Features & Improvements
CODESYS V3.5 SP12

Agenda

1. Runtime
2. Engineering
3. Visualization
4. Motion
5. Fieldbus

Runtime

Overview

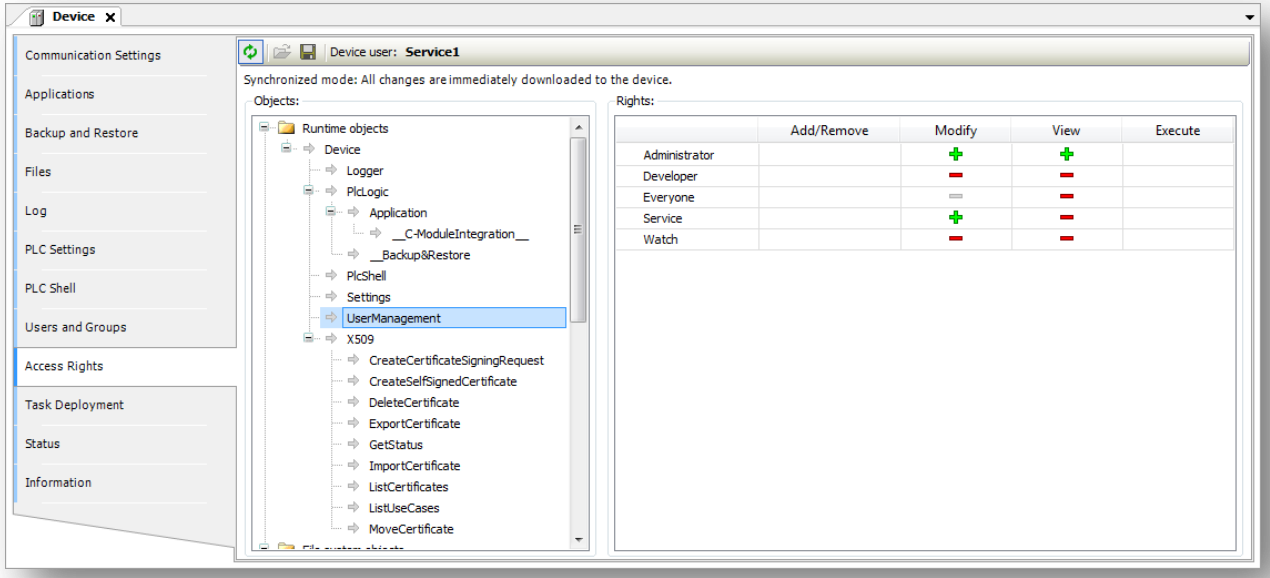
- MultiCore support (beta version)
- Improved device user management
- OPC UA: Support of events
- General improvements

MultiCore support

- Beta version of MultiCore support for CODESYS Control Win
- Consistent read / write of 64Bit data types
- New MultiCore-specific target settings
- New PLC shell command “**`getmulticoreinfo`**”
- Extended task configuration
  - Configuration of task groups with defined core distribution
- Display of variable usage in different tasks
- New operator for problems through memory reordering: **`__MemoryBarrier()`**

Improved device user management

- New device editor for configuration of access rights
- New password and security options
  - Change of password at next login
  - No change of password by user
  - Restriction of login trials

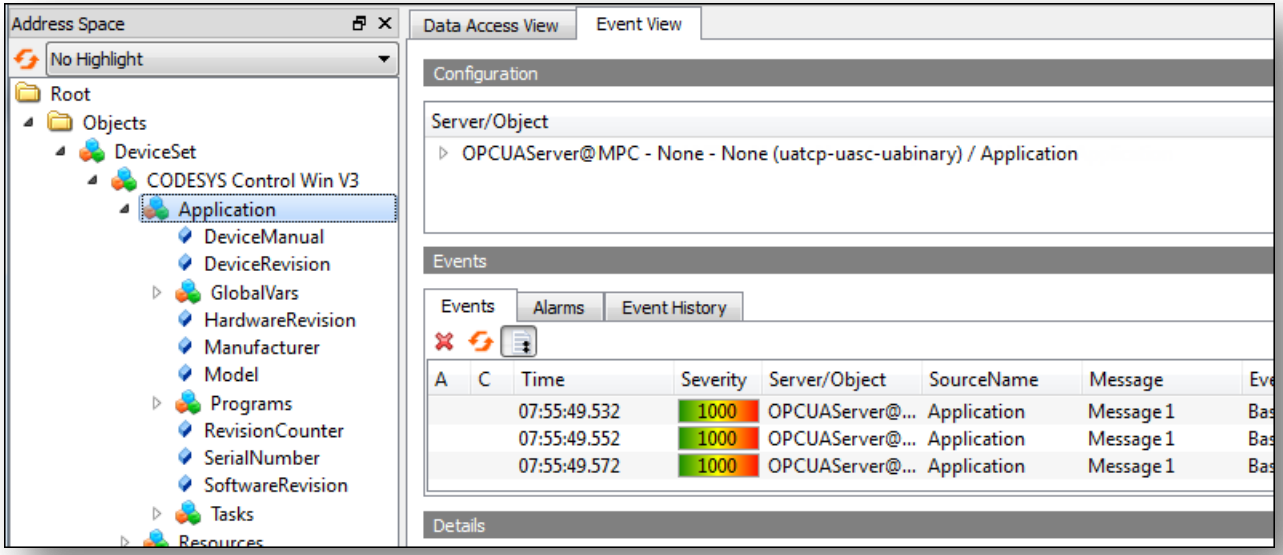


Improved device user management

- Improved pre-defined user groups and roles
- Enforcement of device user management by runtime component *SecurityManager*
- Separate runtime components for user authorization and authentication
  - Possible connection to external user management

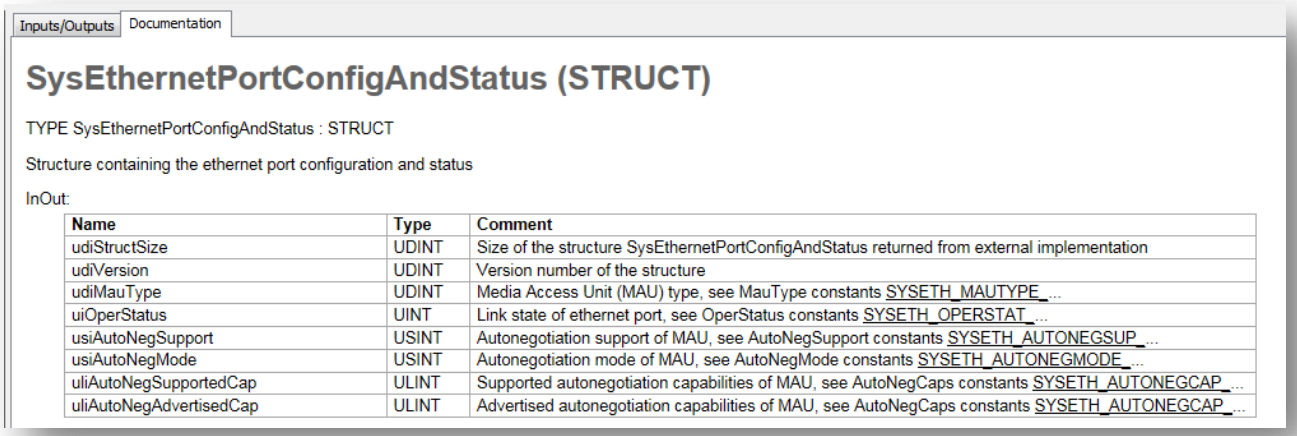
OPC UA: Support of events

- Creating of OPC UA events within alarm configuration
- Triggering of events via IEC code
- Monitoring of events with the OPC UA client “UaExpert”



General improvements

- Conversion of UTF-8 / UTF-16 data types
- Configuration of PLC shell commands
- New interface for current heap consumption
- Interface to support get/set additional ethernet adapter information



Inputs/Outputs | Documentation

SysEthernetPortConfigAndStatus (STRUCT)

TYPE SysEthernetPortConfigAndStatus : STRUCT

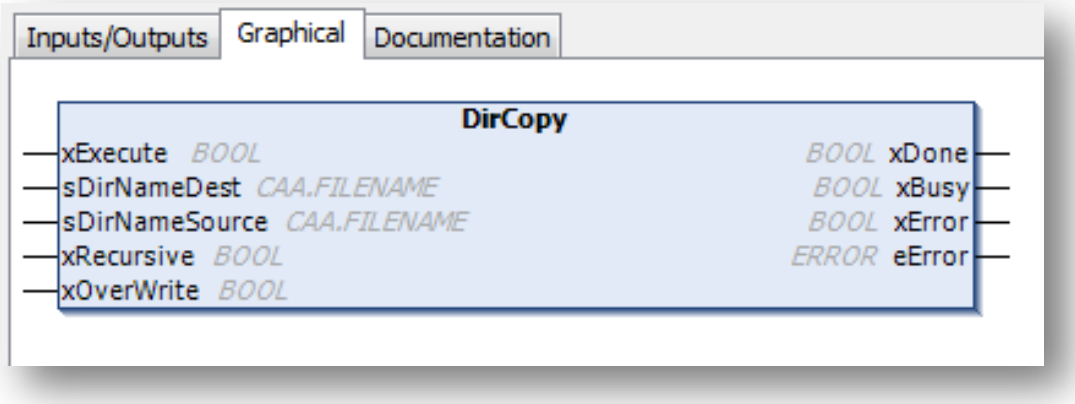
Structure containing the ethernet port configuration and status

InOut:

Name	Type	Comment
udiStructSize	UDINT	Size of the structure SysEthernetPortConfigAndStatus returned from external implementation
udiVersion	UDINT	Version number of the structure
udiMauType	UDINT	Media Access Unit (MAU) type, see MauType constants SYSETH_MAUTYPE_...
uiOperStatus	UINT	Link state of ethernet port, see OperStatus constants SYSETH_OPERSTAT_...
usiAutoNegSupport	USINT	Autonegotiation support of MAU, see AutoNegSupport constants SYSETH_AUTONEGSUP_...
usiAutoNegMode	USINT	Autonegotiation mode of MAU, see AutoNegMode constants SYSETH_AUTONEGMODE_...
uliAutoNegSupportedCap	ULINT	Supported autonegotiation capabilities of MAU, see AutoNegCaps constants SYSETH_AUTONEGCAP_...
uliAutoNegAdvertisedCap	ULINT	Advertised autonegotiation capabilities of MAU, see AutoNegCaps constants SYSETH_AUTONEGCAP_...

General improvements

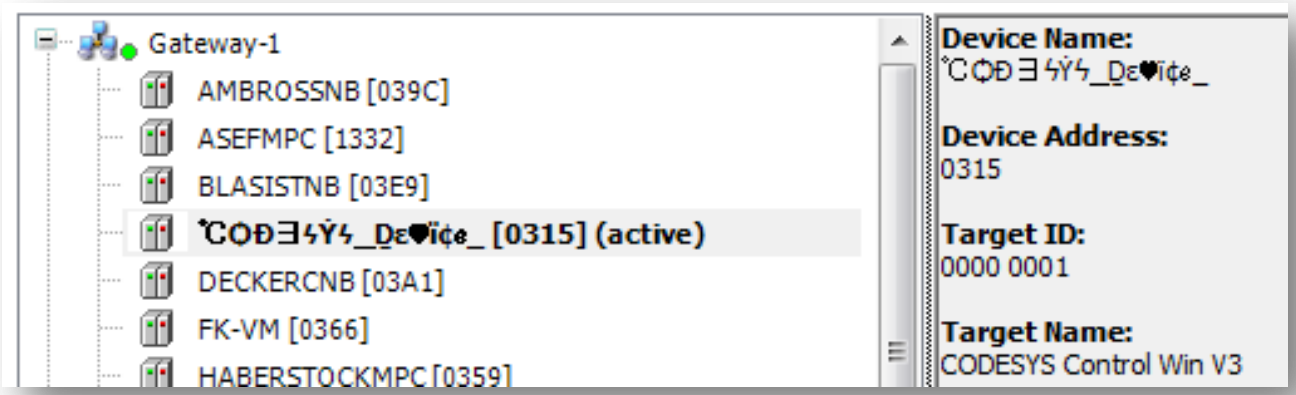
- New interface for creation of events which cannot be registered from IEC applications
- Possibility to copy whole directories (*CAA File)*



- Hilscher CIFX support:
  possibility to select a different firmware dependent on the device version

General improvements

- PLCHandler
  - API method for changing PLC's node name
  - Support of Unicode node names



Engineering

Overview

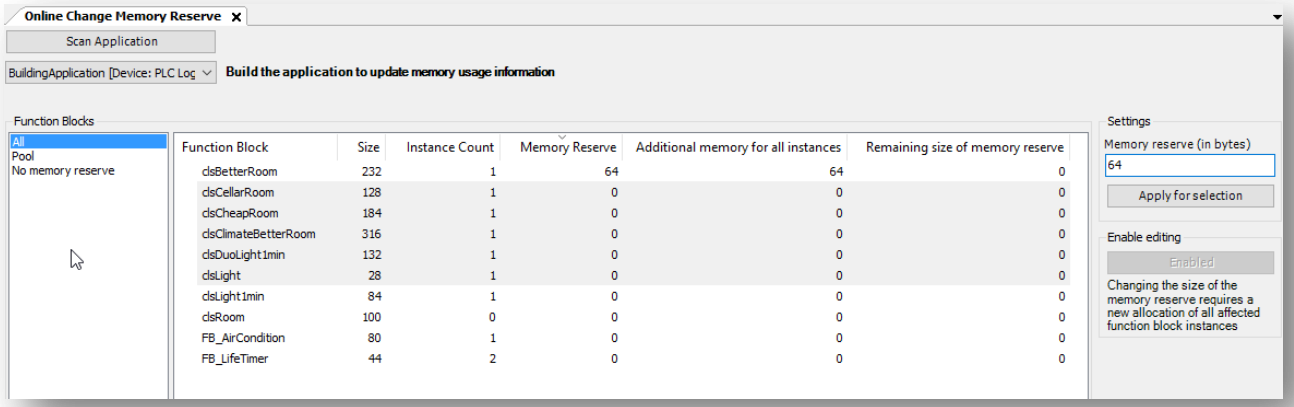
- Usage statistics
- Function block memory
- CODESYS Memory Tools
- General improvements

Usage statistics

- Collection of anonymous usage analysis data
- Analysis data
  - Installation ID
  - CODESYS information: profile name, plug-in information, package information, 32 Bit / 64 Bit version
  - Language information: language of UI and online help
  - Processor information: type and core count
  - OS information: version, 32 Bit / 64 Bit
  - Size of physical memory
  - Monitor information: number, total resolution, resolution of primary monitor, scaling
  - Time stamp for first and last usage

Function block memory

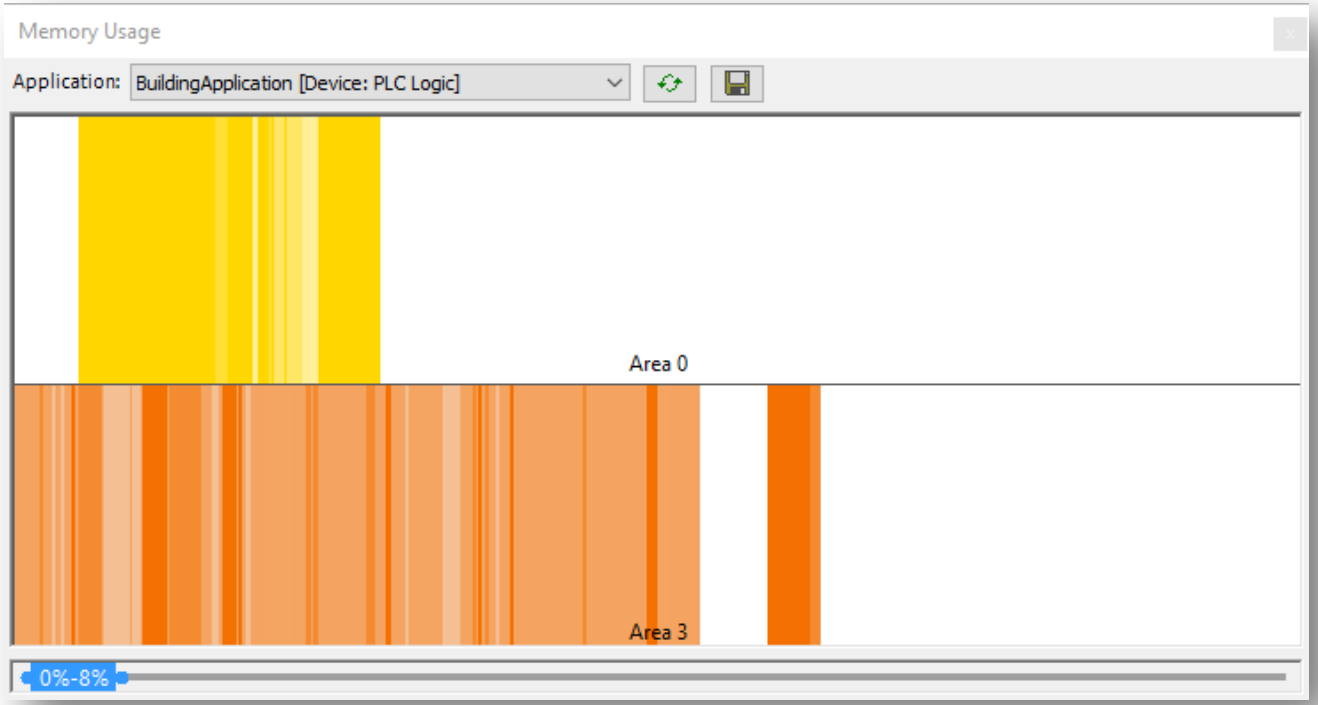
- Possible extension of function block memory



- Usage of additional memory for online change data
- Improved online change performance i.e. for add or delete function block variables

CODESYS Memory Tools

- New graphical view for display of memory allocation in areas



- Available in CODESYS Store

Engineering

General improvements

- Improved project compare
  - Opening of multiple comparison windows at the same time
  - Explicit commit of changes
  - Usage for pending changes view in upcoming release of CODESYS SVN
- Improved refactoring
- Improvements in web-based online help
- Distinction into local and global search
- Compile
  - Support of „Set next statement“ for ARM, THUMB2, PPC, SH and x64
  - Undefine of compiler defines from device descriptions
  - New compiler defines for library development

Visualization

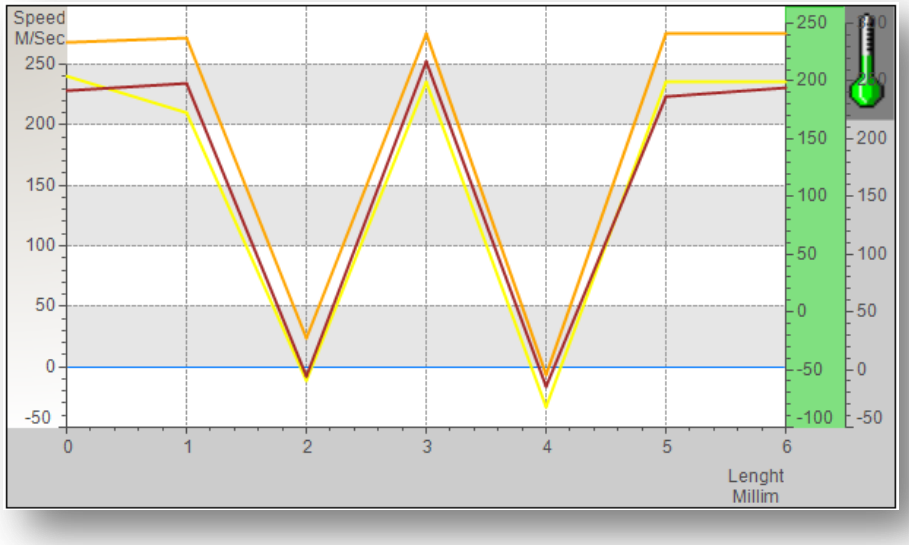
Overview

- New visualization element: XY-plot
- General improvements

New visualization element: XY-plot

Graphical display of values from a numeric array in a cartesian X-Y diagram

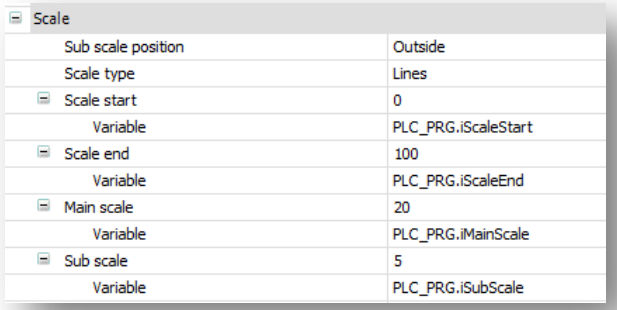
- ARRAY [0..500] OF POINT
- ARRAY [0..500, 0..1] OF REAL
- ARRAY [0..200] OF FB



Visualization

General improvements

- Support of dynamic scaling for meter, bar display, potentiometer, histogramm and slider



Scale	
Sub scale position	Outside
Scale type	Lines
Scale start	0
Variable	PLC_PRG.iScaleStart
Scale end	100
Variable	PLC_PRG.iScaleEnd
Main scale	20
Variable	PLC_PRG.iMainScale
Sub scale	5
Variable	PLC_PRG.iSubScale

- Optimization of alarm and trend storage
  - Update to latest version of SQLite
  - Longer retention of data in memory for display of trend
  - Performance optimization
- Alarm improvements
  - Alarm banner: switching between most important alarms
  - Triggering of multiple alarms in one cycle

Visualization

General improvements

- Touch scrolling
  - Support of touch scrolling for alarm table
  - Control optimization for existing elements
- File transfer
  - Possibility to transfer file with original name
  - Request to overwrite already existing files
- CODESYS HMI
  - Reduction of genrated code size
  - Application example available in CODESYS Store
- Automatic adjustment of font size for large texts
- Use of format *%t* for date and time input and output
- Dynamic image alignement

Motion

Overview

Genral improvements:

- Robotic
- CNC
- New drive drivers

General improvements

- CODESYS SoftMotion Releases since CODESYS V3.5 SP11
  - V4.2.2.0, V4.3.0.0 and V4.3.1.0
- Robotics
  - Jogging of axis groups in the product coordinate system (PCS) and tool coordinate system (TCS)
  - Support of orientation interpolation "Axis“ for Scara and 6-axis kinematics
- CNC
  - Tool length compensation (G43)
  - Rotation and scaling of the coordinate system in the G code (G53 .. G56)
  - Full 3D tool radius compensation in general levels (G41, G42)
- New drive drivers
  - Bonfiglioli iBMD
  - Panasonic MINAS A6B (EtherCAT)
  - Stäubli robot uniVAL (EtherCAT)

Fieldbus

Overview

General improvements:

- CANopen
- EtherCAT
- Sercos
- PROFINET

General improvements

- CANopen Device
  - Improvement of EDS export workflow
    - Seprate buttons for „save only in EDS file“ and „install in device repository and update all affected devices in the project“
- EtherCAT, Sercos
  - Generation of own tasks for EtherCAT and Sercos stack
    - Generation of a new task as bus cycle task when adding a new bus system (analog PROFINET and EtherNet/IP)
    - No change of original behavior at update of the bus system

General improvements

- PROFINET Configurator
  - Support of I&M function, date and description
    - Extension of scan dialog and storage of additional information in the device
  - Global communication settings
    - Central editor for all PROFINET devices, e.g. IP addresses
  - Improved alarm display
    - More information on alarms in the status page (e.g. cable break)
  - Additional input for the status of the IO data
  - Custom defaults for SendClock and Reduction
    - Simpler commissioning at cycle times > 1ms
  - Support of SendClock and RT-Class
    - Better detection of misconfiguration in Profinet devices

Fieldbus

General improvements

- PROFINET Controller
  - Automatic configuration of the phase for easier commissioning of devices (load distribution)
- PROFINET Device
  - Support of IO Provider / Consumer States: additional IO channels for the device status
- PROFINET Drivers
  - Display of alarms in logger
  - Diagnosis outputs: additional outputs in FB instance for better diagnostics
- Profinet Device (CIFX)
  - Update to Firmware V3.12.x.x
  - Additional information (status page) to avoid missmatch of projected and online configuration data

Inspiring Automation Solutions

Thank you for your attention.