

Kollmorgen Automation Suite

Release Notes



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Valid for KAS Software Revision 4.00 R1

Valid for AKD Firmware Version: 01-22-00-000

Valid for AKD2G Firmware Version: 02-10-00-000

Part Number: 959720



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3 Introduction

Welcome to KAS v4.00 R1! This release contains new features and many improvements. This document is intended to help existing users understand the differences between this and KAS v4.00. If you are new to KAS, we recommend you start with other documents, such as the Installation Guide.

This document has these sections:

- ["Installation" \(→ p. 5\)](#) — This covers system requirements as well as provides firmware, software, and hardware information.
- ["What's New in KAS v4.00 R1" \(→ p. 11\)](#) — This is an overview of new features.
- ["What's Changed in KAS v4.00 R1" \(→ p. 13\)](#) — This discusses how this release may affect some older projects.
 - It let's you know what to do when upgrading, especially if there is anything you need to be careful about.
- ["What's Fixed in KAS v4.00 R1" \(→ p. 14\)](#) — This is a list of issues addressed in this release.
- ["Known Issues" \(→ p. 15\)](#) — This contains issues we are aware of and may include methods for avoiding or working around them.

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 4.00 R1.x.y\Help`.

4 Installation

4.1 System Requirements

These are the minimum system requirements for the KAS IDE:

Element	Description
Operating System	Microsoft® Windows® 10 (32- or 64-bit). For optimal performance, verify the operating system is fully updated with the latest patches.
Processor Type	Intel® Pentium® M or equivalent processor at 1.5GHz or greater.
Memory	1GB RAM (for 32-bit) or 2GB RAM (for 64-bit) or greater (which is recommended for complex applications).
Storage	16GB (for 32-bit) or 20GB (for 64-bit) of free space on hard disk.
Display	WXGA+ (1440 x 900) or higher-resolution monitor with 24-bit color. See Note #1.
Connectivity	1 Ethernet port, at either 100MB or 1GB. See Note #2.
Web Browser	A modern web browser is required to access the web server and online help. We recommend Microsoft Edge  , Google Chrome  , Mozilla Firefox  .

NOTE

1. Better results are achieved with OpenGL and 3D cards.
2. A 100Mb network is required in order to allow the 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](#) for information about the ports used by the KAS IDE.
The ports may need to be opened to support connecting from an external network.

4.2 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.

4.2.1 Computer Software

Software Images	Recommended Version
KAS IDE	4.00 R1.0

4.2.2 Firmware Requirements

4.2.2.1 Controller Firmware

This is the controller firmware to use with KAS v4.00.

Description	Type	Name
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 on [KDN](#).

4.2.2.2 Drive Firmware

This is the drive firmware to use with KAS v4.00.

NOTE

AKD and AKD2G firmware is available on [KDN](#).

Description	Type	Name
Firmware for drive built into AKD PDMM	800MHz AKD PDMM	AKD PDMM Servo Drive Firmware <ul style="list-style-type: none"> AKD-M-KCEC-01-22-00-000.i00 AKD-M-MCEC-01-22-00-000.i00
	1.2GHz AKD PDMM	AKD PDMM Servo Drive Firmware <ul style="list-style-type: none"> AKD-M-K1EC-01-22-00-000.i00 AKD-M-M1EC-01-22-00-000.i00
AKD Drive Firmware	AKD-N	AKD-N-xxEC-V01-22-00-000.i00
	AKD-P	AKD-P-NBxC-01-22-00-000.i00
	Resident	R_00-00-68-000.i00
AKD2G Drive Firmware	Non-Safety (FS1)	AKD2G-S-(E)-A-02-10-00-000.i00
	Safety Certified (FS2 & FS3)	AKD2G-S-A-02-05-03-002.i00

4.2.2.3 Firmware Compatibility

Tips

Be aware that you may get an F106 error 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.

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 default, the rotary switch of the drive is used to set the EtherCAT Station Alias.
 - This can conflict with the address that KAS is writing.

4.2.2.4 Mandatory Resident Firmware for AKD

- The recommended resident firmware for all AKD family drives is R_00-00-68-000.
- 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.

4.2.3 Kollmorgen Visualization Builder

Software Images	Recommended Version	Download
Kollmorgen Visualization Builder (KVB)	2.40	

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

The KVB ZIP file contains two different installers:

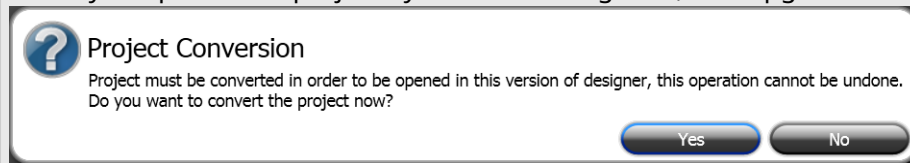
Install Type	File	Notes
New installation	setup.exe	This is the complete package which will install all prerequisite components.
Runtime	RuntimeSetup.exe	This package contains runtime software for TxC panels.

Supported by KVB 2.40

Hardware / Software	Versions
Operating Systems	Windows® 7, Windows 8, Windows 10
Controllers	PCMM, AKD PDMM
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.



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.

4.2.4 BBH Safety Software

These BBH Safety software and firmware minimum versions are required to operate with the AKD2G, AKT2G-SDO-04-000, AKT2G-SDI-04-000, PCMM, AKD PDMM, and KAS IDE software.

[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

4.3 KAS Controls

KAS Runtime is verified compatible with these hardware models:

List of KAS Controllers

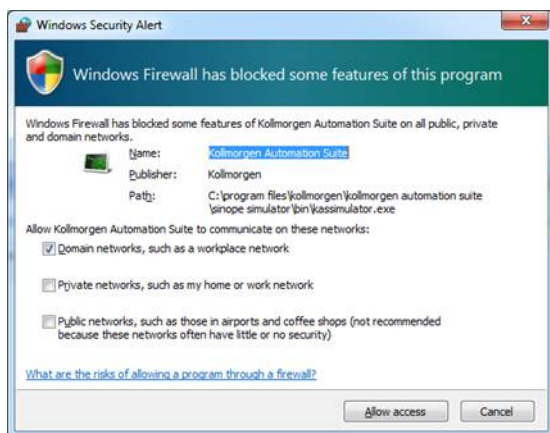
Controller	Description	Model Number	Main Characteristics
PCMM	1.2GHz dual core	AKC-PCM-M2-120-00N-00-000	High Performance Multi-Axis Controller
PCMM	1.2GHz single core	AKC-PCM-M1-120-00N-00-000	High Performance Multi-Axis Controller
PCMM	800MHz single core	AKC-PCM-MC-080-00N-00-000	Standard Multi-axis 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

4.4 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 Simulator](#) for more information.

5 What's New in KAS v4.00 R1

These new features have been implemented for this release.

5.1 Next Generation Controller Software

The KAS IDE and Runtimes have been expanded to support both AKD PDMM / PCMM controllers and the future release of next generation PCMM2G controllers.

Application programs written or upgraded to v4.00 (or later) can be compiled for either generation 1 or 2 controllers. The PCMM2G controllers will have multiple-core CPUs. Follow the [Programming a Dual Core Controller](#) a guidelines for forwards compatibility to next generation controllers.

- Compatible with AKD PDMM and PCMM (1st Generation Controllers)
- 64-bit Runtime (2nd Generation Controllers)

5.2 AKD2G Modular Device Profile (MDP) I/O

KAS IDE supports AKD2G models with various IO configurations for X22 and X23 using the AKD2GModular Device Profiles (MDP).

- The EtherCAT device I/O view and PDO objects automatically adapt to the AKD2G model specific I/O tables when the device is discovered or when MDP modules are manually added/deleted from the project tree.
 - This feature is available with the AKD2G firmware version 02-09-01-000 (or later).
 - Earlier versions include all possible I/O, requiring a manual configuration based on the AKD2G hardware manuals.

5.3 New Kollmorgen Drive Models

Added support for these -ND, -K, and -ES models of the AKD family drives:

Drive	More Information Link
AKD-M-xxxxx-KCEC, K1EC	AKD-M "Kx" PDMM Controller / Drive Variant
AKD-N-xxxxx-ESEC	AKD-N "ES" Drive Variant
AKD-P-xxxxx-NDEC	AKD-P "ND" Drive Variant
MKD-Cxxxxxx-NDEC	MKD-C "ND" Central Power Supply Variant

5.4 New Functions

5.4.1 PLC Standard and Advanced Libraries

These functions have been added to the PLC Standard and Advanced libraries:

Name	Description
DTCurDateTime	Get the present date and time stamp.
ISINF, ISINFL	Checks if the input value is infinite.
ISNAN, ISNANL	Checks if the input value is not a number.
SWAB	Swap the bytes of an integer.

5.4.2 Real-Time Clock (RTC)

These functions have been added to support the Real-Time Clock (RTC) for the PCMM2G and Simulator.

NOTE

AKD PDMM and PCMM do not support RTC because they do not have Real-Time Clock hardware.

Name	Description
DTGetNTPServer	Read the NTP server address.
DTGetNTPSync	Read the NTP synchronization enable state.
DTGetTimeZone	Read the Time Zone.
DTListTimeZones	List the time zones available on the controller.
DTSetDateTime	Sets the local date and time.
DTSetNTPServer	Set the NTP server address.
DTSetNTPSync	Set the NTP synchronization enable state.
DTSetTimeZone	Set the time zone.

6 What's Changed in KAS v4.00 R1

These changes have been implemented for this release.

- Arrays are no longer limited to 64k elements.
- "C" style comments `/* ... */` are now supported.
- FFLD editor includes row and column numbers.
- **MIN** and **MAX** accept variable number of inputs.
- Bit Field data types support up to 64-bit integers.
- SFC Macro and Macro Body button have been removed from the IDE because the SFC Macro functionality is no longer supported.
The compiler supports SFC Macro steps from programs created with v3.07, and earlier, for backwards compatibility.
- Earlier versions allowed improper usage of function block return statements in the same way as function return values.
This could result in undefined behavior.
- In v4.00 and later, the compiler generates an **Unexpected complex data in expression** error for non-compliant syntax.
 - See [Compiler Errors](#) for more information.

Examples

IEC 61131-3 Non-Compliant Syntax

```
If inst_functionBlock(myVar1) = True Then
// ...
End_If;
```

IEC 61131-3 Compliant Syntax

```
inst_functionBlock(myVar1);
If inst_functionBlock.q = True Then
// ...
End_If;
```

WARNING

UDFBs and libraries can have improper syntax.

These Kollmorgen UDFBs have been corrected and can be re-imported into the application code.

See [Re-import Kollmorgen UDFBs](#) for more information.

- | | |
|-------------------------|---------------------------------|
| • FB_AKDFItRpt | • MCFB_StepAbsSwitchFastInput |
| • FB_AxisPlsPosModulo | • MCFB_StepLimitSwitchFastInput |
| • FB_AxisPlsPosNoModulo | • MLFB_DriveFault |
| • FB_S700FltRpt | • MLFB_PlsPosFw |
| • MCFB_AKDFault | • MLFB_PlsPosFwBw |
| • MCFB_DriveFault | • MLFB_PlsTimeFw |
| • MCFB_Jog | |

7 What's Fixed in KAS v4.00 R1

These issues have been fixed for this release.

Defect	Description
BZ-11240	EtherCAT network with AKT2G-AT-410 does not reach op-mode.
BZ-11234	IDE fails to load ESI files from ESI library if FIPS security policy is enabled.
BZ-11233	PLC error 76 (calling FB twice in same VM cycle) is returned incorrectly with PCMM dual-core.
BZ-11231	Kollmorgen EtherCAT device DC configuration set to default at scan / discovery.
BZ-11222	EtherCAT op-mode delayed with AKD2G firmware v02-10-04 (or later).
BZ-11196	PROFINET IO Device is sending wrong VLAN-ID.
BZ-11188	Changing rollover param, followed by MC_SetPos causes incorrect final position for MC_MoveAbsolute.
BZ-11186	>64 byte PDOs not supported w/ 3rd party EtherCAT device.
BZ-11185	E21 during EtherCAT communication failure.
BZ-11184	Multiple AKT2G-SDI-004-000 and/or AKT2G-SDO-004-000 may prevent EtherCAT operation.
BZ-11176	3rd Party EtherCAT device PDO outputs not working.
BZ-11172	KAS Simulator crashes randomly when stopping the PLCopen application.
BZ-11170	Reinstate PROFINET drivers in the KAS installer.
BZ-11162	MC_CamResumePos returns incorrect position after camming has stopped.
BZ-11161	EtherCAT does not start with CoE Init commands for AKD2G outputs that don't exist.
BZ-11156	WorkBench Setup Wizard always disabled in Online Configuration Mode.
BZ-11153	Multiple MC_MoveAbsolute calls with blending buffer mode does not decelerate correctly.
BZ-11084	IDE Crash w/ IDE-WB Scope views during Ethernet connection loss.

8 Known Issues

These are the known issues for this release.

Defect	Description
BZ-11143	IDE has long delay when mapping variables to Safety PDOs.
BZ-11139	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 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) will 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	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 FW download failure.
BZ-8508	PDOs need padding to meet byte boundary requirement. <ul style="list-style-type: none"> The 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.
BZ-8212	Modified cam file is not downloaded when forcing an Online Change.
BZ-8138	WebBrowser component not working for TxB panels.
BZ-7985	IDE disconnects from the controller after several days.
BZ-7759	Breakpoint with For(...) loop, increases VM load significantly.
BZ-7728	IDE animation with non-matching project versions.
BZ-6240	IDE always reports the project has been modified.

9 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 & Replace function is not supported in Pipe Network.
 - Search & 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:
 - Modbus for an HMI
 - PDMM Onboard IO
 - External driver

Example: A PLC variable cannot be mapped to Modbus and Onboard PDMM IO at the same time.

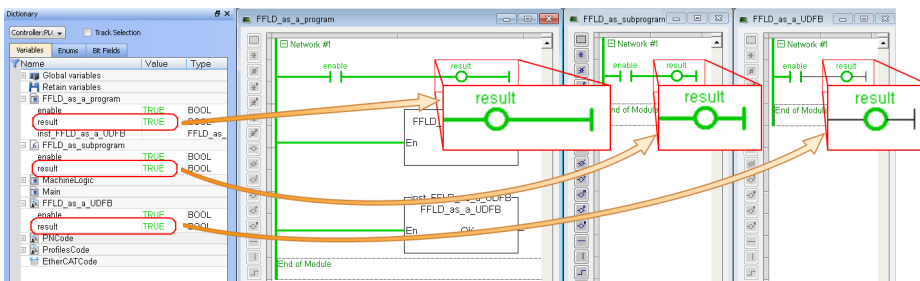
9.1 EtherCAT Limitations

- **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\\AppData\Local\Kollmorgen\KAS\Astrolabe\ESI\.`

9.2 FFLD Animation Limitation

The animation of FFLDs defined as UDFBs has a limitation where connected rails are not being animated.

This is not the case when FFLDs are defined as programs or subprograms.



10 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).

11 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.

11.1 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.

11.2 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.

12 Support and Services

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