Kollmorgen Automation Suite

KAS v4.04 R1 Release Notes

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Valid for KAS Software Revision: 4.04 R1
Valid for AKD Firmware Version: 1-24-00-001
Valid for AKD2G Firmware Version: 02-15-00-001
Valid for Kollmorgen Essentials Drive Firmware Version: 02-15-00-001
Part Number: 959720

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    - For more information about accessing the PCMM2G's files, see SSH Login to a Controller.
- The OS, bootloader, and their software component's source codes including modifications, copyright notices, license texts, disclaimers of warranty, and the compilation scripts to build the OS image are available at the Kollmorgen webpage PCMM2G Operating System (OS) License Sources.
- The OS image and its corresponding sources file is identified by an "OS-Sources" designator, followed by its version number: OS-Sources-x.xx.x.xxxxx.
- The compilation scripts and sources file are available at the Kollmorgen webpage PCMM2G Operating System (OS) Build Sources.
- See PCMM2G - File Naming Conventions in the KAS online help.

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Table of Contents

1 Introduction

Welcome to Kollmorgen Automation Suite (KAS) v4.04 R1!

This release contains new features and many improvements.

This document is to help existing users understand the differences between this v4.04 R1 release and KAS v4.03.

If you are new to KAS, we recommend you start with other documents, such as the Installation Guide.

This document has these sections:

- "What's New in KAS v4.04 R1" (→ p. 6) - This is an overview of new features.
- "What's Changed in KAS v4.04 R1" (→ p. 14) - This discusses how this release may affect some older projects.
- "What's Fixed in KAS v4.04 R1" (→ p. 10) - This is a list of issues addressed in this release.
- "Known Issues" (→ p. 17) - This contains issues we are aware of and may include methods for avoiding or working around them.
- "Installation" (→ p. 21) - This covers system requirements as well as provides firmware, software, and hardware information.

1.1 Digital Signatures

The KAS-IDE Installer and the executables are digitally signed to protect the integrity of these files and identify the distributor of the software components.

The digital signature appears as part of the file properties.

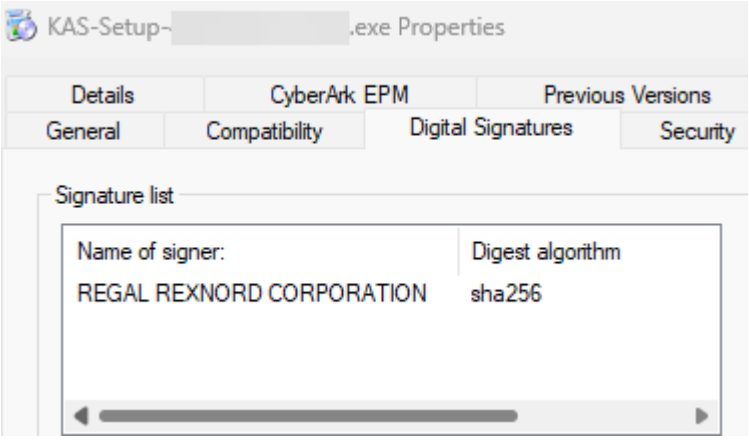

Figure 1-1: Example: KAS Setup Properties Digital Signature

TIP

We recommend you visit Kollmorgen Developer Network (KDN).
KDN is an online resource which includes a knowledge base, provides access to downloads, and has a user community where you can get answers from peers and Kollmorgen employees, and make feature suggestions for KAS.
Beta versions of the help are posted here and are searchable.

NOTE

This PDF contains links to the KAS help system and works best when read from within the KAS-IDE installation directory.
The links to content do not work if the PDF is located somewhere other than `(install directory)\Kollmorgen\Kollmorgen Automation Suite 4.04 R1.x.y\Help`.

2 What's New in KAS v4.04 R1

These new features have been implemented for this release.

2.1 v4.04 R1 New

2.1.1 Kollmorgen Essentials Drive Support

This release of KAS supports the Kollmorgen Essentials Drive. The Kollmorgen Essentials Drive axis can be mapped to either the PLCopen or Pipe Network motion engine axes, moves can be commanded.

Supported Features

The Kollmorgen Essentials Drive integration includes these capabilities:

- Scan, discover, map axis, and run functionality.
  - See EtherCAT Devices tab.
- Customized EtherCAT device views specific to the Kollmorgen Essentials Drive.
- Kollmorgen Essentials Drive's digital I/O mapping to PLC variables.
  - See Map I/O from the Project Explorer.
- WorkBench view integration in the KAS-IDE.
  - See WorkBench Views in the KAS-IDE.
- Firmware update over EtherCAT/FoE using KAS-IDE.
  - See Update Kollmorgen Servo Drives Firmware.
- EtherCAT backup and restore support with Kollmorgen Essentials Drive in the network.
  - See either EtherCAT Devices Backup or EtherCAT Devices Restore.

2.1.2 AKD2G Firmware

The KAS-IDE and KAS Runtime have been tested with Production Release v2-15-00-001.

2.1.3 Kollmorgen Essentials Drive Firmware

The KAS-IDE and KAS Runtime have been tested with Production Release v2-15-00-001.

2.1.4 KAS-IDE-WB (WorkBench)

- The KAS-IDE's embedded WorkBench has been updated to v2.19.0.11951.
  - This update introduces support for the Express Setup View and includes performance improvements.
  - See the WorkBench Release Notes.

2.2 v4.04 New

2.2.1 AKD Firmware

The KAS-IDE and KAS Runtime have been tested with Production Release v1-24-00-001.

2.2.2 AKD2G Firmware

The KAS-IDE and KAS Runtime have been tested with Production Release v2-14-00-000.

2.2.3 KAS-IDE

Export/Import User Configured CoE Init-Commands

The KAS-IDE now allows:

- Exporting user-configured CoE Init Commands from an EtherCAT device in a KAS project to a file.
- Importing CoE Init Commands into another device.
- The import or export can be either within the same or a different project.
- Use this feature to replicate configurations and speed the setup of projects with similar hardware configurations.

See the CoE Init Commands tab.

KAS-IDE Non-Administrator Installation Support

The KAS-IDE installer now supports installing the KAS software without requiring administrative privileges.

The KAS-IDE installer supports two installation options and users can choose the installation mode that best suits their needs and permissions.

- All Users (Requires Administrative Privileges)
  - This mode requires administrative privileges to install the software for all users on the Windows system.
  - This option is ideal for shared or multi-user environments.
- Current User (No Administrative Privileges Required)
  - This mode does not require administrative privileges and installs the software under the current logged-in user account.
  - This option is ideal for individual users or environments with restricted permissions.

See Install KAS-IDE.

2.2.4 KAS-IDE-WB (WorkBench)

- The KAS-IDE's embedded WorkBench has been updated to v2.17.3.11273.
  - See the WorkBench Release Notes.

2.2.5 New PLC Functions

The K5 (KAS IDE) and T5 libraries (KAS Runtime) were upgraded and include these new features and changes:

- ST function block - support "==>" syntax.
  - See ST Language Example section in Call a Function Block.
- Profinet CC-A conformity for Controller: Alarms
- New PLC Standard functions for degree / radian conversion:
  - DEG_TO_RAD
  - RAD_TO_DEG

Fixed Defects

- FBD editor crashes when too many inputs for a resizable block.
- FBD Variables used as conditions appear in the unused items list.
- FFLD compiler: "1" block with enums leads to errors.
- Fieldbus configuration: Incomplete display in the tree for the root node.
- Fieldbus: arr[index] not recognized if spaces around brackets.
- ST: Expression "REAL#1.0E-12" not allowed by the compiler.

3 What's Fixed in KAS v4.04 R1

These issues have been fixed for this release.

3.1 v4.04 R1 Fixed

Defect	Description
BZ-11331	**Simulator crashes sometimes when disconnecting from KAS-IDE.** • **Issue**: In certain scenarios, disconnecting the Simulator from KAS-IDE caused a temporary freeze in the KAS-IDE, followed by a crash in the Simulator application. • The crash was due to a double-free memory error during shutdown. • **Resolution**: The Simulator logic was updated to correctly handle memory deallocation and resource cleanup.

BZ-11330	**Unexpected Error Message Logged When Selecting Control Panel Widgets.**
	• **Issue**: Selecting any widget in the Control Panel triggered an HMI property fetch error message in KAS-IDE local logs.
	  • This resulted in misleading error reporting during normal usage.
	• **Resolution**: The event handling logic for control panel widget selection has been updated to prevent false error messages from being logged.
	  • This results in improved log accuracy and enhanced system stability.

BZ-11325	**KAS-IDE Crashes When Unmapping Multiple PLC variables from the EtherCAT Device I/O Configuration tab** • **Issue**: Attempting to unmap an I/O channel from a variable that is mapped to more than one I/O channel on the same window caused the KAS-IDE to crash. • This happens on the EtherCAT Device I/O Configuration tab as well as any KBus Slice properties window. • **Resolution**: Fixed the underlying issue by improving the stability of the unmapping operation, allowing safe removal of PLC variable assignments without triggering a crash.

BZ-11322	**UTF-8 (non-ASCII) Strings in SFC / FFLD Programs become Corrupted after Saving and Reopening in a KAS Project**
	• **Issue**: UTF-8 encoded (non-ASCII) text in SFC/FFLD programs were corrupted after saving and reopening in a KAS project.
	  • This was leading to loss or misrepresentation of special characters.
	• **Resolution**: Fixed the project file handling to correctly preserve UTF-8 strings during the save and reload operations.
	  • This ensures accurate representation of non-ASCII characters.

BZ-11319	The MC_WriteParam (MC_AXIS_PARAM_UU_REV_RATIO) function block fails for certain valid values.
	• **Issue**: The MC_WriteParam(MC_AXIS_PARAM_UU_REV_RATIO) function block was incorrectly rejecting some valid user units per revolution values.
	  • This was caused by overly strict conversion parameters, resulting in an **Invalid parameter data** error (Error ID 9).
	• **Resolution**: The real-to-rational integer conversion algorithm has been replaced with a new implementation that is less strict with conversion parameters, removing false positive error cases.
	  • In some cases, the new algorithm produces a more precise rational result.
	• **Workaround**: If the user units per revolution value is known at application compile time, it can be set directly using the Axis Data Parameters (PLCopen) in the KAS-IDE.
	  • This avoids the need to use MC_WriteParam at runtime.

3.2 v4.04 Fixed

Defect	Description

BZ-11319	The MC_WriteParam (MC_AXIS_PARAM_UU_REV_RATIO) function block fails for certain valid values.
	• **Issue**: The MC_WriteParam(MC_AXIS_PARAM_UU_REV_RATIO) function block was incorrectly rejecting some valid user units per revolution values.
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	• **Resolution**: The real-to-rational integer conversion algorithm has been replaced with a new implementation that is less strict with conversion parameters, removing false positive error cases.
	  • In some cases, the new algorithm produces a more precise rational result.
	• **Workaround**: If the user units per revolution value is known at application compile time, it can be set directly using the Axis Data Parameters (PLCopen) in the KAS-IDE.
	  • This avoids the need to use MC_WriteParam at runtime.

BZ-11318	Tcp send and receive function block calls block each other.
	• **Issue**: TCP/IP Function Blocks on the same socket could not execute concurrently, preventing applications from sending data while receive function is waiting on incoming data.
	  • This limitation could lead to potential communication delays in TCP-based applications.
	• **Resolution**: The TCP/IP communication logic has been improved to allow one function block from each category (i.e., send (TcpSend, TcpBinSend), receive (TcpReceive, TcpBinRecieve), and status (TcpIsConnected, TcpIsValid)) to execute concurrently.
	  • If multiple functions from the same category are called, they are queued and executed sequentially.
	  • Example: TcpSend and TcpReceive can be executed simultaneously.
	  • If TcpBinSend is executed while a TcpSend is in progress, the TcpBinSend call is queued so that it is executed after the TcpSend block has completed.

BZ-11312	The KAS-IDE crashes when accessing the EtherCAT device view for any E-Bus Analog I/O Slice with a negative offset setting. • **Issue**: The KAS-IDE would crash if a negative offset or gain value was assigned to any channel on the E-Bus Analog I/O slice. • This occurred upon reopening the project and accessing the EtherCAT device view. • **Resolution**: The KAS-IDE has been updated to properly handle negative offset and gain values for channels on the E-Bus Analog slice.
BZ-11307	The PCMM2G Static IP address cannot be changed if the gateway address is not provided. • **Issue**: Users were unable to change the static IP address on the PCMM2G if the gateway address was not provided, leading to potential connectivity issues. • **Resolution**: The KAS-IDE now allows changes to the network settings without requiring a gateway address. • Users can modify the static IP address independently without entering the default gateway address when the PCMM2Gis inside the local network.
BZ-11306	The axis moved past the rollover position using the coordinated motion engine and causes large velocities in slave axes. • **Issue**: When a PLCopen axis with rollover is used as a master axis, moving it past its rollover point with coordinated motion function blocks causes slave axes to experience higher than expected velocities. • **Resolution**: The coordinated motion engine now correctly handles rollover.

Defect	Description

BZ-11298	Un-mapping the last variable in the oscilloscope does not get saved to memory.
	• **Issue**: When a channel group contains only one mapped variable, unmapping that variable will remove it from the user interface.
	  • The underlying data was not updated accordingly.
	  • As a result, the variable could still appear in exported channel data or saved project files, as if it were still mapped.
	• **Resolution**: The un-mapping logic has been updated to ensure that when the last variable in a channel group is unmapped, it is also properly removed from the internal data model and project file.
	  • This update ensures consistency across the user interface, exported data, and saved project files.

BZ-11271	The KAS-IDE crashes when adding a second CoE Init-Command on some computers.
	• **Issue**: The KAS-IDE crashed when attempting to add a second CoE Init-Command.
	  • This was caused by improper memory deallocation during the destruction of the Add/Edit CoE Init Command dialog widget, leading to a use-after-free or invalid memory access scenario.
	• **Resolution**: The memory management logic for the CoE Init Command dialog has been corrected to ensure safe and complete deallocation.
	  • The widget is now properly destroyed without affecting subsequent operations, preventing crashes when adding multiple CoE Init-Commands.

BZ-11257	The ST Editor no longer auto-fills function block data type. • **Issue**: Dragging a function block from the Function Blocks Libraries to the ST editor that requires an instance to be declared in the dictionary no longer auto-populates the create variable window with a default name of "Inst#_NameOfFunctionBlock". • **Resolution**: The create variable window now auto-populates with the suggested variable name when dragging and dropping a function block that requires an instance to be declared in the dictionary.

BZ-11104	Added no-modulo output option for CAM, Phaser, Comparator, and Sampler Pipe Network (PN) blocks.
	• **Issue**: Certain PN blocks (e.g., CAM and PHASER) do not allow the no-modulo option and operate with negative positions.
	  • This can lead to unwanted jumps in motion in certain scenarios.
	• **Workaround**: To mitigate this issue, an additional differentiator and integral PN blocks can be added to the network.
	  • The differentiator block converts the PN position signal to a velocity signal, eliminating the jump.
	  • The integral PN block then restores the signal back to PN position for downstream usage in the pipe.
	• **Resolution**: The CAM, Phaser, and Sampler PN blocks have been enhanced to support a no-module setting.
	  • This makes the PN code more streamlined, user-friendly, and practical.

Defect	Description

BZ-8193	Project out-of-date notification is missing when downloading a project after modifying EtherCAT device settings, PDO or IO mappings.
	
	• **Issue**: When downloading the KAS project from the KAS-IDE after modifying an EtherCAT device configuration (e.g., PDO Selection/Mapping, I/O, CoE Init-Commands, etc.), the KAS-IDE did not display the expected **Project Out-Of-Date: PLC Code need compilation** notification.
	  • This omission could lead to users to unknowingly working with an outdated configuration, potentially causing confusion and leading to incorrect troubleshooting.
	• **Resolution**: The KAS-IDE software has been updated to ensure the "Project Out-Of-Date" notification appears correctly when relevant changes are made.
	  • This fix helps users:
	  • Stay informed about necessary updates.
	  • Reduce the risk of configuration mismatches.
	  • Improve overall project accuracy.

BZ-7859	The AKD firmware update still allows web browser functions. • **Issue**: While updating the AKD or AKD2G firmware from the KAS-IDE, KAS allows the Web server to update the controller firmware, potentially corrupting the drive firmware. • **Resolution**: KAS now prevents controller firmware updates and/or starting a KAS project while drive firmware update is in-progress.

4 What's Changed in KAS v4.04 R1

4.1 v4.04 R1 Changes

There were no changes for v4.04 R1.

4.2 v4.04 Changes

4.2.1 KAS-IDE

Support Mapping of Structure Instances Variables

The EtherCAT device PDO Selection/Mapping tab, I/O tab, and Controller Onboard I/O views now allows mapping PDO objects to variables within a structure instance.

- This enhancement improves data organization and code readability and reduces the time to develop and manage the KAS projects that rely on numerous PDO mappings.
  - Mapping to variables within a structure instance is supported.
  - Mapping to either array variables or array variables within structure instance is **not** supported.

User Unit Scaling Opt-out Option for AKD2Gand Kollmorgen Essentials Drive

An opt-out option has been added for AKD2Gand Kollmorgen Essentials Driveuser unit scaling (PLCopen and Pipe Network axis).

Background

- The KAS-IDE's Pipe Network and PLCopen axis properties allow users to configure User units type (Counts, Degrees, Radians, and Custom) and a label for the units.
- The User units configuration is written to the AKD2Gand Kollmorgen Essentials Drivedrive via CoE-init commands.
  - This enables automatic synchronization of the units between WorkBench views and the controller.

Enhancement

- The Pipe Network and PLCopen axis configuration views now include an option to specify whether the user -defined unit configuration to be written to the AKD2Gor Kollmorgen Essentials Drivedrive mapped to this axis.
- This feature allows advanced users who wish to define different unit configurations in KAS-IDE and the associated drives per their application needs.

4.2.2 KAS-IDE GUI Framework Upgrade to Qt v6.8.1

The KAS-IDE GUI framework has been upgraded from v5.11.3 to v6.8.1.

This is a major update to the GUI libraries.

- In accordance with Qt's open-source license policy terms, the Qt sources and pre-built packages used by KAS-IDE can be downloaded from the KDN website here:
  - Qt Source Files
  - Qt Pre-built Package

4.2.3 KAS-IDE Embedded Web Browser Update

The KAS-IDE's embedded web browser component has been updated to Microsoft Edge-based WebView2 control.

- The previous browser had issues displaying modern HTML code.
- The new component supports the latest web technologies and is actively maintained by Microsoft, ensuring regular updates and security patches.
- See Access the Web server From the KAS-IDE.

4.2.4 Secure Upload of KAS-IDE and Simulator Crash Report Files to Kollmorgen Server.

The KAS crash reporting feature automatically generates a crash log when the KAS-IDE crashes.

- This feature has been updated to use a secure protocol (SFTP) when uploading crash report files.
- With user consent, these crash details are uploaded to the Kollmorgen server to assist in analyzing and resolving those crashes.

4.2.5 Modify EtherNet/IP IO Scanner Server Addresses in KAS Projects

Modify EtherNet/IP IO Scanner server addresses in KAS projects without requiring KAS-IDE access, recompilation, or downloading.

Background

- Previously, modifying EtherNet/IP IO Scanner server addresses required access to the KAS-IDE, followed by recompilation and downloading the updated configuration to the KAS controller.
  - See EtherNet/IP IO Scanner (Client).
- This process was time-consuming, particularly for customers managing multiple machines with a single KAS project file.

Enhancement

- The KAS software now allows users to modify EtherNet/IP IO Scanner server addresses via a separate configuration file.
  - This eliminates the need for KAS-IDE access, recompiling and downloading the project file.
  - This improvement streamlines workflow efficiency, reduces setup time, and simplifies configuration management for customers commissioning multiple machines with a single KAS-IDE project file.
  - See EtherNet/IP IO Scanner (Client) - Server Configuration.

4.2.6 Oscilloscope Enhancements

Trace file data can now be imported into the KAS-IDE scope graph area.

- The Soft Oscilloscope screen now includes the ability to import the data from CSV files that were exported from other systems.
  - See Oscilloscope Control Panel - Control Panel buttons.
- This feature is used to visualize and analyze the imported data offline using the Oscilloscope Graphical Area.
- This feature reduces reliance on external software tools (e.g., Microsoft® Excel) for data visualization and analysis needs.
- See either:
  - Export the Oscilloscope Data.
  - Import the Oscilloscope Data.

5 Known Issues

These are the known issues for this release.

Defect	Description
BZ-11322	UTF-8 (non-ASCII) strings in SFC/FFLD programs become corrupted after saving and reopening KAS Project.
BZ-11320	KAS-IDE Crashes during new project creation when installed in non-ASCII directory paths.
BZ-11309	PROFINET GSDML file does not work with Siemens TIA Portal V20.
BZ-11267	KAS-IDE O-Scope window update rate slows down with 7 (or more) traces.
BZ-11265	Intermittent PCMM shared directory connection failure at power-on w/ static IP.
BZ-11258	KAS-IDE Program Cycle view drag-n-drop stops working after moving multiple programs.
BZ-11252	Deleting variables with KVB option causes **[[MODBUS-S]:(...) Unknown Symbol** compile errors.
BZ-11247	KAS-IDE crash reports are sometimes sent with zero file size crash dump and no user information.
BZ-11241	O-Scope PLCProgExecTime trace displays incorrect value with multi-core controllers if PLC execution time is close to EtherCAT cycle time.
BZ-11169	Multiple **MC_MoveLin/Circ** calls with velocity blending and short path distance may exceed specified deceleration rate.
BZ-11143	KAS-IDE has long delay when mapping variables to Safety PDOs.
BZ-11139	KAS-IDE PLCopen digitizing axis w/ multi-turn has incorrect user units.
BZ-10458	PLC Variable Creation Wizard don't show the mapping.
BZ-10451	Cannot start application with direct Ethernet connection.
BZ-10419	Drag-n-drop variable from UDFB instance to watch window does not display the value.
BZ-10275	PxMM controller bus time not synchronized with DC master time.
BZ-9928	ESI file list not updated when good and bad ESI files added at the same time.
BZ-9835	Non-ASCII characters in projects not handled properly in the KAS-IDE.
BZ-9834	Import/export from/to non-ASCII file names does not work correctly.
BZ-9359	PDO objects not defined in the object dictionary (or 24-bit size) do not work properly with MLSmpXxxxx(...) functions.
BZ-8659	PLCopen move blending with jerk. If the blending move is commanded with an unreachable velocity, the move may abruptly decelerate to the final position within one sample, exceeding the specified deceleration rate.
BZ-8645	Adding ESI file after scanning results in no selected PDOs.
BZ-8643	EtherCAT scan fails after a AKD drive firmware download failure with a wrong EtherCAT topology.
BZ-8636	Recovered projects don’t recover imported libraries (.KAL files).
BZ-8608	KAS-IDE views do not scale if Windows text scaling is > 100%.
BZ-8605	**MLInitTrig** does not configure the AKD Capture engine correctly for a negative edge trigger.
BZ-8588	EtherCAT network restore fails to recover from drive firmware download failure.
BZ-8508	PDOs need padding to meet byte boundary requirement. • The KAS-IDE PDO Editor does not automatically pad PDOs on non-byte boundaries. • The problem can be avoided by manually adding dummy objects to pad the PDO size to line-up on byte boundaries. • See this article on KDN: How do I Insert PDO Padding in the KAS PDO Editor? for more information.

Defect	Description
BZ-8212	Modified cam file is not downloaded when forcing an Online Change.
BZ-7985	KAS-IDE disconnects from the controller after several days.
BZ-7728	KAS-IDE animation with non-matching project versions.
BZ-6240	KAS-IDE always reports the project has been modified.

6 Known Limitations

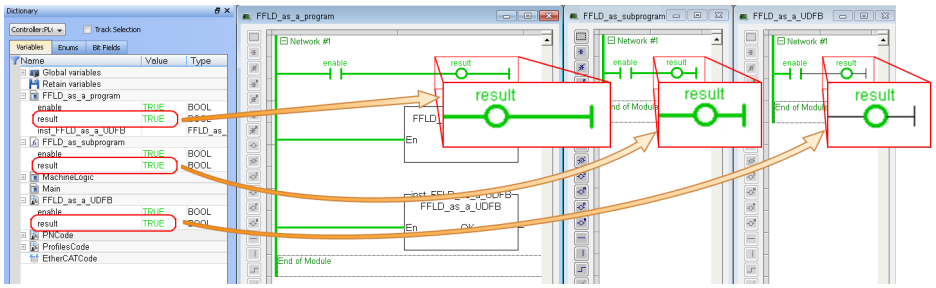
- RGM is not supported.
- The undo action is not possible for all operations.
- Find/Search/Replace function:
  - Search and Replace function is not supported in Pipe Network.
  - Search and Replace for HMI are supported only with local <CTRL+F>.
- In SFC programs, breakpoints can only be set on transitions (i.e., in First Level diagram) and not in steps or conditions.
  - With a breakpoint set on transition, you can debug cycle by cycle.
- SFC programs are limited to 64k byte size due to the bytecode engine.
  - If the SFC program exceeds 64k bytes, the compiler generates a warning message: **Warning: limit is 64KB!**.
- Plugging the EtherCAT cable to the OUT port is not detected and is not reported as an error.
- PLC Variable mapping:
  - Each PLC variable can be mapped to an EtherCAT IO and exclusively to either:
    - External driver.
    - Modbus for an HMI.
    - PDMM Onboard IO.
  - Example: A PLC variable cannot be mapped to Modbus and Onboard PDMM IO at the same time.

6.1 EtherCAT Limitations

- **Cabling**: Plugging the EtherCAT cable to the OUT port is not detected and is not reported as an error.
- **External EtherCAT Configuration**: If an external EtherCAT XML file needs to be used, the file `AKD-for-KAS.xml` should be used as the ESI file for AKD.
  - This ensures proper operation with KAS.
  - The file is located here: `C:\Users\<user.name>\AppData\Local\Kollmorgen\KAS\Astrolabe\ESI\`.

6.2 FFLD Animation Limitation

- The FFLD animation for UDFBs has a limitation, where the ladder rung is not fully animated.
  - Example: In a program and sub-program, the rung is fully animated, where in the UDFB it is not fully animated.



6.3 PCMM2G Limitations

The PCMM2G with EtherCAT configured for a 4kHz (250usec) Cycle Time may experience cycle jitter or a missed receive frame (A38) in +24hrs of operation with:

- 16 (or more) Axes.
- Large memory usage from PLC variables.

Detect Excessive Cycle Jitter

- Use the IDE Oscilloscope to monitor the TraceTimes **CycleJitter** channel.
- Check the controller logs for an EtherCAT Warning message with **Cycle jitter:[xx]us...**.

Reduce Cycle Jitter

- Reduce the PLC memory size by:
  - Delete unused programs, functions, and UDFBs.
  - Delete unused variables.
    - See the Find and Replace tab - **Find Unused Variables** (#3).
  - Size arrays appropriately to meet to their actual maximum usage.

7 Installation

Use this information for KAS installation:

7.1 System Requirements

These are the minimum system requirements for the KAS-IDE.

Component	Description
Supported Operating Systems	• Microsoft® Windows® 11 (64-bit). • Microsoft® Windows® 10 (32-bit or 64-bit). • For optimal performance, verify the operating system is fully updated with the latest patches.
Connectivity	• 1 Ethernet port or WiFi connectivity, at either 100 MB or 1 GB. • See Note #2.
Display	• WXGA+ (1440 x 900) or higher-resolution monitor with 24-bit, 16.7M colors. • See Note #1.
Hard Disk	Free space required on hard disk: • 32-bit hard disk: 16GB • 64-bit hard disk: 20GB
Network	Internet connection for downloading and updating WebView2 Runtime.
Processor	Intel® Pentium® M or equivalent processor at 1.5GHz or greater.
RAM	• 32-bit: 1GB RAM • 64-bit: 2GB RAM or greater • Recommended for complex applications.
Software	• Microsoft Edge WebView2 Runtime (Evergreen) version 133.0.3956.59 or newer. • .NET Framework 4.8.1 or newer.
Web Browser	• A modern web browser is required to access the controller Web server and online help. • We recommend Microsoft Edge.

NOTE

1. Better results are achieved with OpenGL and 3D cards.
2. A 100MB network is required to allow the KAS-IDE to Runtime communication to work in all conditions. The AKD WorkBench AutoTuner and Scope both require 100MB of bandwidth to function properly.

TIP

See Connect Remotely about the ports used by the KAS-IDE.
The ports may need to be opened to support connecting from an external network.

7.2 Firmware and Software Requirements

KAS is comprised of several software components integrated together to provide a complete motion system.

We recommend these component software versions for best performance and compatibility.

7.2.1 Computer Software

Software Images	Recommended Version
KAS-IDE	4.04 R1.0

7.2.2 Firmware Requirements

7.2.2.1 Controller Firmware

This is the controller firmware to use with this KAS release.

Description	Type	Name
PCMM2G 1.5GHz Quad-Core	KAS Runtime	KAS Runtime for PCMM2G (KAS-PCMM2G-Cx-08)
PCMM 800MHz	KAS Runtime	KAS Runtime Firmware for AKC-PCMM (KAS-PCMM-M-MCEC)
AKD PDMM 800MHz	KAS Runtime	KAS Runtime Firmware for AKD-PDMM (KAS-PDMM-M-MCEC, KAS-PDMM-M-KCEC)
PCMM 1.2GHz	KAS Runtime	KAS Runtime Firmware for AKC-PCMM (KAS-PCMM-M-M1EC)
PCMM 1.2GHz Dual-Core	KAS Runtime	KAS Runtime Firmware for AKC-PCMM (KAS-PCMM-M-M2EC)
AKD PDMM 1.2GHz	KAS Runtime	KAS Runtime Firmware for AKD-PDMM (KAS-PDMM-M-M1EC, KAS-PDMM-M-K1EC)

- Supported drives include:
  - AKD-M (AKD PDMM Drive)
  - AKD2G, AKD-P (Motion Tasking Drive or Position Indexer)
  - AKD-C, AKD-N
  - Kollmorgen Essentials Drive
  - MKD-C
- The recommended firmware version is dependent on the drive's model and revision.
- Controller firmware is available at KDN.

7.2.2.2 Drive Firmware

NOTE

- AKD firmware is available at AKD Firmware.
- AKD2G firmware is available at AKD2G Firmware.

This is the drive firmware to use with this KAS release.

Description	Type	Name
Firmware for drive built into AKD PDMM	AKD PDMM 800MHz	AKD PDMM Servo Drive Firmware • AKD-M-KCEC-01-24-00-001.i00 • AKD-M-MCEC-01-24-00-001.i00
Firmware for drive built into AKD PDMM	AKD PDMM 1.2GHz	AKD PDMM Servo Drive Firmware • AKD-M-K1EC-01-24-00-001.i00 • AKD-M-M1EC-01-24-00-001.i00
AKD Drive Firmware	AKD-N	AKD-N-xxEC-V01-24-00-001.i00
AKD Drive Firmware	AKD-P	AKD-P-NBxC-01-24-00-001.i00
AKD Drive Firmware	Resident	R_00-00-71-000.i00
AKD2G Drive Firmware	Non-Safety (FS1)	AKD2G-S-(E)-A-02-14-00-000.i00
AKD2G Drive Firmware	Safety Certified (FS2 and FS3)	• Drive Firmware: AKD2G-S-(E)-A-02-12-00-105.i00 • SMM Firmware: R_02-07-000

7.2.2.3 Firmware Compatibility

7.2.2.3.1 F106 Error

An F106 error may appear after upgrading the AKD firmware.

- This indicates that non-volatile parameters are not compatible between the two firmware versions.
- Resetting the drive to the default memory values using Parameter Load will fix this error.

7.2.2.3.2 FBUS.PARAM05 Bit 5

`FBUS.PARAM05` bit 5 should be set to 0 (zero); this is the default value.

- This prevents an error E33 and EtherCAT not starting.
- If it is not set to 0 (zero), the rotary switch of the drive is used to set the EtherCAT Station Alias.
  - This can conflict with the address that KAS is writing.

7.2.3 Mandatory Resident Firmware for AKD

- The recommended resident firmware for all AKD family drives is v71.
- To reliably support the EtherCAT firmware download, resident firmware must be at least v35.
  - Contact Kollmorgen for any AKD Drive with resident firmware lower than v35.
    See Support and Services (➔ p. 30).

7.2.4 Kollmorgen Visualization Builder (KVB)

7.2.4.1 Software Images

Software Images	Recommended Version	Download
KVB	2.40 [2.43.17.0]	Kollmorgen Visualization Builder IDE

7.2.4.2 Installers

The installation package contains both the IDE and runtime for TxC panels.

The KVB .ZIP file contains two different installers:

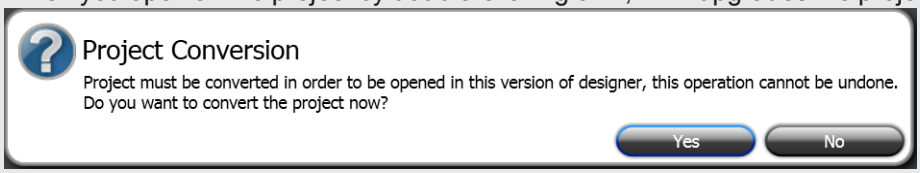
Install Type	File	Notes
New installation	setup.exe	This is the complete package which will install all prerequisite components.
Runtime	RuntimeSetup.exe	This package contains runtime software for TxC panels.

7.2.4.3 Hardware / Software

Hardware / Software	Versions
Operating Systems	Windows® 10, Windows 11
Controllers	AKD PDMM, PCMM, and PCMM2G
HMI	All Kollmorgen AKI panels

NOTE

The KAS-IDE creates projects using KVB 2.0.
When you open a v2.0 project by double-clicking on it, KVB upgrades the project to v2.40 [2.43.17.0].



IMPORTANT

KVB 1.2 projects are not compatible with KVB 2.x.
An attempt to open a v1.2 project with v2.x results in an alert message.
If accessing v1.2 projects is important, we recommend keeping both versions installed on your system.
New panels automatically use KVB 2.0.

TIP

Contact Kollmorgen if you have a KVB 1.2 project that needs to be updated in KVB 2.x.
See "Support and Services" (→ p. 30).

7.2.5 BBH Safety Software

These BBH Safety software and firmware minimum versions are required to operate with these products and KAS-IDE software:

- AKD PDMM
- AKD2G
- AKT2G-IO-SDI-04-000
- AKT2G-IO-SDO-04-000
- PCMM
- PCMM2G

Contact BBH for the latest software and firmware release information and details.

Description	Type	Minimum Version
SCU-1-EC FSoE Master firmware	Firmware	03.00.00.62
SafePLC2 safety programming software	Software	1.7.1.8219

7.3 KAS Controls

KAS Runtime is verified compatible with these hardware models:

Controller	Description	Model Number	Main Characteristics
PCMM2G	1.5GHz Quad-core	PCMM2G-C2-08-000-00-000	2nd Generation High Performance Multi-Axis Controller
PCMM	1.2GHz Dual-core	AKC-PCM-M2-120-00N-00-000	High Performance Multi-Axis Controller
PCMM	1.2GHz Single-core	AKC-PCM-M1-120-00N-00-000	High Performance Multi-Axis Controller
PCMM	800MHz Single-core	AKC-PCM-MC-080-00N-00-000	Standard Multi-Axis Controller
AKD PDMM	1.2GHz	AKD-M0xxxx-M1EC-0000 AKD-M0xxxx-K1EC-0000	High Performance Drive Resident Controller
AKD PDMM	800MHz	AKD-M0xxxx-MCEC-0000 AKD-M0xxxx-KCEC-0000	Standard Drive Resident Controller

7.4 Allow Simulator to Use HTTP Communication

The Simulator needs to open HTTP ports to allow communication.

The first time Simulator is run, Windows prompts you to block or unblock the KAS application.

Allow access to all of these requests to ensure correct behavior.

The Simulator uses Port 80 for the web server.

Simulator automatically assigns an available free port to the webserver to listen to the incoming HTTP requests if another service is using Port 80.

See Start the KAS Simulator for more information.

8 AKD Firmware Notes

- The AKD Firmware v1-16 (and later) supports a new drive parameter, ECAT.LEGACYREV, to enable a backwards compatibility RevisionNo (0x2).
  By default, AKD-Series drives ships with the latest production release firmware, with ECAT.LEGACYREV = 1, for backwards compatibility.
- The AKD Firmware v1-16 (and later) supports a 3rd FMMU if the ECAT.LEGACYREV = 0.
  The advantage of using a 3rd FMMU is 30% performance improvement with the KAS-IDE embedded Workbench communication.
- EtherCAT RevisionNo: EtherCAT provides an optional field to identify a vendor specific RevisionNo for a device and a field to specify the logic to CheckRevisionNo for device compatibility.
  - The KAS-IDE and Runtime supports multiple RevisionNos for the same Vendor/ProductID.
  - In previous KAS versions, the EtherCAT initialization would generate a device mismatch error, if the device's RevisionNo and the project's RevisionNo did not match.
  - If the device's ESI file does not specify the CheckRevisionNo logic then, by default, the KAS Runtime allows any RevisionNo at EtherCAT initialization.
  - The IDE allows you to map physical devices to project devices with different RevisionNos and keep the project device configurations.
- Limitation: The CheckRevisionNo options **equal or greater than** (EQ_OR_G, LW_EQ_HW_EQ_OR_G, and HW_EQ_LW_EQ_OR_G) are not supported.
  They are evaluated as **equal** (EQ).

9 Third Party EtherCAT Device Support

This section summarizes the known capabilities and limitations with KAS support for third-party EtherCAT devices.

See:

- Add and Configure Third Party EtherCAT Devices in the online help for directions on integration.
- Set Up FSoE Master and an AKD2G with SafeMotion Monitor if integrating a different third-party FSoE master into a KAS system.

9.1 Requirements

- All third-party devices must have an ESI file containing the device information, features, and settings.
- MDP devices must support automatic module discovery at EtherCAT network scan.

9.2 Limitations

- The KAS-IDE does not support third-party drives.
  - Contact your local Kollmorgen representative for details.
- MDP fieldbus gateway devices that require MDP gateway profiles, implemented to the ETG 5001.3 specification, may not be discovered.
  - This includes gateway protocols: CAN, CANopen, DeviceNet, Interbus, and IO Link.
- PDO upload is not supported.
- Manual slot configuration is not supported with MDP devices.
- 3rd-party drivers for network gateway devices are not included.

Support and Services

About Kollmorgen

When you need motion and automation systems for your most demanding applications and environments, count on Kollmorgen - the innovation leader for more than 100 years. We deliver the industry's highest-performing, most reliable motors, drives, AGV control solutions and automation platforms, with over a million standard and easily modifiable products to meet virtually any motion challenge. We offer manufacturing facilities, distributors and engineering expertise in all major regions around the world, so you can bring a better machine to market faster and keep it profitable for many years to come.

Kollmorgen Developer Network

See the Kollmorgen Support Network for product support.
Search the knowledge base for answers and get product downloads.

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