

Kollmorgen Automation Suite

KAS v4.02 R1 Release Notes



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Valid for AKD Firmware Version: 01-23-00-000

Valid for AKD2G Firmware Version: 02-13-00-000

Part Number: 959720



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See [PCMM2G - File Naming Conventions](#) in the KAS online help.

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1 Introduction

Welcome to Kollmorgen Automation Suite (KAS) v4.02 R1!

This release contains new features and many improvements.

This document is to help existing users understand the differences between this v4.02 R1 release and KAS v4.01.

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 v4.02 R1" (→ p. 7) - This is an overview of new features.
- "What's Changed in KAS v4.02 R1" (→ p. 13) - This discusses how this release may affect some older projects.
- "What's Fixed in KAS v4.02 R1" (→ p. 11) - This is a list of issues addressed in this release.
- "Known Issues" (→ p. 14) - This contains issues we are aware of and may include methods for avoiding or working around them.
- "Installation" (→ p. 19) - This covers system requirements as well as provides firmware, software, and hardware information.

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 4.02 R1.x.y\Help`.

2 What's New in KAS v4.02 R1

2.1 v4.02 R1 New Features

There were no new features for v4.02 R1.

2.2 v4.02 New Features

These new features have been implemented for this release.

2.3 PCMM2G

The PCMM2G controller is fully supported with this release.

PCMM2G Firmware File Signing

- The PCMM2G firmware supports a security feature to protect firmware upgrade file integrity.
- PCMM2G firmware files are now protected.
 - See [PCMM2G - File Naming Conventions](#).
- Starting with this v4.02 release, firmware updates and controller restore to older versions are blocked by security protection.
 - If your PCMM2G OS Version is 1.0.0.00383 (or older), you MUST upgrade the OS to version 1.0.0.00385 (or later) using a Recovery USB flash drive.
 - See [PCMM2G Web server Recovery](#).
- Reduce PCMM2G EtherCAT cycle jitter with Web server [Diagnostics tab](#).
 - In previous firmware versions, opening the Web server Diagnostics > HW status tab would increase the PCMM2G EtherCAT cycle jitter and the [A23/E23](#) conditions were monitored only after the HW status tab was opened.
 - This behavior has been corrected.

Upgrade the PCMM2G Bootloader from Web Server

- The PCMM2G firmware now includes the capability to upgrade the Bootloader (u-boot) directly from the Web server interface.
- Users can find the bootloader version alongside the OS and runtime versions in the Firmware tab.
- The bootloader firmware is packaged separately from the existing OS and the Runtime firmware file. See:
 - [Boot Loader - File Naming Convention](#)
 - [Firmware tab](#)

PCMM2G 4kHz Reliability Improved

- In previous releases, the PCMM2G with EtherCAT configured for a 4kHz (250 usec) Cycle Time may have a missed receive frame ([A38](#)) in +24hrs of operation.
 - This has been improved, with no missing Rx frames for +72 hrs.
- Optimized L2 Cache memory usage in Runtime while monitoring: Temperature, CPU usage, Low Voltage and Fan operation, and IP address changes.
 - This improves the EtherCAT cycle jitter with heavy loaded applications at 4kHz.

2.4 S-Curve Coordinated Motion

Coordinated motion moves now supports the jerk input.

The path velocity profile at the start and end of the move segment will be S-Curve, applying a jerk to provide a continuous non-constant acceleration profile.

- The jerk input is supported for these Coordinated Move function blocks:
 - MC_MoveLinAbs(...), MC_MoveLinRel(...)
 - MC_MoveCircAbs(...), MC_MoveCircRel(...)

Limitations

These limitations remain and may change in future releases:

- Not supported by MC_MoveDirAbs/Rel(...).
- Aborting (BM_ABORTING) moves are not supported for line-arc, arc-arc, arc-line moves.

2.5 S-Curve Corner Distance Transition

Coordinated motion supports a new corner distance transition with TM_SCURVE_CORNER as the TransitionMode parameter.

The path velocity profile during the transition will be S-Curve, applying a jerk to provide a continuous non-constant acceleration profile.

- There is a single parameter for TM_SCURVE_CORNER, to specify the corner distance.
See:
 - [Transition Between Moves – S-Curve Corner \(TM_SCURVE_CORNER\)](#)
 - [S-Curve Corner Line-to-Line Transitions](#)
 - [MC_MoveLinAbs](#)
 - [MC_MoveLinRel](#)
- Coordinated Motion with S-Curve profile and S-Curve Corner Transition have additional error codes.
See:
 - [Transition Between Moves](#)
 - [S-Curve Corner Line-to-Line Transitions](#)
 - [PLCopen Function Block ErrorIDs](#)
- Guidelines for calculating the S-Curve Corner Distance Transition time and component trajectories are available here: [S-Curve Corner Transition – Design and Calculations](#) (login is required).

Limitations

The S-Curve Corner transition has these limitations and may change in future releases:

- Not supported by MC_MoveDirAbs/Rel(...) or MC_MoveCircAbs/Rel(...).
- Buffer Mode (BM_BUFFERED) is not compatible with this transition.
- Aborting a move during an S-Curve Corner Distance Transition is not supported.
- Changes to the velocity override during the transition will not take effect until after the transition has completed.
- Halt and stop actions, via MC_GrpHalt and MC_GrpStop, pause during S-Curve Corner transitions.
 - The halt and stop actions resume after the transition has completed.
- The Acceleration and Deceleration parameters do not affect the transition profile.
 - The peak acceleration or peak deceleration may exceed the specified parameters for Acceleration and Deceleration.
- The Jerk parameter is ignored by the transition profile calculations (path jerk is derived from the velocity, corner distance, and move positions).

2.6 AKD Firmware v1-23-00-000

- The KAS-IDE and Runtime have been tested with Production Release v1-23-00-000.
- The ESI files have been updated in the installation package.

2.7 AKD2G Firmware v2-13-00-000

- The KAS-IDE and Runtime have been tested with Production Release v2-13-00-000.
- The ESI files have been updated in the installation package.

2.8 Configurable Drive Status Bit #11 (Internal drive limit Active)

The KAS Runtime response to drive status bit #11 is now configurable via PLC code.

- By default, the motion engine triggers an emergency stop and place the axis in ErrorStop state when the drive activates bit #11 in the CANopen Status Word.
- The PLC code can now instruct the motion engine to ignore this bit, allowing the PLC code to manage warning cases per application needs without forcing a realign.
 - See [Overtravel Conditions](#).
 - For a Pipe Network axis, configure and verify the bit #11 behavior using the ML_AXIS_PARAM_IGNORE_DRIVE_LIM_STATUS axis parameter in these function blocks:
 - [MLAxisReadBoolParam](#)
 - [MLAxisWriteBoolParam](#)
 - For a PLC axis, configure and verify the bit #11 behavior using the MC_AXIS_PARAM_IGNORE_DRIVE_LIM_STATUS axis parameter in these function blocks:
 - [MC_ReadBoolPar](#)
 - [MC_WriteBoolPar](#)

2.9 EtherCAT Read/Write SDO Array

- ECATReadSDOData(...) and ECATWriteSDOData(...) function blocks read or write an array of EtherCAT SDO data.
- These are useful for SDO data sizes greater than 32-bits.

2.10 Group Halt/Stop Deceleration and Jerk Arguments

MC_GrpHalt and MC_GrpStop have updated behavior for deceleration and jerk arguments.

- The Jerk argument is now supported, allowing for S-Curve Corner halting and stopping behavior.
- If the specified halt/stop deceleration is lower than the active move's deceleration, the active move's deceleration value is used to ensure motion stops before reaching the move's endpoint.
- Similarly, if the specified halt/stop jerk value is either zero or less than the active move's jerk value, the active move's deceleration value is used to ensure motion stops before reaching the move's endpoint.

2.11 Interpolate Actual Position between Corrupt, Missing, or Late Rx Frames

- The controller interpolates the actual position for servo axes, digitizing axes, and pipe network sampler blocks when either an [A31](#) or [A38](#) alarm condition occur.
- This feature is supported by the PCMM, PDMM, and PCMM2G controllers.

2.12 KAS-IDE-WB (WorkBench)

- The KAS-IDE's embedded WorkBench has been updated to v2.16.0.10303.
 - See the [WorkBench Release Notes](#).

2.13 MC_Power(...) State Machine for 3rd Party Drives

- The internal state machine has been modified to add the switched-on state for compliance with the DS-402 specification.
- Third party drives (non-Kollmorgen) may require the "switched on" state before the "operation enabled" state.
- The MC_Power(...), MLAxisPower(...), and PipeNetwork(MLPN_POWER_ON) use the modified state machine.
- The execution and drive response time for the operation enabled state might be slightly different compared to previous versions.
- See [CANopen Status Machine](#).

2.14 MLFB_HomeFindHomeFastInput

- Fixed issues with clearing a timeout error and immediate home input trigger.
- Re-import the MLFB_HomeFindHomeFastInput(...) UDFB to get the latest changes.
- See [Re-import Kollmorgen UDFBs](#).

2.15 Modular EtherCAT with 1st DC as Reference Clock

In previous releases, a limitation was that:

The first EtherCAT device with Distributed Clocks cannot be disconnected/removed and must remain the same.

Only devices downstream from the first DC device can be removed.

This limitation is no longer applicable.

During MLMotionStart(...) the first discovered connected device with DC is used as the master reference clock for the EtherCAT network.

2.16 New PLC Functions

These functions blocks to read and write Pipe Network Axis parameters have been added:

- [MLAxisReadBoolParam](#)
- [MLAxisReadParam](#)
- [MLAxisWriteBoolParam](#)

2.17 Retrofit EtherCAT Backup with AKD2G Firmware Version

- There is a utility program and KDN article to provide instructions to retrofit an existing EtherCAT backup file with a different AKD2G firmware version.
 - See [Retrofit KAS EtherCAT Backups with AKD2G](#).
- This is useful for the latest AKD2G drives, which are restricted from downloading firmware versions older than 02-12-00-001.

3 What's Fixed in KAS v4.02 R1

These issues have been fixed for this release.

- "v4.02 R1 Fixed" (→ p. 11)
- "v4.02 Fixed" (→ p. 12)

3.1 v4.02 R1 Fixed

Defect	Description
BZ-11301	<p>KAS PDO Limitation of 32 vs 20 Bytes for AKD devices.</p> <ul style="list-style-type: none"> • Issue: The KAS project fails to compile when Rx PDO bytes exceed 20 for AKD devices with firmware version v1.23 are present. <ul style="list-style-type: none"> • The compile error should only occur if RX PDO bytes exceed 32 for firmware versions v1.17 or newer. • For AKD devices, the KAS-IDE compiler restricts the total byte count for the content of all editable Rx PDOs based on the AKD firmware version. • See PDO Restrictions and Compiler Errors. • Resolution: The KAS-IDE compiler now correctly checks the firmware version of the AKD devices in the project and applies the appropriate PDO restrictions.
BZ-11299	<p>The Limit Switch with AKD2G is causing the position jump on the axis to re-enable.</p> <ul style="list-style-type: none"> • Issue: When using the limit switches on the AKD2G, the KAS controller attempts to perform a controller stop separately from the drive. <ul style="list-style-type: none"> • The mismatch in stopping behavior between the drive and controller results in position jumps when the drive releases control back to the controller, leading to erratic motion or a following error fault. • Resolution: In both Pipe Network and PLCopen, for axes mapped to AKD and AKD2G drive, the controller now tracks the actual feedback position of the axis when the internal limit active (bit #11) is set in the CANopen status word. <ul style="list-style-type: none"> • This ensures that the position demand value from the controller matches the drive's actual position, preventing position jumps when the drive releases control back to the controller. <p>Notes The controller's response to drive status bit #11 is configurable (specifically for third-party drives)</p> <p>Pipe Network</p> <ul style="list-style-type: none"> • Use <code>ML_AXIS_PARAM_IGNORE_DRIVE_LIM_STATUS</code>, <code>ML_AXIS_PARAM_DRIVE_OVERRIDE_ON_LIMIT_ACTIVE</code> axis parameters with MLAxisWriteBoolParam and MLAxisReadBoolParam function blocks. <p>PLCopen</p> <ul style="list-style-type: none"> • Use the <code>MC_AXIS_PARAM_IGNORE_DRIVE_LIM_STATUS</code>, <code>MC_AXIS_PARAM_DRIVE_OVERRIDE_ON_LIMIT_ACTIVE</code> axis parameters with the MC_WriteBoolPar and MC_ReadBoolPar function blocks.
BZ-11297	<p>PCMM2G UDP communications with auto start not working properly.</p> <ul style="list-style-type: none"> • Issue: When manually starting a KAS project on a PCMM2G, the UDP send and receive functions in the KAS application are working correctly. <ul style="list-style-type: none"> • However, with the KAS application auto-start feature enabled, PCMM2G sends only one UDP packet and fails to receive messages from the client. • Resolution: The PCMM2G runtime has been updated to properly initialize UDP communications when the KAS application auto-start feature is enabled.

Defect	Description
BZ-11296	<p>The AKD2G drive stays enabled if MC_Power enable input is momentarily set to TRUE and then turns FALSE.</p> <ul style="list-style-type: none"> • Issue: The MC_Power function block did not disable the drive if the PLC application enabled the axis momentarily and then disabled it before it was fully powered-on. • Resolution: The MC_Power state machine has been updated to abort the drive power-on sequence and immediately disable the drive when the enable input set to FALSE.
BZ-11295	<p>A Digitizing Axis mapped to absolute feedback devices on AKD2G loses multi-turn data on KAS startup.</p> <ul style="list-style-type: none"> • Issue: Previously, upon application startup, digitizing axis connected to AKD2G with absolute feedback devices would retain only the single-turn position information, losing all multi-turn data. • Resolution: The digitizing axes now accurately report the actual position using both single-turn and multi-turn data from the absolute feedback devices.
BZ-11294	<p>KAS Oscilloscope export omits data for channels not shown on the graph.</p> <ul style="list-style-type: none"> • Issue: KAS Oscilloscope Data exported to the CSV file only included the data for the traces selected for display in the Oscilloscope Graphical Area. • Resolution: The exported file now includes data for all the traces present in the Channels List even when they are not shown on the graph. <ul style="list-style-type: none"> • See Export the Oscilloscope Data for details.
BZ-11246	<p>KAS application failed to start when a digitizing axis was mapped to an AKD2G feedback device using the default settings.</p> <ul style="list-style-type: none"> • Issue: The default single-turn position bit count was set to 32-bits when the digitizing axis is mapped to AKD2G feedback device. <ul style="list-style-type: none"> • This default setting prevents the KAS application to start due to a CoE init-command generated by the KAS-IDE. • Resolution: The default single-turn position bit count is now changed to 31, with a valid range of 2-31 bits.

3.2 v4.02 Fixed

Defect	Description
BZ-11268	E21 with PCMM dual-core and AKD2G drive.
BZ-11263	Coordinated Motion bad velocity profile w/ cycle rate 2kHz or 4kHz.
BZ-11262	Synapticon CiA402 module (MDP) not discovered automatically.
BZ-11259	PCMM2G with Stepper (AKT2G-SM-Lxx) fails to reach EtherCAT op-mode (E33).

4 What's Changed in KAS v4.02 R1

4.1 v4.02 R1 Changes

There were no changes for v4.02 R1.

4.2 v4.02 Changes

The [ECATDeviceStatus](#) function block is changed to return a new error identifier (ErrorID) when the specified device was disconnected from the EtherCAT network using the [ECATDeviceAction](#) function block.

- The new identifier is ECERR_DEVICE_DISCONNECTED.
 - In previous releases, this ErrorID was returned as ECERR_DEVICE_INVALIDADDR.
- See either [ECATReadSdoData](#) or [ECATWriteSdo](#) for description of this new error code.

5 Known Issues

These are the known issues for this release.

Defect	Description
BZ-11271	KAS-IDE crashes when adding 2nd CoE Init-Command.
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-11257	ST Editor no longer auto-fills function block data type.
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-9496	AKD-N firmware download fails if 4x drives are selected.
BZ-9359	PDO objects not defined in the object dictionary (or 24-bit size) do not work properly with <code>MLSmpXxxxx(...)</code> 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-8644	PLCopen S-Curve move may not reach target with small jerk.
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. <ul style="list-style-type: none"> The KAS-IDE PDO Editor does not automatically pad PDOs on non-byte boundaries. <ul style="list-style-type: none"> 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-8138	WebBrowser component not working for TxB panels.
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

- KAS-IDE drive status bar cannot detect if AKD2G is active or inactive in pre-op mode.
- 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.

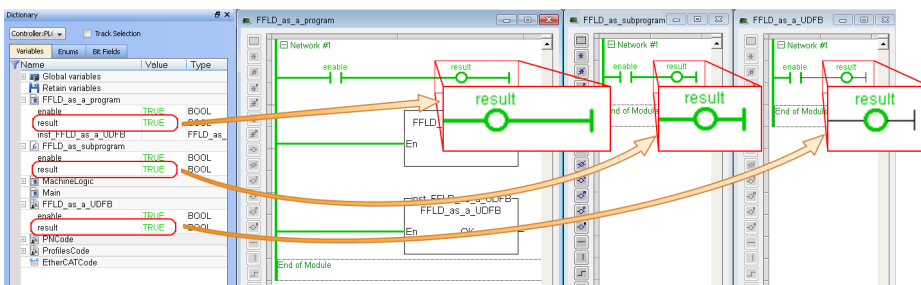
6.1 EtherCAT Limitations

- **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

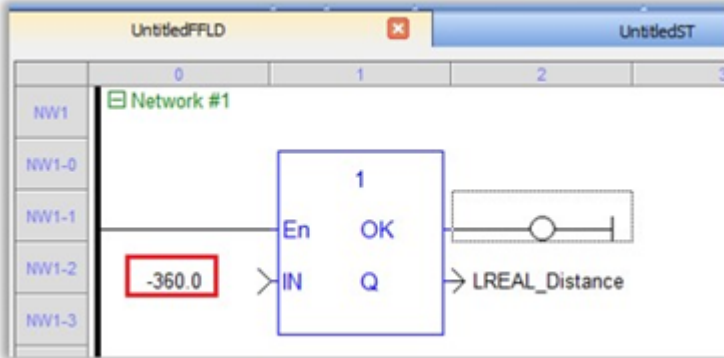
- The FFLD animation for UDFBs has a limitation, where the ladder rung is not fully animated.
 - Example: In a program and sub-program, the rung is fully animated, where in the UDFB it is not fully animated.



6.3 FFLD Programs Limitation

The FFLD has a limitation where a compile error is reported when the application has a function input when a negative REAL/LREAL constant expression is used.

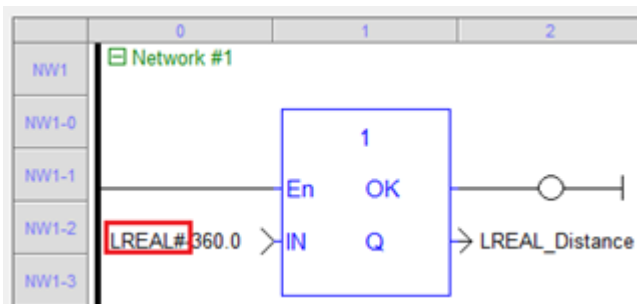
Example: The **Assignment** function with an input value of **-360.0** causes a **Bad variable on box output** compile error.



The screenshot shows the 'Compiler Output' window. The window contains the following text:

```

Controller:----- Generating Modbus Files successful -----
Controller:----- Compile PLC -----
Controller:PLC:Compiler V12.0.100.115
Controller:PLC:>> Complex variables stored in a separate segment
Controller:PLC:Loading application symbols...
Controller:PLC:MCFB_AKDFaultLookup
Controller:PLC:Main
Controller:PLC:MotionControl
Controller:PLC:ControlPanelUpdate
Controller:PLC:AxisLoop
Controller:PLC:Estop
Controller:PLC:UntitledFFLD
Controller:PLC:UntitledFFLD: NW1(1,0): LREAL_Distance: Bad variable on box output
Controller:PLC:Error(s) detected
Controller:Warning: ECATGetStatus is a deprecated function block.
Controller:----- PLC failed -----
Controller:----- Device compile failed -----
EtherCAT:----- Generating EtherCAT Network Information (ENI) file -----
EtherCAT:----- EtherCAT Network Information (ENI) file generated successfully -----
Project compile failed
  
```



6.4 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:

- "System Requirements" (→ p. 19)
- "Firmware and Software Requirements" (→ p. 20)
- "Computer Software" (→ p. 20)
- "Firmware Requirements" (→ p. 20)
- "Mandatory Resident Firmware for AKD" (→ p. 21)
- "Kollmorgen Visualization Builder (KVB)" (→ p. 22)
- "BBH Safety Software" (→ p. 23)
- "KAS Controls" (→ p. 23)
- "Allow Simulator to Use HTTP Communication" (→ p. 24)

7.1 System Requirements

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

Element	Description
Connectivity	<ul style="list-style-type: none"> • 1 Ethernet port, at either 100MB or 1GB. • See Note #2.
Display	<ul style="list-style-type: none"> • WXGA+ (1440 x 900) or higher-resolution monitor with 24-bit, 16.7M colors. • See Note #1.
Memory	1GB RAM (for 32-bit) or 2GB RAM (for 64-bit) or greater (recommended for complex applications).
.NET Framework	4.8.1
Processor Type	Intel® Pentium® M or equivalent processor at 1.5GHz or greater.
Storage	16GB (for 32-bit) or 20GB (for 64-bit) of free space on hard disk.
Supported Operating Systems	<ul style="list-style-type: none"> • Microsoft® Windows® 10 (32-bit or 64-bit). • Microsoft® Windows® 11 (64-bit). • For optimal performance, verify the operating system is fully updated with the latest patches.
Web Browser	<ul style="list-style-type: none"> • A modern web browser is required to access the 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	4.02 R1.0

7.2.2 Firmware Requirements

- "Controller Firmware" (→ p. 20)
- "Drive Firmware" (→ p. 21)
- "Firmware Compatibility" (→ p. 21)
 - "F106 Error" (→ p. 21)
 - "FBUS.PARAM05 Bit 5" (→ p. 21)

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/-N
 - 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 and AKD2G firmware is available at [KDN](#).

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 <ul style="list-style-type: none"> AKD-M-KCEC-01-23-00-000.i00 AKD-M-MCEC-01-23-00-000.i00
	AKD PDMM 1.2GHz	AKD PDMM Servo Drive Firmware <ul style="list-style-type: none"> AKD-M-K1EC-01-23-00-000.i00 AKD-M-M1EC-01-23-00-000.i00
AKD Drive Firmware	AKD-N	AKD-N-xxEC-V01-23-00-000.i00
	AKD-P	AKD-P-NBxC-01-23-00-000.i00
	Resident	R_00-00-71-000.i00
AKD2G Drive Firmware	Non-Safety (FS1)	AKD2G-S-(E)-A-02-12-00-001.i00
	Safety Certified (FS2 and FS3)	AKD2G-S-A-02-05-03-002.i00

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 the 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. 27).

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]	

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.

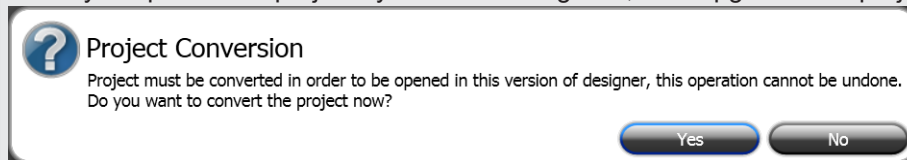
7.2.4.3 Hardware / Software

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. 27).

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:

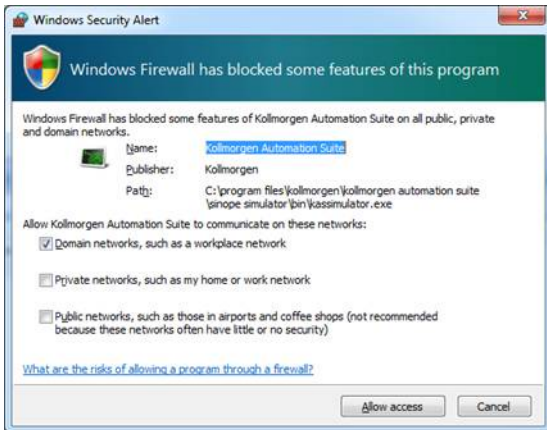
Controller	Description	Model Number	Main Characteristics
PCMM2G	1.5GHz Quad-core	PCMM2G-C2-08-000-00-000	2 nd Generation High Performance Multi-Axis Controller
PCMM	1.2GHz Dual-core	AKC-PCM-M2-120-00N-00-000	High Performance Multi-Axis Controller
PCMM	1.2GHz Single-core	AKC-PCM-M1-120-00N-00-000	High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



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Ask the community questions, search the knowledge base for answers, get downloads, and suggest improvements.



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