



# JetSym

Version update from V. 5.7.2 to V. 6.0.0

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# 1 New additions

Below, all features newly included in this software version, as well as product enhancements are listed.

## 1.1 Hardware Manager

### 1.1.1 Updating individual operating systems via context menu

As of this release, it is generally possible to update the operating systems of individual hardware components via the context menu of the corresponding hardware node.

### 1.1.2 User prompt after change of axis type

After the axis type has been changed on the axis parameter page, a system prompts asks the user whether to apply the set parameters to the new axis type or reset the parameters to default.

### 1.1.3 CPU node discontinued

The CPU node in the Hardware tree has become obsolete. As of this release, the controller is configuration directly on the controller node.

### 1.1.4 Separate JX3 system bus node

As of this release, the Hardware Manager features a separate JX3 system bus node. JX3 expansion modules now figure as subnodes of the bus node rather than the controller node.

### 1.1.5 Displaying EtherCAT diagnostics data

As of this release, the EtherCAT node shows diagnostics data detailing the EtherCAT bus state.

### 1.1.6 Travel range/modulo limit verification

As of this release, the system runs a verification routine when configuring an axis travel range in Motion Setup.

### 1.1.7 Behavior when changing the axis type

When changing the axis type, the name, comment, and mechanic configuration values persist. Previously, the values used to be reset to default when configuring a new axis type.

### 1.1.8 New controller model JCM-631-E03-G06-K

The new JCM-631-E03-G06-K controller model has been added to the product menu.

### 1.1.9 New controller model JCM-63x

The new JCM-63x controller model has been added to the product menu.

### 1.1.10 New controller models JC-125MC (only JetSym Asia)

The new JC-125MC controller model has been added to the JetSym Asia product version.

### 1.1.11 New controller MC-JM2xxx and MC-JMD2xxx

As of this JetSym version, the new controller models MC-JM2xxx and MC-JMD2xxx are available.

### 1.1.12 CAN bus node configuration

The CAN bus node now offers setting options for the Node ID, transfer rate and operating mode.

### 1.1.13 New synchronous mode enable/disable option on the JX3-BN-EC

Exceeding the maximum permissible amount of JX3 bus process data bytes can trigger a bus error, causing the JX3-BN-EC system bus to stop working. To avoid this, synchronous data transfer can be disabled as of this version.

### 1.1.14 Controller clean-up

As of this version, the product supports only STX control systems/devices. The following controllers/devices have been discontinued (corresponding projects require a legacy version of JetSym):

- JC-24x-STX
- JC-647
- JC-800
- Nano
- Delta
- Pase-E
- Mikro
- PCPPLC
- D203-STX
- BTM012
- BTM07
- BTM09
- JCM-350-E01
- JCM-350-E02
- JCM-350-E03
- JCM-522
- JCM-620-E01
- JCM-620-E04
- JV-310
- JVM-407
- JVM-507
- JVM-604
- JVM-604B

## 1.2 Editor

### 1.2.1 Disabling all breakpoints

As of this version, the Debug toolbar features a toggle button (Disable/enable all breakpoints/tracepoints) allowing for cumulative enabling and disabling of all breakpoints and tracepoints.



## 1.2.2 Displaying a task position in the Monitor

For a task waiting in a **When** condition, the monitor used to show the number of the line preceding the `End_When` condition rather than the number of the line containing the `End_When` condition itself. As of this version, the Monitor shows the number of the line containing the **When** keyword.

## 1.2.3 Opening axis motion setup via context menu

Hovering the mouse pointer over the axis name allows users to access the axis configuration dialog “Open Motion Setup of <axis name>” from the context menu.

## 1.2.4 New setting “Ignore constructor access modifier”

As of this version, the compiler performs a more severe constructor verification routine. If for this reason code does not compile correctly, selecting the **Ignore constructor access modifier** option in the project settings will cause the code to remain unchanged.

## 1.2.5 New scroll speed setting

As of this version, the Options settings allows for adjustment of the scroll speed for marking operations in the source code editor. The value range extends between 1 (minimum speed) and 100 (maximum speed), with 5 being the default setting.

## 1.2.6 Code navigation

The programming editor now includes a mini preview feature for improved code navigation.

## 1.2.7 Toolbars

The toolbar icons are now larger and feature a trim and straightforward imagery. Some icons were renamed to make their function easily understandable.

## 1.3 Motion Setup

### 1.3.1 Optimized speed and position feedback controller (JM-3xxx)

The Speed page in the JM-3xxx Motion Setup new features a new function for controller optimization. It triggers determination of the mass moment of inertia and acquisition of speed and feedback control parameters.

## 1.4 Motion API

### 1.4.1 Reading the path group ID

As of this version, the ID of an axis object that is part of a path group can be read from the axis itself. Requirement: The respective path group is active.

### 1.4.2 New PositioningMode for path groups

Motion API 1.x, and 2.x: New **AbsOriNormal** positioning mode for path groups.

### 1.4.3 Uncoupling axes

Motion API 1.x, and 2.x: New method `MCCouplingGroup.Undefine()` uncouples a group.

## 1.5 General information

### 1.5.1 Opening legacy projects

This software version implements major changes to the data format. When opening legacy projects and files, their format is automatically converted to the current data format. Projects and files that have been converted are no longer compatible with JetSym versions preceding 6.0.0. Prior to performing any conversion process, the system creates a backup ZIP archive.

### 1.5.2 2 files deleted from the Platforms directory

The **CanOpen.stxp** and **DatabaseAPI.stxp** files have become obsolete and were therefore deleted from **Platforms** directory.

### 1.5.3 Optimized dialogs

In the **Project** menu item, the dialogs for setting the active configuration and for exporting declarations can now be scaled.

### 1.5.4 Synchronizing the controller RTC with an NTP server

As of this version, it is possible to create a configuration file allowing the controller to synchronize the real-time clock with an NTP server.

### 1.5.5 Changes to the process data default values of the JX3-COM-PND module

- In the event of an error, the Troubleshooting column is **enabled** by default.
- The value on error is **0**.
- In general, the Value on error mask is **0xffffffff**.

### 1.5.6 Old oscilloscope (.sof) discontinued

This version does no longer support the **old** oscilloscope file without the **extended** suffix. Opening this file type requires a JetSym version preceding 6.0. Consequently, the **extended** suffix has been removed from current oscilloscope file name.

### 1.5.7 User interface makeover

The user interface has undergone a complete makeover. Outdated window layouts have been removed.

### 1.5.8 New Project Settings dialog

The Project Settings dialog features a remodeled design and updated content.

### 1.5.9 Error flag in the OPC UA icon table

The OPC UA icon table shows an error flag, if several errors have occurred. A tooltip displays the individual error messages.

### 1.5.10 Lower-case letters for IntelliSense keywords

As of this version, IntelliSense keywords are written in lower-case letters. Previously, the default was upper- and lower-case letters. The setting is customizable to individual preferences.

### 1.5.11 Signing up for the newsletter

Sign-up for the newsletter to stay posted on important and valuable information. You can do so immediately after initial installation of JetSym or at any other time by going to **Tools/Register for Newsletter...**

### 1.5.12 New project can be immediately compiled

A project requires at least one task in order to be compiled. As of this version, a task is automatically created in the main program file when creating a project. The task can be edited subsequently.

### 1.5.13 Menu item “Update OS” deleted from the Build menu

The menu item “Update OS” was deleted from the Build menu. As of this version, operating system updates can be initialized directly from the hardware node in the hardware tree or by running a cumulative OS update.

## 1.6 IntelliSense

### 1.6.1 Formatting of user-defined auto text entries remains unchanged

IntelliSense entries of user-defined auto text used key word formatting (upper case, lower case, camel case). As of this version, auto text lacks formatting and is displayed as entered by the user.

## 1.7 STX

### 1.7.1 Function overloading

As of this version, STX allows for function and method overloading, meaning that several functions and methods can be named identically, yet must differ in count or type of parameters.

### 1.7.2 New STX language feature “Foreach”

The new STX language feature **Foreach** allows for all elements of an array or enumeration to be run without consideration of array limits.

### 1.7.3 Nested types

As of this version, a class allows types to be declared that are visible in the class scope, yet not outside of it.

### 1.7.4 New compiler constant `__BUILDSYSTEM__`

This software version introduces the predefined `__BUILDSYSTEM__` compiler constant showing the value of the Windows version employed at the time when the project was compiled.

### 1.7.5 Compiler directive expansion

Simple string expressions have been added to `#hint`, `#warning` and `#error`. These expressions need bracketing and must start with a string or file expression. Subsequently, other strings, files oder integers can be linked with “+”. This includes not only literals but also pre-defined and customized macros.

Example:

```

// predefined macros:
#hint ("Date: " + __DATE__ + ", Time: " + __TIME__ )
#hint ("File: " + __FILENAME__ + ":" + __LINE__ + " CFG: " + __CONFIGURATION__)

// user defined macros:
#define __MYVERSION__ 42
#define __HUBBA__ 'abcdef'

#hint ("User hint: " + __MYVERSION__ + ' <-- __MYVERSION__')
#warning ("User warning: " + __HUBBA__)

task t0 autorun

end_task;

```

### Compiling output:

```

Date: 26.02.2020, Time: 18:23:51
File: PBI17963DirectiveStringExpr.stxp:5 CFG: Main_Configuration
User hint: 42 <-- __MYVERSION__
D:\...\PBI17963DirectiveStringExpr.stxp(13) : warning 2100: User warning: abcdef

```

## 1.7.6 TaskGetCallStack SysCall

The TaskGetCallStack system call is used to retrieve information on current call stack frames of a task.

## 1.7.7 Compiler performance

This version has significantly improved the parsing and optimizing performance of the STX compiler, in particular for large-scale projects.

## 1.8 Setup and Monitor

### 1.8.1 Hiding complex-type variables

As of this version, the Monitor window features the **Hide complex types** menu item, allowing to blank complex data type variables.

### 1.8.2 Modified default time for Setup update

The preset update interval for newly created Setup documents is now 300 ms.

### 1.8.3 New behavior when incrementing/decrementing

When entering -/+, the value - or + is now entered directly in the column. Incrementing in steps of 1 now works with the key combination **Shift + Minus** or **Shift + Plus**. Increment in steps of 100 using the key combination **Ctrl + Minus** or **Ctrl + Plus**.

## 1.9 PubSub

### 1.9.1 Float register for publisher and subscriber on the JX3-COM-PND and JX3-COM-EIPA

As of this version, the publishers and subscribers allow to use float registers also for the JX3-COM-PND and JX3-COM-EIPA.

## 1.9.2 Task-local variable update

A setup option allows for task-local variables to be automatically updated when the task re-starts.

## 1.10 Motion control

### 1.10.1 Travel range/modulo limit

As of MC version 1.21.0.27, the error message 8013 has been added: **Presentable position limit exceeded**.

## 1.11 Oscilloscope

### 1.11.1 Enabling/disabling channels

New checkboxes have been added to the oscilloscope to enable and disable channels.

## 2 Fixed software bugs

This chapter describes the software bugs fixed in the new software release.

### 2.1 General information

#### 2.1.1 Risk of software freeze caused by changes to a library file structure

There was a risk of JetSym freezing when attempting to delete, add or rename files or folders of a library via the context menu. As of this software version, these operations are disabled in the context menu.

#### 2.1.2 Axis comments lost when copying hardware configuration

When creating a hardware configuration by copying an existing one (dialog “Add Project Configuration”), any comments added to the axis configuration pages were not copied.

#### 2.1.3 JetSym froze

JetSym used to freeze when starting the compiler while it was running an IntelliSense update in the background.

### 2.2 Setup

#### 2.2.1 Risk of JetSym freeze related to the JX3 module

Risk of JetSym freezing, if the contents of JX3-BN-ETH registers were shown in the Setup screen while there was no connection to the JX3-BN-ETH module.

### 2.3 Oscilloscope

#### 2.3.1 Unused channels loaded when retrieving recorded data

When uploading recorded data via the context menu of the oscilloscope diagram, all channels used to be uploaded and scaled, including channels that were not marked for upload in the recording configuration.  
In order for the JetSym bug fix to work, the controller is required to run the latest OS version.

#### 2.3.2 Uploading recorded channels

When uploading recordings in the device-internal mode (context menu **Upload data...**), data was also retrieved from channels with the checkbox disabled in the **Upload** column.

#### 2.3.3 Forced type reset after start

When entering a register (not a variable) and a forced type while the oscilloscope was in live mode, the forced type was reset to **auto** after the oscilloscope started.

#### 2.3.4 JetSym freeze under high load

There was a risk of JetSym freezing when recording with several oscilloscope files simultaneously (increased system load).

### **2.3.5 Display of member variables in the Setup in case of overloading**

In case of overloading a member variable present in the base class with variable of a different type in a derived class, the Setup used to show the variable in both the base and derived classes. As of this version, the variable appears only once.

## **2.4 STX**

### **2.4.1 %VL in the BitNum command**

Using the BitNum function with a structure localized as %VL resulted in 0, whereas the result is expected to be 4, identical to %rl and without localization.

## **2.5 Editor**

### **2.5.1 Set color not applied to program editor**

Upon initial installation of a new JetSym version, the color scheme set in the predecessor version was not applied to the program editor.

### **2.5.2 Incorrect display of values in the variable monitor**

An incorrect value (0) was sometimes displayed for variables in the variable monitor.

## 3 Important notes

### 3.1 Installing JetSym

To be able to license JetSym during installation, the JetSym installation program must be started from an admin user account.

### 3.2 .NET framework 4.7.2

This JetSym release requires a .NET framework 4.7.2.

### 3.3 CodeMeter Runtime

As of this version, the software **CodeMeter Runtime** is no longer required to use JetSym.

### 3.4 Semaphore issue

When using the Motion API with the following controllers:

JC-365MC (all models) running OS version < 1.37.0.1

JC-440MC/EXT(all models) running OS version < 1.13.0.06

JC-940MC (all models) running OS version < 1.21.0.12

JC-945MC (all models) running OS version < 1.21.0.12

JC-960EXT (all models) featuring OS version < 1.21.0.12

JC-965EXT (all models) featuring OS version < 1.21.0.12

JC-970MC (all models) running OS version < 1.21.0.12

JC-975MC (all models) running OS version < 1.21.0.12

there may be rare events of the following controller OS behavior:

If several application tasks are reading from or writing to the same axis/object simultaneously, there may be rare events of tasks receiving no or a very late response from the axis. The Motion API time-out interval may expire. This behavior is not a general issue but depends on the STX program and the individual configuration.

#### **Remedy:**

Use Motion API version 2.2.0.0 (on controllers with EtherCAT MC axes) or Motion API version 1.3.0.0 (on controllers with Ethernet or JX2-MC axes) in combination with a minimum required OS version as detailed above.