **53.1.4 The "BeforeSlave" text in Master configuration**

"BeforeSlave" is now written in the Master configuration according to the specification.

#### **53.1.5 Export Master configuration (without KPA extensions)**

<OutputOffs> and <InputOffs> were added for commands according to the specification.

## **54 KPA Studio EtherCAT, version 1.9.17.5, released 2008-10-03**

### **54.1 Features**

#### **54.1.1 PDO mappable indexes without any sub-indexes are available in PDO Entry Adding window**

In this version the PDO mappable indexes without any subindexes are available in the PDO Entry Adding window.

#### **54.1.2 <Send> and <Recv> order now corresponds to the Master configuration schema**

The order of <Send> and <Recv> blocks in the Master configuration file was enhanced to meet with the specification requirements.

#### **54.1.3 <Physics> and <SerialNo> added to Master configuration file**

<Physics> and <SerialNo> blocks were added to the Master configuration file according to the specification.

### **54.2 Fixed bugs**

- The problem of opening EEPROM and the DDP Comparing Tool from the first time.
- The problem of wrong PI offset of variables which belong to different SMs of the same type.
- The problem of scanning bus for slave EL1521.

## **55 KPA Studio EtherCAT, version 1.9.17.2, released 2008-09-22**

### **55.1 Features**

#### **55.1.1 Editing existing PDO or adding new one**

The function of adding a new PDO or editing an existing one was implemented.

#### **55.1.2 Clearing PDO assignment of Sync Managers which go after SM3**

The CoE Init command was added to clear PDO assignment of Sync Managers which go after SM3 (SM4, SM5 etc).

#### **55.1.3 M2MbridgePlugin for slave EL6692 was improved**

The M2MbridgePlugin for slave EL6692 was improved. The possibility of automatic configuring EL6692 EtherCAT Bridge terminal (Secondary) was added.

#### **55.1.4 Configuring FMMUs in order defined in DDF**

From this version FMMUs are configured in specific order defined in DDF.

## **56 KPA Studio EtherCAT, version 1.9.16.0, released 2008-09-05**

### **56.1 Features**

#### **56.1.1 DDF and EEPROM Comparing Tool**

In this version the DDF and EEPROM Comparing Tool was added.

### **56.2 Fixed bugs**

- The problem of saving CoE Init commands for Profibus slave EL6731-0010.

## **57 KPA Studio EtherCAT, version 1.9.15.0, released 2008-08-28**

### **57.1 Features**

#### **57.1.1 Plugin for Profibus Slave EL6731-0010 was updated (v.2.2)**

Plugin for EL6731-0010 PROFIBUS Slave was updated (v2.2). The *Import of signals from NTF and add modules* command was added.

#### **57.1.2 Export master configuration (without KPA extensions) was added**

The *Export master configuration (without KPA extensions)* command was added to the list of export commands.

## **58 KPA Studio EtherCAT, version 1.9.14.1, released 2008-08-22**

### **58.1 Features**

#### **58.1.1 Plugin for Profibus Slave EL6731-0010 was updated (v.2.1)**

Plugin for Profibus Slave EL6731-0010 was updated (v.2.1): the problem of signals import from NTF containing specific symbols was solved.

## **59 KPA Studio EtherCAT, version 1.9.14.0, released 2008-08-15**

### **59.1 Features**

#### **59.1.1 CoE Init commands tab added for slaves which support CoE**

The CoE Init commands tab was added for slaves, which support CoE.

### **59.1.2 Support of 4-port terminal slave**

In this version master configuration with a 4-port terminal is supported.

### **59.1.3 Plugin for Profibus slave EL6731-0010 was updated**

The plugin for EL6731-0010 PROFIBUS Slave was updated (v2.0): import of signals from an NTF file was added.

## **60 KPA Studio EtherCAT, version 1.9.13.1, released 2008-08-01**

### **60.1 Features**

#### **60.1.1 Plugin for EL6692 Bridge terminal was updated (v1.1)**

In this version the plugin for EL6692 Bridge terminal was updated:

- data types list of signals was extended (float data types were added)
- problem of saving plugin data was solved.

#### **60.1.2 Plugin for EL6731-0010 PROFIBUS Slave was updated (v1.1)**

In this version signals are named by adding prefixes to the names of modules taken from GSE files.

#### **60.1.3 Rcc files are automatically saved in master project folder**

In this version RCC files are automatically saved in the Master project folder.

## **61 KPA Studio EtherCAT, version 1.9.13.0, released 2008-07-28**

### **61.1 Features**

#### **61.1.1 Plugin for Profibus Slave EL6731-0010 was added**

In this version the plugin for PROFIBUS Slave EL6731-0010 was added.

## **62 KPA Studio EtherCAT, version 1.9.12.0, released 2008-07-18**

### **62.1 Features**

#### **62.1.1 Obtaining a list of S2S connections**

In this version it is possible to obtain a list of S2S connections via AI.

## **63 KPA Studio EtherCAT, version 1.9.11.3, released 2008-07-11**

### **63.1 Fixed bugs**

- The problem of adding DDFs with undeclared GroupType to the Slaves Library.
- The problem of data alignment of modular device BK1120/BK1250.
- The problem of creating ambiguous names for signals of modular device BK1120/BK1250.
- The problem of configuring Profibus Master EL6731-0000-0017.

## **64 KPA Studio EtherCAT, version 1.9.11.0, released 2008-06-25**

### **64.1 Features**

#### **64.1.1 Profibus configuration tool support (version 3.5.1.0).**

The system supports the Profibus configuration tool v.3.5.1.0 which allows importing signals from an NTF file.

#### **64.1.2 Signal name and path available via AI**

Signal name and path are now available via AI instead of complex signal name. They are shown in the Information tab.

**Note:** Only signal name can be changed.

## **65 KPA Studio EtherCAT, version 1.9.10.0, released 2008-06-20**

### **65.1 Features**

#### **65.1.1 Information on Object Dictionary source added to the CoE tab**

Now it is possible to view the information on Object Dictionary source in the CoE tab.

#### **65.1.2 Saving swapping flags**

In this version the problem of saving swapping flags has been solved.

#### **65.1.3 Separate I/O update flag was added**

The option of separate I/O update was added to the Cyclic tab. At first, the master sends frames to read inputs. After that frames for reading outputs are sent.

#### **65.1.4 Possibility to set master as Reference Clock**

In the Distributed clocks tab it is possible to set the master as a Reference Clock.

### **65.1.5 M2MBridgePlugin added for slave EL6692**

The KPA M2MbridgePlugin was added for masters configuring.

### **65.1.6 Displaying signals with swapping flags**

Signals with swapping flags are displayed according to their flags.

### **65.1.7 Possibility to add module prefix to signals names**

In this version it is possible to enable/disable adding a module prefix to signals' names in the Profile tab.

### **65.1.8 Possibility to change default values of MboxOut/MboxIn parameters' length in SYNC Manager configuration**

In this version it is possible to change default values of the following parameters in the SYNC Manager configuration pane:

- MBoxOut length
- MBoxIn length

### **65.1.9 Possibility to increase inputs/outputs length in SYNC Manager configuration**

In this version it is possible to increase the length of inputs/outputs in the SYNC Manager configuration pane up to maximum values defined in DDFs.

## **66 KPA Studio EtherCAT, version 1.9.9.0, released 2008-06-06**

### **66.1 Features**

#### **66.1.1 Byte order parameter values can be obtained via Automation Interface**

Byte order parameter values can now be obtained via Automation Interface. The parameter specifies the order of bytes in a signal. The following values of the parameter are possible:

- Little-endian
- Big-endian(SwapWord)
- Big-endian(SwapDWord)
- Big-endian(SwapWord, SwapDWord)

The Byte order parameter has been added to the Information tab.

#### **66.1.2 Interface for working with slave's OD added to AI**

The interface for working with a slave's Object Dictionary has been added to the Automation Interface.

#### **66.1.3 Possibility to read Backup and Settings objects added to Object Dictionary settings**

The following types of objects were added to Object Dictionary settings:

- Backup objects
- Settings objects

#### **66.1.4 Possibility to attach to master which has no slaves connected to**

Now it is possible to attach to the master which has no slaves connected to.

### **67 KPA Studio EtherCAT, version 1.9.8.6, released 2008-04-29**

#### **67.1 Features**

##### **67.1.1 Possibility to force inputs was added**

Now it is possible to force inputs. A forced input value cannot be changed until it is unforced. But it is possible to force it with another one.

##### **67.1.2 Connection settings tab improved**

The Connect to Internal master check box has been added to the Connection Settings tab.

If it is checked, the Studio is connected to the in-process master.

If you uncheck the check box, the Change button is enabled and you can change Connection Settings to connect the Studio to the remote master that is run on a local PC.

### **68 KPA Studio EtherCAT, version 1.9.7.1, released 2008-04-04**

#### **68.1 Features**

##### **68.1.1 About window**

The information on master expiry date has been added.

### **69 KPA Studio EtherCAT, version 1.9.6, released 2008-03-27**

#### **69.1 Features**

##### **69.1.1 Context sensitive help**

The context sensitive help (invoked by F1) is available for the following items:

- project tree;
- library tree;
- trace window;
- master's properties;
- slave's properties;
- chart control;
- snapshot control.

### 69.1.2 Frame chart improved

Frame assembling time is displayed in the frame chart and indicated by the semitransparent firm line.

### 69.1.3 Set value control panel

Now it is possible to set an input/output value in the following formats:

- Decimal
- Hexadecimal
- Binary

### 69.1.4 New command line parameters have been added

New parameters have been added that allow studio starting exactly from the command line and thus serve for further user authentication, e.g. `EcatStudio.exe /port=1111 /silent /user="user" /password="password."`

## 70 KPA Studio EtherCAT, version 1.9.5, released 2008-03-11

### 70.1 Features

#### 70.1.1 Legend added to Frame Chart

A legend was added to a frame chart.

Cyclic frames information is highlighted in blue, acyclic frames info - in red.

Time required for frames assembling and sending is denoted by the firm line, receipt time and parse time - by the dotted line.

#### 70.1.2 Generate separate cyclic command check box added to Slave tab

Certain slaves (e.g. gateway ones) are not able to work with the same speed as master.

They need generating separate cyclic commands not to derange other slaves operation.

## 71 KPA Studio EtherCAT, version 1.9.0, released 2008-02-04

### 71.1 Features

#### 71.1.1 User interactive configuration merge

##### Hot-plugged devices merging.

After you have clicked the Merge button, EtherCAT Studio scans the network to acquire real configuration. If real configuration differs from that in the Project, the differences are shown in a dialog window.

**Note:** If the Merge ignoring Alias check box is selected, matches between hot-plugged segments are found automatically. If the check box is not checked, matches are chosen by the user.

The current network configuration is shown in the right pane while the master configuration – in the left one.

The segment in the master configuration to match is highlighted in magenta, the segment in the current network configuration with a different alias-in green.

You can choose one of the following actions:

Replace, the Network Configuration is duplicated with its default settings to the Master Configuration tree (after scanning the EtherCAT Studio mode is switched to off-line).

Merge, the Network Configuration is merged with the Master Configuration.

Cancel, no Network scanning is performed.

Discard, you'll be able to work with the Master Configuration (Network Configuration is not taken into account).

**Note:** New slaves are added with their default settings.

### **Static devices merging.**

The segments to match in offline mode are highlighted in green in the left pane.

## **71.1.2 Slave and master diagnostics provided by Master API**

The Master Diagnostics consists of the following parameters:

- Send/Receive Error – master can neither send nor receive a frame to/from a slave.
- Frame Parse Error – error while frame parsing.
- Connection to the slaves is lost
- Wrong Configuration – current network configuration differs from the one downloaded to the master.
- Slave to slave communication timeout
- Network state – current network state (with or without redundancy).
- Number of slaves on main NIC
- Number of slaves on redundancy NIC – number of slaves if the master works with the redundancy NIC.

Slave Diagnostics consists of the following parameters:

- Online position – current position of a given slave.
- Offline – lamp indicator switches on if a slave is unplugged.
- Wrong EtherCAT State – current EtherCAT state differs from the master state.
- Wrong device type – network device does not correspond to the one in the configuration.

Port information

- RX errors counter – physical layer RX errors (inside/ outside a frame)
- Invalid frames counter – invalid frame initially detected (includes RX errors).
- Lost links counter – link lost events (per port).

**Note:** If any port pane is disabled, it means that there is no such a port for a given slave.

**Note:** All diagnostics changes are logged in a diagnostics log file.

## **71.1.3 Slave emergency messages**

The Emergency tab displays messages sent by slaves in case of emergency. Possible causes may be the following:

Current/voltage/temperature values are too high/low

Errors in device software or hardware

EtherCAT State Machine Transition error

Active messages are highlighted in red. After acknowledging an active message is highlighted in grey. Inactive messages are highlighted in black. They are deleted automatically from the list after acknowledging.

### 71.1.4 Attaching to working master

On attaching to the working master, the project on master side is compared with the current project on studio. Use the Attach to Master device function in order to get the identical project with that on master side.

If projects are different, a dialog window appears. In the window the differences are shown.

Choose between the following options:

- Click the Replace offline button to download the project from master and continue working offline.
- Replace button to download the project from master and attach.
- Merge online button to ignore the project on master side and scan the real network.
- Cancel button to cancel attaching to master.

### 71.1.5 Log file for diagnostic messages

All diagnostics changes are logged in a diagnostics log file.

### 71.1.6 Watch dog adjustment for master

If there is PLC program crash or it is hanging and no output value has been set within this timeout, a default value will be assigned to all outputs.

Check the Enable check box to enable the function.

Set a required timeout by choosing an appropriate value in the Timeout (ms) combo box:

### 71.1.7 Max wrong working counter parameter for cyclic commands

The Max cyclic command errors to set default data parameter is a value that displays the maximum errors number of a cyclic command due to invalid working counter or impossibility to send a cyclic command. If the number of errors reaches the set value, the master sets a default number of signals for the given command.

### 71.1.8 Possibility to force output value

The Force value function allows setting a defined value for an output signal. A forced output value cannot be changed until it is unforced. But it is possible to force it with another one.

**Note:** Forced values are shown in bold.

**Note:** It is possible to force a value only in Operational mode.

## 72 KPA Studio EtherCAT, version 1.8.10, released 2008-01-24

### 72.1.1 Extend well-known values in slave memory

Only standard addresses with descriptions will be shown if you check the Show named registers only check box:

## **73 KPA Studio EtherCAT, version 1.8.9, released 2008-01-10**

### **73.1.1 Import of signals from CoDeSys export file**

After project export the user can assign new names to signals for convenience. Then the project should be saved and changed signals names may be imported to be read.

To import signals from a CoDeSys export file, choose Import signals names from CoDeSys from the right-click context menu (Import → Import signals names from CoDeSys).

## **74 KPA Studio EtherCAT, version 1.8.8, released 2007-12-06**

### **74.1.1 Possibility to assign orphan PDO to any Sync Manager of a corresponding type**

It is possible to assign an orphan PDO (the object that is not assigned to a SYNC Manager and its check box is not selected in the PDO assignment pane) to a SYNC Manager of a corresponding type (input/output).

## **75 KPA Studio EtherCAT, version 1.8.7, released 2007-11-30**

### **75.1.1 Check number of Sync Managers while scanning slaves on attach**

If the number of Sync Managers in a device description file is greater than the one in a slave, the information on incorrect slave configuration is displayed in traces.

## **76 KPA Studio EtherCAT, version 1.8.4, released 2007-11-20**

### **76.1.1 Adding empty FMMU in case of any wrong information of FMMUs in DDFs**

If an FMMU entity in DDF is incorrectly assigned to a SYNC manger (for example there is no such SYNC Manager in the configuration), a new empty FMMU will be added.

## **77 KPA Studio EtherCAT, version 1.8.3, released 2007-11-09**

### **77.1.1 Decomposition of PROFIBUS signals**

The option of signals splitting has been added. To split signals, follow the steps described below:

1. Go to the Variables tab.
2. Select an input/output variable and right-click.
3. In the right-click menu chose the Split signal command:

### **77.1.2 Possibility to set aliases to all segments at one dash**

If slaves' configuration is too large, there is a possibility to assign aliases to all slaves at one dash.  
To assign aliases for all slaves, go to Actions → Master → Make all slaves hot pluggable with alias

## **78 KPA Studio EtherCAT, version 1.8.1, released 2007-10-30**

### **78.1.1 New system information statistics displayed on Master statistics**

CPU usage information is displayed on the Statistics tab for those EtherCAT masters that support this feature.

## **79 KPA Studio EtherCAT, version 1.8.0, released 2007-10-26**

### **79.1.1 Default values of inputs/outputs**

It is possible to  
set default values of inputs/outputs manually  
store the last value.

In the first case click the Change button and enter a required value in the SetValue edit box:

In the second case select the Keep last value check box (this value is set if there is no communication with slaves). It is the last value received from a slave in online mode. When this value is set, the default value is reset.

To set last values for all signals, check the Signals keep last value check box on the Information tab of a corresponding channel.

### **79.1.2 Frame logger viewer**

On the Frame logger panel information about all frames received and sent by Master are displayed. It is possible to stop the process of frames information loading (the Stop button), to display/hide acyclic frames (the Show acyclic frames check box), to save frames information to a file (Save log button).

Also, It is possible to look through Frame logger info graphically by means of Chart window ( the Chart button).

Cyclic frames information is highlighted in blue. Acyclic frames info - in red.

Time required for frames assembling and sending is denoted by the firm line, receipt time and parse time - by the dotted line.

## 80 KPA Studio EtherCAT, version 1.7.2, released 2007-09-19

### 80.1 Features

#### 80.1.1 Licensing

Now the following types of EtherCAT products are available:

##### Master Trial

Master Trial allows 2-hour run in Operational mode then switches to Initialization without possibility to return to the Operational mode. Master Trial allows switching to SAFE-OP and PRE-OP without restrictions.

##### Master FULL

License bound to the hardware.

##### Studio TRIAL

30 day trial period starting from the date of installation (reinstallation does not reset the trial time).

##### Studio FULL

License bound to the hardware.

Below you can find a summarized license model

Product	Trial	Time Limit	Limited functionality	HW binding	License file	License acquisition
Master	Yes	2 hours	No	No	No	-
	No	No	No	Yes	Yes	Web-site
Studio .NET	Yes	30days	No	No	No	-
	No	no (optionally can be limited)	No	Yes	Yes	Web-site
	Yes	mm/dd/yyyy	No	Yes	Yes	Sales Manager

#### 80.1.2 Combining signals

Possibility to combine signals generated at reading configurations of other fieldbuses (such as PROFIBUS, CANopen etc) has been added. It allows to create signals which will correspond to the real configuration.

Combine signals command can be called from right-click menu in Variables tab.

#### 80.1.3 Changing data type

The type of a signal may be changed according to its size (e.g., the type of a 16-byte signal may be changed to INT etc). Change data type command can be called from right-click menu in Variable tab.

### 80.1.4 Output/watch window

Output/watch window has been added. This window provides additional information about process and has three tabs:

Studio Output – displays messages from Studio.

Master Output – displays diagnostic traces from Master.

Watch – displays the following signal data (available only in Online mode):

- Name – Signal name
- Type – data type of a signal
- Bit size – bits occupied by a signal
- Value – numeric value of a signal

**Note:** To add a signal to the Watch tab select the signal in Process image tab in Master configuration window, then right click and use *Add to watch* command from the context menu.

The following types of messages are shown in the tabs:

Error messages (An error message displays a fault occurred and its description).

Warnings (A warning shows that the process is not running properly. Appropriate measures should be taken to avoid undesired consequences).

Info messages (An info message contains any kind of information or tips for the user).

**Note:** It is possible to filter the displaying of messages by checking the corresponding check boxes in the context menu and clear the Studio output / Master output tab by checking the Clear check box.

### 80.1.5 Reading EEPROM

EEPROM – energy-independent slave memory. It contains the most important slave settings such as  
Device Identity  
Supported protocols  
General parameters

EEPROM info depends on the type of a slave.

To view the EEPROM's content available in hex values, click the Hex view button:

After clicking the HEX view button the following window will be displayed:

Use the Read EEPROM/Write EEPROM buttons to read /write EEPROM information to a slave.

## 81 KPA Studio EtherCAT, version 1.6, released 2007-09-10

### 81.1.1 Configuration tree improvements

Slave's icons from Device Description Files are used to represent the slaves in the tree.

### 81.1.2 Automation interface improvements

Studio's online functionality is implemented in the automation interface.

## 82 KPA Studio EtherCAT, version 1.5, released 2007-09-04

### 82.1.1 CoE-Offline

The Object Dictionary of a slave can be read either from a separate XML file or a Device Description File in the offline mode. It is adjusted in Object Dictionary settings by selecting options:

- From EDS file;
- From XML file;
- From Device Description File.

Also, by means of Object Dictionary settings you can adjust type of Object Dictionary refresh (Automatically or Manually) and set Advanced settings (Object Dictionary exporting, Device Description File updating)

## 83 KPA Studio EtherCAT, version 1.4, released 2007-08-07

### 83.1.1 Automation interface via .NET Remoting

The Studio has a set of interfaces (compiled in one assembly **ECATInterfaces.dll**) that allow getting remote control over the application and automate it. Interfaces are available via .NET Remoting.

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