

Kollmorgen Automation Suite

KAS v4.05 Release Notes



Document Edition: GG, February 2026

Valid for KAS Software Revision: 4.05

Valid for AKD Firmware Version: 1-25-00-000

Valid for AKD2G Firmware Version: 02-15-00-001

Valid for Kollmorgen Essentials Drive Firmware Version: 02-15-00-001

Part Number: 959720



For safe and proper use, follow these instructions.
Keep for future use.

KOLLMORGEN

A REGAL REXNORD BRAND

Table of Contents

1 Introduction-	4
1.1 Digital Signatures	4
2 What's New in KAS v4.05	5
2.1 Kollmorgen Essentials™ Drive Support	6
2.1.1 Kollmorgen Essentials Drive Firmware	6
2.2 PCMM2G	6
2.2.1 OPC UA Server	6
2.2.2 Web Diagnostic Panel	7
2.2.3 Single-Core Compatibility Mode for PCMM2G Migration	8
2.2.3.1 SD Card Functions	8
2.2.4 Linux OS Security and Stability Enhancements	8
2.3 AKD PDM, PCMM, and PCMM2G	9
2.3.1 Enhanced Support for Third-party DS-402 Standard Compatible Drives	9
2.3.2 Project Setting to Allow Legacy Support for Function Block Outputs in Conditional Expressions	9
2.4 AKD Firmware	9
2.5 AKD2G Firmware	9
2.6 KAS-IDE	9
2.6.1 Express Setup View	9
2.6.2 KAS-IDE-WB (WorkBench)	9
2.7 KAS-IDE UI Changes	10
2.7.1 Project Settings dialog box	10
2.7.2 Project menu	10
2.8 New PLC Functions	10
2.8.1 EtherCAT PDO Data Read / Write Function Blocks	10
3 What's Fixed in KAS v4.05	11
4 What's Changed in KAS v4.05	15
4.1 MKD-N Drive Integration Support	15
4.2 Pipe Network	15
4.2.1 Motion Control Enhancements for Pipe Network Applications on Multicore Controllers	15
4.3 Removed the Restriction that Prevents Mapping Non-safety PDOs to Read-Only Variables	15
4.4 Support Mapping EtherCAT PDOs and I/Os to Array Variables	15
5 Known Issues	16
6 Known Limitations	17
6.1 EtherCAT Limitations	17
6.2 FFLD Animation Limitation	17
6.3 PCMM2G Limitations	18
7 Installation	19
7.1 System Requirements	20
7.2 Firmware and Software Requirements	21
7.2.1 Computer Software	21
7.2.2 Firmware Requirements	21
7.2.2.1 Controller Firmware	21
7.2.2.2 Drive Firmware	22
7.2.2.3 Firmware Compatibility	22
7.2.2.3.1 F106 Error	22
7.2.2.3.2 FBUS.PARAM05 Bit 5	22

7.2.3 Mandatory Resident Firmware for AKD	22
7.2.4 Kollmorgen Visualization Builder (KVB)	22
7.2.4.1 Software Images	23
7.2.4.2 Installers	23
7.2.4.3 Hardware / Software	23
7.2.5 BBH Safety Software	24
7.3 KAS Controls	24
7.4 Allow Simulator to Use HTTP Communication	25
8 AKD Firmware Notes	26
9 Third-party EtherCAT Device Support	27
9.1 Requirements	27
9.2 Limitations	27
10 Copyrights, Trademarks, Licenses, and Disclaimer	28
Support and Services	32

1 Introduction-

Welcome to Kollmorgen Automation Suite (KAS) v4.05!

This release contains new features and many improvements.

This document is to help existing users understand the differences between this v4.05 release and the KAS v4.04 release.

If you are new to KAS, we recommend you start with other documents (e.g., the Installation Guide).

This document has these sections:

- "What's New in KAS v4.05" (→ p. 5) - This section is an overview of new features.
- "What's Changed in KAS v4.05" (→ p. 15) - This section identifies how this release may affect some older projects.
- "What's Fixed in KAS v4.05" (→ p. 11) - This section is a list of issues corrected in this release.
- "Known Issues" (→ p. 16) - This section lists issues we are aware of and may include methods for avoiding or working around them.
- "Installation" (→ p. 19) - This section has system requirements and 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.

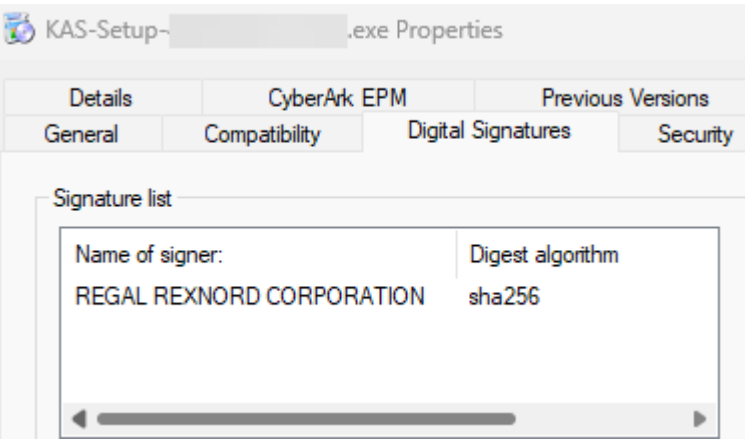


Figure 1-1: Example: KAS Setup Properties Digital Signature

TIP

- Kollmorgen recommends you visit [Kollmorgen Support Network \(KSN\)](#).
- KSN is an online resource providing access to Kollmorgen firmware, software, and documentation downloads.

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 4.05.x.y\Help.

2 What's New in KAS v4.05

These new features have been implemented for this release.

2.1 Kollmorgen Essentials™ Drive Support	6
2.1.1 Kollmorgen Essentials Drive Firmware	6
2.2 PCMM2G	6
2.2.1 OPC UA Server	6
2.2.2 Web Diagnostic Panel	7
2.2.3 Single-Core Compatibility Mode for PCMM2G Migration	8
2.2.4 Linux OS Security and Stability Enhancements	8
2.3 AKD PDMM, PCMM, and PCMM2G	9
2.3.1 Enhanced Support for Third-party DS-402 Standard Compatible Drives	9
2.3.2 Project Setting to Allow Legacy Support for Function Block Outputs in Conditional Expressions	9
2.4 AKD Firmware	9
2.5 AKD2G Firmware	9
2.6 KAS-IDE	9
2.6.1 Express Setup View	9
2.6.2 KAS-IDE-WB (WorkBench)	9
2.7 KAS-IDE UI Changes	10
2.7.1 Project Settings dialog box	10
2.7.2 Project menu	10
2.8 New PLC Functions	10
2.8.1 EtherCAT PDO Data Read / Write Function Blocks	10

2.1 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](#).

2.1.1 Kollmorgen Essentials Drive Firmware

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

2.2 PCMM2G

2.2.1 OPC UA Server

The KAS release v4.05 introduces the Open Platform Communications - Unified Architecture (OPC UA) server capability for the KAS / PCMM2G controller.

- This enables standardized and secure data exchanges with third-party industrial systems.
- The OPC UA Server provides structured access to the controller data, supporting modern industrial connectivity requirements while maintaining system performance and security.

Key Features

- Built in OPC UA Server for standardized connectivity.
- Read and write access to configured PLC variables.
- Structured and browsable data model.
- Secure client connections using OPC UA security mechanisms.
- Compatible with standard OPC UA clients (e.g., SCADA, HMI, MES, Industry 4.0 systems).

Typical Use Cases

- SCADA and HMI monitoring.
- Production and machine data collection.
- MES and reporting system integration.
- Data logging and analytics.
- Industry 4.0 and IIoT system compatible.

Notes and Limitations

- The OPC UA Server is designed primarily for supervisory, monitoring, and data acquisition purposes.
 - It is not intended for high speed or time critical control applications.
- Excessive polling rates or large data subscriptions can affect controller performance.
- Some advanced OPC UA features (e.g., complex methods, alarms, redundancy) may not be supported.
- See [OPC UA Server](#) to enable this feature.
 - This includes the procedure for verifying communication using some external applications.
 - A user manual and training videos are available here:
 - User Manual: [KAS OPC UA Server User Manual](#).
 - Training Videos: [PCMM2G OPC UA Server Setup in KAS-IDE](#).
 - They provide end-to-end configuration and validation of OPC UA Communications.

2.2.2 Web Diagnostic Panel

The Web Diagnostic Panel feature is used to interact with and manage control panels designed in the KAS-IDE through a browser-based interface.

This feature provides a convenient way to visualize and operate control logic without requiring any additional software installations.

Key Capabilities

- **Browser-Based Access:** Control panels can be accessed via standard desktop web browsers.
- **Real-Time Interaction:** Users can monitor, and control system parameters live.
- **Custom Panel Layouts:** Panels designed in the KAS-IDE retain their layout and styling when rendered in the browser.
- **No Installation Required:** Runs directly in supported browsers without plugins.

Limitations

ⓘ IMPORTANT

- The Web Control Panel feature has these limitations:
 - **Exclusive for PCMM2G Controllers**
 - This functionality is exclusively for KAS projects targeted for PCMM2G controller.
 - This feature is disabled for AKD PDMM and PCMM KAS projects.
 - **Firefox Browser Compatibility**
 - Firefox is not supported.
 - Even though the control panel widgets are visible, they do not update with the data from the KAS Runtime.
 - The status bar will show "WebSocket connection Closed" to indicate connection issues.
 - **Responsive Design**
 - The Web-based panels do not support responsive design; i.e., they are not optimized for mobile or tablet screen resolutions.
 - For best results, use a desktop or laptop browser.
 - Drop-down choices do not appear next to combo-boxes; they do remain functional.
- See [Web Diagnostic Panels](#).
 - This includes procedures to enable this functionality and access the control panels using any HTML5-compatible web browser.
- The [Web Diagnostic Panels User Manual](#) provides configuration and access procedures for the Web Diagnostic Panels through a web browser.

2.2.3 Single-Core Compatibility Mode for PCMM2G Migration

Single-Core Compatible Mode allows PCMM2G multi-core controllers to run legacy single-core applications without modification.

- **Configuration:** This setting is enabled for each project.
 - See [Configure Project Settings](#).
- **Execution Behavior:** This mode forces the motion engine and PLC virtual machine to run on the same core, emulating single-core controller behavior.
- **No Code Changes Required:** Applications originally designed for single-core execution run without modification.
- **Diagnostics Support and Persistence:** A warning message is logged at project startup when the compatibility mode is enabled to aid in diagnostics.
 - This setting persists across firmware updates and controller backup/restore operations.
- **Customer Benefit:** Allows continued use of existing applications without the need for immediate code refactoring, easing the transition to multi-core platforms.

NOTE

See [Single-Core Compatibility Mode](#) for instructions, feature limitations, and guidelines.

2.2.3.1 SD Card Functions

Support added for SD_ISREADY, SD_MOUNT and SD_UNMOUNT functions on PCMM2G.

These functions are implemented in the PCMM2G primarily to support migrating projects from AKD PDMM or PCMM to PCMM2G.

See [SD Card / USB Flash Drive Mounting Functions](#).

Notes

- AKD PDMM and PCMM use SD cards.
 - See [File Management](#).
- PCMM2G uses a USB flash drive for File Management.
- PCMM2G supports auto-mount feature for USB drives, automatically mounting on insertion and safely unmounting on removal.
 - Calling mount and unmount functions in KAS projects is not required for PCMM2G.

2.2.4 Linux OS Security and Stability Enhancements

The Yocto platform used to build the PCMM2G OS distribution has been updated from 4.0.23 to 4.0.31.

Key Improvements

- Numerous security patches across core components, such as binutils, curl, OpenSSL, glib-networking, Python3, and others, helping protect the platform from known vulnerabilities.
- Kernel updates within the Linux Ken5.15 series, improving overall system stability.
- Updated the Python runtime from 3.10.15 to 3.10.19.
- See [Release notes for Yocto-4.0.31 \(Kirkstone\)](#).

Together, these changes:

- Strengthen the overall platform security.
- Reduce exposure to vulnerabilities.
- Establish a more robust foundation for long term product support.

2.3 AKD PDMM, PCMM, and PCMM2G

2.3.1 Enhanced Support for Third-party DS-402 Standard Compatible Drives

KAS now supports configuring projects using only DS-402 compatible third-party drives.

- This removes the previous requirement to include at least one Kollmorgen drive.
- Any DS-402 compliant third-party drive may be configured by the KAS-IDE as long as certain restrictions are observed.
- See [Configure a Third-party Drive](#) about configuration restrictions.

2.3.2 Project Setting to Allow Legacy Support for Function Block Outputs in Conditional Expressions

- The KAS v3.07, and earlier releases, allowed function blocks with a single output value to be used in conditional statements ([IF THEN ELSE ELSIF END_IF](#)) like function return values.
- In KAS v4.0 and later, this syntax triggers an Unexpected complex data in expression error.
- The **Allow non-compliant syntax to evaluate function block outputs** check box has been added to the [Project Settings dialog box](#).
 - This check box enables the use of legacy syntax, allowing migration without requiring changes to existing code.
- See [Unexpected complex data in expression](#).

2.4 AKD Firmware

The KAS-IDE and KAS Runtime have been tested with Production Release 1-25-00-000.

2.5 AKD2G Firmware

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

2.6 KAS-IDE

2.6.1 Express Setup View

- The KAS-IDE now provides direct access to WorkBench's Express Setup view within its embedded interface.
 - This view allows users to quickly configure drives and motors using a simplified setup workflow, directly from the KAS-IDE.
 - Seamless switching between **Full Setup** and **Express Setup** views is supported for all AKD, AKD2G, and Kollmorgen Essentials drives included in the KAS project.

2.6.2 KAS-IDE-WB (WorkBench)

- The KAS-IDE's embedded WorkBench has been updated to v2.20.0.12461.
 - This update introduces support for the [Express Setup View](#) and includes performance improvements.
 - See the [WorkBench Release Notes](#).

2.7 KAS-IDE UI Changes

2.7.1 Project Settings dialog box

The existing PLC Options dialog box in KAS-IDE has been redesigned and renamed to [Project Settings dialog box](#).

- This updated dialog box provides a centralized interface for configuring project-level settings.
- Users can now configure web-based control panels generation and web content refresh rate from this redesigned Project Settings dialog box.

2.7.2 Project menu

A new [Project menu](#) has been added to the main menu.

The Project menu consolidates Compile and Compile and Download with access to the Project Settings dialog box.

2.8 New PLC Functions

2.8.1 EtherCAT PDO Data Read / Write Function Blocks

These new function blocks have been added:

- [ECATReadPDOData](#)
- [ECATWritePDOData](#)

These function blocks:

- Support reading and writing data between the EtherCAT cyclic frame and array variables.
- Are useful when accessing PDO objects as byte arrays.
- Are the only way to access PDO objects larger than 32-bits.

3 What's Fixed in KAS v4.05

These issues have been fixed for this release.

Defect	Description
BZ-11351	Coordinated Motion Move Function Blocks Incorrectly Reports a Successful Move as Aborted When Prior Move Was Aborted Issue: If a move function block (e.g., MC_MoveLinAbs) previously commanded a move that was aborted, when the function block later starts a new move, the CommandAborted output may incorrectly be set to TRUE. Resolution: The conditions for setting the CommandAborted output were updated to correctly set the output value.
BZ-11348	KAS-IDE Fails to Import a SafePLC2 Project Issue: The Import SafePLC2 Project feature in the KAS-IDE failed to import properly configured SafePLC2 projects. - This produced an error that prevented the integration of safety projects into KAS projects. Resolution: The SafePLC2 project import parser has been updated to correctly recognize and process project configuration elements within SafePLC2 projects. - This enables a successful import through the standard workflow.
BZ-11345	Online Change Feature Fails for Large Projects with "too many POU's or variables" warning. Issue: Active use of function blocks that hold system resources (e.g., TCP or UDP sockets) may cause the Online Change feature to fail with a misleading compiler warning: "Online Change is not possible. Reason: too many POU's or variables." Resolution: - Updated the compiler to remove the misleading "too many POU's or variables" warning. - Updated documentation to explain Online Change limitations when active system resources exist. - See PLC Online Change.
BZ-11342	If the project is stopped while TcpReceive is waiting for incoming data and then restarted, TCP function blocks fail to recover, requiring a power cycle. Issue: Stopping the project while TCP function blocks are waiting for client data or a connection could block future TCP communication. - This happened because the TcpReceive and TcpAccept blocks were prematurely locking a resource. - This prevented TcpClose from releasing the associated socket and blocking the future TCP communication. Resolution: The resource lock handling in TcpRecive and TcpAccept was corrected. - This allows TcpClose to complete correctly.
BZ-11341	Axis Jump Occurs When Modulo Position Changes from 360 to 180 While Synchronizer Pipeblock is Active. Issue: When the Synchronizer Pipeblock is active and its modulo position changed using the MLBkWriteModPos function block, the axis may unexpectedly jump. - This jump could lead to positioning errors and mechanical stress. Resolution: The synchronizer pipeblock logic has been updated to correctly handle modulo position changes without introducing motion discontinuities.

Defect	Description
BZ-11340	KAS Print Preview and Print functionality not working in v4.04. • Issue: The printing code was not updated to support the new KAS-IDE GUI framework library (Qt 6.8.2) introduced in the KAS v4.04 release. • Resolution: The printing logic has been updated to align with the Qt 6.8.2 framework changes. • Print Preview and Print features now function correctly in KAS projects.
BZ-11335	KAS-IDE crashes if project is closed while connecting to a controller. • Issue: An unexpected crash could occur when closing a project while the KAS-IDE was actively attempting to connect to a controller. • This behavior disrupted workflows and posed a risk of losing unsaved changes. • Resolution: The KAS-IDE now processes the project closure gracefully during controller connection attempts. • This provides improved stability and helps prevent crashes.
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-11329	KAS-IDE Freezes After Running for an Extended Period while Connected to Simulator. • Issue: The KAS-IDE could freeze or crash after running for an extended period while connected to the simulator. • This was caused by a memory leak in the simulator-connection logic, leading to steadily increasing memory usage over time. • Resolution: The simulator communication code was updated to eliminate the memory leak, ensuring all resources are properly released.
BZ-11327	Write and Read Directions Swapped When Adding/Editing CoE Init Commands • Issue: When adding or editing CoE Init Commands, entries configured with Write were incorrectly changed to Read direction. • Resolution: Fixed the Add/Edit CoE Init-Commands user inputs handling logic to correctly save the user specified direction. • Workaround: When adding a new CoE Init Command: 1. Select the object from the object dictionary shown in the Add/Edit CoE init-command dialog box. 2. Specify the Direction as Read instead of Write.

Defect	Description
BZ-11326	In the PDO Selection/Mapping window, attempting to unmap a PDO entry fails if the mapped PDO entry size is smaller than the variable size (e.g., unmapping a 32-bit variable assigned to a 16-bit PDO). • Issue: Unmapping a PDO entry failed when the mapped variable name included a bit-range suffix (e.g., .0-15). • The unmap logic used the display name instead of the canonical variable name, causing lookup errors. • Resolution: The unmapping process has been improved to correctly handle variables with bit ranges. • Users can now remove PDO mappings without errors, even when the variable includes a range in its name.
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-11324	PDO Mapping of 8-point Omron NX I/O Modules are not Appearing in the PDO Selection/Mapping tab • Issue: PDO mappings for Omron NX EtherCAT coupler's 8-pts digital I/O modules were not displayed correctly in the PDO Selection/Mapping tab. • This was due to a padding entry in the Omron's NX coupler ESI file (Omron_NX_Coupler.xml) that was not defined per ESI standard recommended approach. • This caused an exception in the KAS-IDE during parsing. • Resolution: Updated the ESI file parser in KAS-IDE to handle non-standard padding entries. • This prevents exceptions and ensures correct display of PDO mappings for Omron NX I/O modules. • Workaround: Manually edit the ESI file by removing the DependOnSlot='1' attribute from the padding entries. • After making this change, reimport the updated the ESI file into the KAS-IDE.
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.

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. • 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.

4 What's Changed in KAS v4.05

4.1 MKD-N Drive Integration Support

The KAS-IDE and KAS Runtime now support MKD-N drive models.

- This allows seamless integration with new machine configurations.
- The MKD-N ESI file is included in the KAS-IDE installer.
 - It is compatible with all MKD-N variants
- The MKD-N drives function like other AKD models within the KAS-IDE.

4.2 Pipe Network

4.2.1 Motion Control Enhancements for Pipe Network Applications on Multicore Controllers

- This update improves motion control reliability on multicore controllers by ensuring that Pipe Network function blocks that rely on cached data (e.g., MLMstRun and MLMstAbs) are executed strictly in the order they appear in the PLC code, even when added within the same cycle.
- This enhancement addresses issues observed during migration from single-core (AKD PDMM / PCMM) to multicore (PCMM2G) controllers, where out-of-order execution could lead to unexpected behavior.
- A log message is now generated when multiple actions are buffered on the same axis within a single cycle, aiding application developers in identifying and validating motion sequences.

Limitations

- Projects migrated from single-core to multicore controllers may still require validation and minor adjustments.
- See [Program a Multi-Core Controller](#) for multi-core controller programming guidelines.
- Not all instances of multiple buffered actions are logged to avoid excessive output.

4.3 Removed the Restriction that Prevents Mapping Non-safety PDOs to Read-Only Variables

- **Issue:** Starting with KAS v3.02, the KAS-IDE restricted mapping of Digital and Analog Inputs to read-only variables in the EtherCAT Device I/O screen.
 - This limitation did not apply to the Input (Tx) PDOs in the PDO selection/mapping screen.
 - This led to confusion when expected variables were missing from the PLC Variable Selector dialog box.
- **Resolution:** The read-only variable assignment restriction has been removed.
 - Users can now map any non-safety PDOs to any compatible variable in the Project Dictionary, regardless of read/write status.
 - This update improves consistency across mapping interfaces and enhances configuration flexibility.

4.4 Support Mapping EtherCAT PDOs and I/Os to Array Variables

- The EtherCAT device [PDO Selection/Mapping tab](#), [I/O tab](#), and [Controller Onboard I/O](#) views now allow mapping PDO objects to array variables and array variables within a structure instance.
- This enhancement is to:
 - Improve data organization and code readability.
 - Reduce the time and effort to develop or manage the KAS projects that rely on numerous PDO mappings.

5 Known Issues

These are the known issues for this release.

Defect	Description
BZ-11336	Unable to read / write PLC variables mapped to manually added PDO entries in EtherCAT device MDP-generated PDOs.
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-8565	There is no compile error when user has too many retain variables.
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

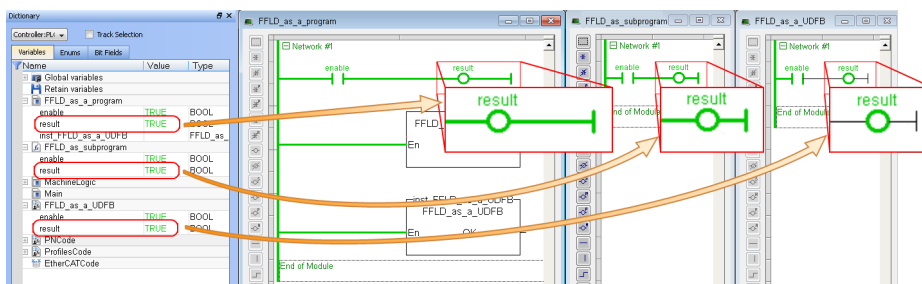
- RGM is not supported.
- The undo action is not possible for all operations.
- Find/Search/Replace function:
 - Search and Replace function is not supported in Pipe Network.
 - Search and Replace for HMI are supported only with local <CTRL+F>.
- In SFC programs, breakpoints can only be set on transitions (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	20
7.2	Firmware and Software Requirements	21
7.2.1	Computer Software	21
7.2.2	Firmware Requirements	21
7.2.3	Mandatory Resident Firmware for AKD	22
7.2.4	Kollmorgen Visualization Builder (KVB)	22
7.2.5	BBH Safety Software	24
7.3	KAS Controls	24
7.4	Allow Simulator to Use HTTP Communication	25

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 or 1GB 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.

The ports may need to be opened to support connecting to a controller 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	4.05.0

7.2.2 Firmware Requirements

- "Controller Firmware" (→ p. 21)
- "Drive Firmware" (→ p. 22)
- "Firmware Compatibility" (→ p. 22)
 - "F106 Error" (→ p. 22)
 - "FBUS.PARAM05 Bit 5" (→ p. 22)

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](#).
- Kollmorgen Essentials™ Drive firmware is available at: [Kollmorgen Essentials Drive \(KED\) 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-01-25-00-000.i00 • AKD-M-MCEC-01-25-00-000.i00
Firmware for drive built into AKD PDMM	AKD PDMM 1.2GHz	AKD PDMM Servo Drive Firmware • AKD-M-K1EC-01-25-00-000.i00 • AKD-M-M1EC-01-25-00-000.i00
AKD Drive Firmware	AKD-N	AKD-N-xxEC-01-25-00-000.i00
AKD Drive Firmware	AKD-P	AKD-P-NBxC-01-25-00-000.i00
AKD Drive Firmware	Resident	R_00-00-71-000.i00
AKD2G Drive Firmware	Non-Safety (FS1)	AKD2G-S-(E)-A-02-15-00-001.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
Kollmorgen Essentials Drive (KED) Firmware	All Kollmorgen Essentials Drive Models	KED-S-(M)-A-02-15-00-001.i00s

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. 32).

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.

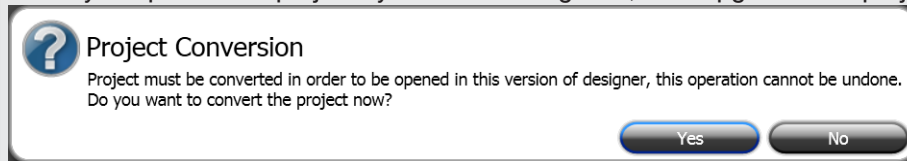
7.2.4.3 Hardware / Software

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. 32).

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:

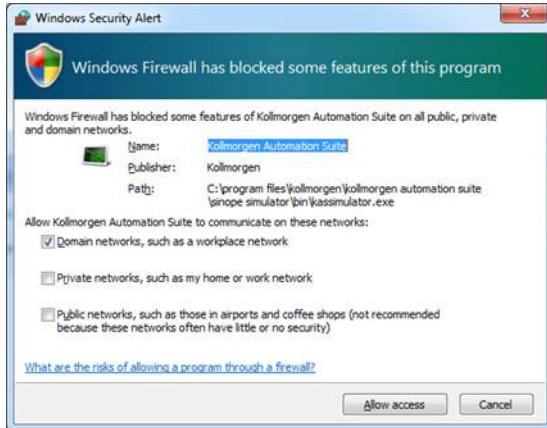
Controller	Description	Model Number	Main Characteristics
PCMM2G	1.5GHz Quad-core	PCMM2G-C2-08-000-00-000	2nd Generation High Performance Multi-Axis Controller
PCMM	1.2GHz Dual-core	AKC-PCM-M2-120-00N-00-000	High Performance Multi-Axis Controller
PCMM	1.2GHz Single-core	AKC-PCM-M1-120-00N-00-000	High 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](#).

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

- KAS has limited support for third-party drives that follows the CANopen [DS-402](#) standard.
 - See [Configure a Third-party Drive](#) about configuration restrictions.
 - Contact your 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.

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PCMM2G

The PCMM2G's Operating System (OS) and boot loader ([U-Boot](#)) are based on free and open-source software.

- The individual copyright notices, license texts, and disclaimers of warranty for the software components are located in the controller, under the directory: /usr/share/common-licenses/.
 - 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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- [Qt Framework](#) cross-platform SDK (distributed under the [terms of the LGPL3](#); Qt source is available on KSN).
- the [Qwt](#) project.
- [U-Boot](#), a universal boot loader is used by the AKD PDMM and PCMM (distributed under the terms of the [GNU General Public License 2.0](#)).
- Zlib software library (distributed under the [Zlib License](#)).

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Kollmorgen Support Network



See the [Kollmorgen Support Network](#) for product support, product downloads, knowledge base answers, and information.



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