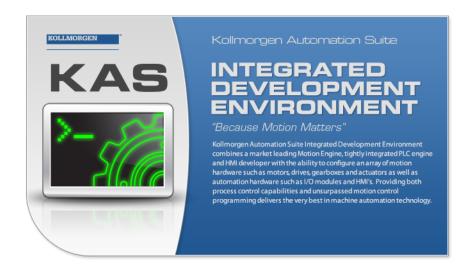# Kollmorgen Automation Suite
Release Notes

Document Edition: H, April 2018

Valid for KAS Software Revision 3.0

Valid for AKD firmware version: 1.17

Part Number: 959720

Keep all manuals as a product component during the life span of the product.
Pass all manuals to future users / owners of the product.

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Disclaimer

1 Table of Contents

2 Introduction

Welcome to KAS v3.0! This release contains new features and many improvements. This document is intended to help existing users understand the differences between this and KAS v2.12. If you are new to KAS, we recommend that you start off with other documents, such as the Installation Guide.

This document has five sections:

- "Installation" (p. 5) — this section covers system requirements as well as provides firmware, software, and hardware information.
- "What's New" (p. 9) — an overview of new features.
- "What's Changed" (p. 11) — this section discusses how this release may affect some of your 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 v3.0" (p. 13) — a list of issues addressed in this release.
- "Known Issues" (p. 14) — this section contains issues we are aware of, and methods for avoiding or working around them.

NOTE

This document contains links to more complete descriptions in the online help on KDN. We point to KDN with absolute links so you can use this PDF from any directory.

↖ TIP

We recommend that you visit the 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. Additionally, beta versions of the help are posted and are searchable. Stop by https://kdn.kollmorgen.com, take a look around, and don't forget to register.

3 Installation

3.1 System Requirements

Element	Description
Operating System	Microsoft® Windows® 7 SP1 (32 or 64-bit), Microsoft® Windows® 10 (32 or 64-bit). For optimal performance, please be sure your operating system is fully updated with the latest patches.
Processor type	Intel® Pentium® M or equivalent processor at 1.5 GHz or greater.
Memory	1 GB RAM (for 32-bit) or 2 GB RAM (for 64-bit) or greater (which is recommended for complex applications)
Storage	16 GB (for 32-bit) or 20 GB (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 below.
Connectivity	1 Ethernet port, at either 100Mbits/s or 1Gbits/s. See Note #2 below.
Web Browser	A modern web browser is required to access the web server and online help. We recommend Internet Explorer (IE9 or later, see Note #3) , Mozilla FireFox , or Google Chrome .

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 AKDWorkBench AutoTuner and Scope both require 100Mb of bandwidth to function properly.
3. IE9 should be considered a minimum. Later versions of the browser are more compliant with web standards and afford better performance and compatibility.

↖ TIP

See the topic Connect Remotely for information about the ports used by KAS which may need to be opened to support connecting from an external network.

3.2 Firmware & Software Requirements

KAS is comprised of several software components integrated together to provide a complete motion system. We recommend the following component software versions for best performance and compatibility.

3.2.1 Controller Software

Software Images	Recommended Version
KAS IDE	3.0.0

3.2.2 Firmware Requirements

Controller Firmware to use with KAS version 3.0

Description	Type	Name
800 MHz PCMM	KAS Runtime	KAS Runtime Firmware for AKD-PCMM (KAS-PCMM-M-MCEC)
800 MHz PDMM	KAS Runtime	KAS Runtime Firmware for AKD-PDMM (KAS-PDMM-M-MCEC)
1.2 GHz PCMM	KAS Runtime	KAS Runtime Firmware for AKD-PCMM (KAS-PCMM-M-M1EC)
1.2 GHz Dual-Core PCMM	KAS Runtime	KAS Runtime Firmware for AKD-PCMM (KAS-PCMM-M-M2EC)
1.2 GHz PDMM	KAS Runtime	KAS Runtime Firmware for AKD-PDMM (KAS-PDMM-M-M1EC)

KAS is compatible with AKD-M (PDMM Drive), AKD-P (Motion Tasking Drive or Position Indexer), AKD-C, and AKD-N drives. The recommended firmware version is dependent upon your drive's model and revision. The operational image recommended with this release is 01-17-00-000. KAS firmware is available on KDN.

Drive Firmware to use with version 3.0

Description	Type	Name
AKD Firmware for KAS	Operational	AKD-Firmware-for-KAS-V01-17-00-000
	Resident	R_00-00-60-000.i00
Firmware for drive built into PDMM	800 MHz AKD PDMM	AKD PDMM Servo Drive Firmware AKD-M-MCEC-01-17-00-000.i00
	1.2 GHz AKD PDMM	AKD PDMM Servo Drive Firmware AKD-M-M1EC-01-17-00-000.i00
AKD Drive Firmware	AKD-N	AKD-N-xxEC-01-17-00-000.i00
	AKD-P	AKD-P-NBxC-01-17-00-000.i00

AKD firmware is available on KDN.

> 🖰 *TIP*
>
> Please be aware that you may get a F106 error after upgrading your 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.

> 🖰 *TIP*
>
> `FBUS.PARAM05` bit 5 should be set to 0, which is the default value. This will prevent 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.

3.2.2.1   Mandatory Resident Firmware

The recommended resident firmware is v60 (R_00-00-60-000). The recommended resident firmware for AKD-C and AKD-N is v60 (R_00-00-60-000). To reliably support the EtherCAT Firmware Download, the resident firmware must be at least version 35. Please contact Kollmorgen for any AKD Drive with resident firmware lower than v35.

3.2.3 Kollmorgen Visualization Builder

Software Images	Recommended Version	Download
Kollmorgen Visualization Builder (KVB)	2.20	

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 2.20

Hardware / Software	Versions
Operating Systems	Windows® 7, Windows 8, Windows 10
Controllers	PCMM, PDMM
HMI	All Kollmorgen AKI panels

> **NOTE**
>
> The KAS IDE creates projects using KVB 2.0. When you open a version 2.0 project by double-clicking on it, KVB will upgrade the project to version 2.20.
>
> **Project Conversion**
> Project must be converted in order to be opened in this version of designer, this operation cannot be undone. Do you want to convert the project now?
>
> Yes   No

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

> **↖ TIP**
>
> If you have a KVB 1.2 project that needs to be updated in KVB 2.x, please contact Kollmorgen.

3.3 KAS Controls

KAS Runtime is compatible with, and has been verified with the following hardware models:

Description	Model Number	Main Characteristics
PCMM, 800 MHz single core	AKC-PCM-MC-080-00N-00-000	Standard Mutli-axis Controller
PCMM, 1.2 GHz single core	AKC-PCM-M1-120-00N-00-000	High Performance Multi-Axis Controller
PCMM, 1.2 GHz dual core	AKC-PCM-M2-120-00N-00-000	High Performance Multi-Axis Controller
PDMM, 800 MHz	AKD-M0xxxx-MCEC-0000	Standard Drive Resident Controller
PDMM, 1.2 GHz	AKD-M0xxxx-M1EC-0000	High Performance Drive Resident Controller

3.4 Allow Simulator to Use HTTP Communication

The Simulator needs to open HTTP ports to allow communication. The first time Simulator is run, Windows will prompt you to block or unblock the KAS application. You should allow access to all of these requests to ensure correct behavior.

The Simulator uses port 80 for the web server. This communication channel is mandatory for Simulator to work properly. So please close any application, such as VOIP, that may use port 80 before starting Simulator.

For more information see Start KAS Simulator in the online help.

4 What's New

KAS v3.0 introduces the following new features.

4.1 AKD2G Support

This release of KAS supports the forthcoming AKD2G drives. The AKD2G drive axes can be mapped to either the PLCopen or PipeNetwork motion engine axes, moves can be commanded, and the actual feedback is available.

> **✎ TIP**
>
> If you are using AKD2G drives, please consider contacting us to get the latest (beta) version of KAS IDE to have the latest AKD2G features.

Present limitations include:

- Configuration tab view (AKD-GUI) is partially working, AKD2G specific views are not supported, only the first axis is visible

  > **✎ TIP**
  >
  > **Workaround:** Use the latest WorkBench software with a direct connection to AKD2G to access all supported configuration views.

- Upgrade Firmware via EtherCAT is not available
- Backup/Restore is not supported
- Onboard I/O diagram and I/O variants are not supported
- AKD2G Capture engine is not available

> **① IMPORTANT**
>
> If you are upgrading an application from v2.12 (or older) and switching from AKD to AKD2G drives, or from a single-core PCMM to a dual-core PCMM, you need to update the sub-programs from UDFBs. The sub-programs need to be recreated to support the new devices.

4.2 Dual-Core 1.2 GHz PCMM

This release introduces the newest KAS controller, the Dual-Core 1.2GHz PCMM. This device provides greater performance for demanding projects.

As with other devices, this model supports controller backup and restore via the SD card. Due to the differences in CPU core count, a single-core PCMM backup cannot be restored to a dual-core PCMM and a dual-core PCMM backup cannot be restored to a single-core PCMM. For more details, please see: Using the PDMM or PCMM Controller > Using the Web Server > Using the KAS Web Server > WebServer Backup and Restore in the online help.

4.3 Windows 10

With the release of v3.0, KAS IDE is fully compatible with Windows® 10. The KAS IDE may be run on either 32-bit or 64-bit platforms.
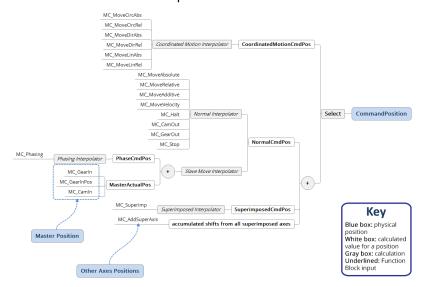
4.4 v1-17 AKD Firmware

- The AKD Firmware v1-16 (and higher) supports a new drive parameter, ECAT.LEGACYREV, to enable a backwards compatibility RevisionNo (0x2). By default, AKD-Series drives will ship with the latest production release firmware, with ECAT.LEGACYREV = 1, for backwards compatibility.
- The AKD Firmware version 1-16 (and higher) 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 will allow any RevisionNo at EtherCAT initialization. Also, the IDE will allow 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 will be evaluated as "equal" (EQ).

5   What's Changed

This section discusses changes in products that you should be aware of.

5.1   Unified Coordinate System for PLCopen and Coordinated Motion Axes

In previous versions, the PLCopen single axes and Coordinated Motion group axes positions were summed together to calculate the demand positions to the drives. Applications that mixed PLCopen single axis moves and MC_SetPos(...) with Coordinated group moves and MC_GrpSetPos(...), would have difficulties resolving the differences between the single axis and coordinated axes positions. The Coordinated Motion axes and the PLCopen single axes have been changed to share a common command and actual position. This change will simplify applications that use both single and coordinated moves. It also limits applications, as both single axis moves and coordinated moves cannot be simultaneously commanded on the same axes. See Axis Positions Data in the help for more information.

It is no longer possible to command single axis moves and coordinated moves simultaneously on the same axes. The PLCopen and Coordinated Motion Function Blocks will protect for this case and return an ErrorID if there is a conflicting command between the axes. For more details, please see PLCopen Function Block ErrorID Output in the help .

5.2   Functions, Function Blocks, and Parameters

- MC_CreatePLCAxis has been created to support the dual axis AKD2G. MC_CreateAxis has been deprecated.
- MLPNAxisCreate has been created to support the dual axis AKD2G. MLAxisCreate has been deprecated.
- PWM - generates a PWM signal
- FilterOrder1 - first order filter
- eipReadAttr - Ethernet/IP explicit messaging - read single attribute
- eipWriteAttr - Ethernet/IP explicit messaging - write single attribute
- The parameter MC_AXIS_PARAM_DRIVE_AXIS_NUMBER is used to identify drive axis numbers. See Axis Parameters in the help for more information.
- ECATGetStatus and ECATSetControl have been deprecated.

5.3   PAC End-of-Life

The PAC (Programmable Automation Controller, models AKC-PLC and AKC-PNC) is no longer supported and has been completely removed from the KAS v3.0 software. Any previous PAC projects will be converted to PCMM/PDMM controllers when opened with the KAS IDE v3.0.

5.4   Miscellaneous Changes in KAS v3.0

- The maximum cam table size has been increased to 20,000 points.
- The maximum flexible PDO size is now 128 bytes.
- The KAS IDE allows AKD Rx PDOs with a maximum size of 32 bytes, when using drive firmware v1-16-08 (or higher) if ECAT.LEGACYREV is set to 0. Please see the AKD drive firmware release notes for more details.
- S300/S700: The ESI files for the S300/S700 drives, their corresponding PDOs, and KAS IDE/Runtime motion engine mapping to PDO objects have been changed. The change was due to the original PDO definitions defined by the S300/S700 ESI files were incorrect, preventing the user from configuring the PDO objects in flexible PDOs. The new ESI files are NOT backwards compatible with KAS v2.12 (or older). KAS project files from v2.12 (or older) will automatically be updated to the the new PDO objects when opened with v3.0 (or higher).
- The default IP address for new projects is `192.168.0.101`. This is the same as the default IP address for switch position #1 on PCMM/PDMM devices.
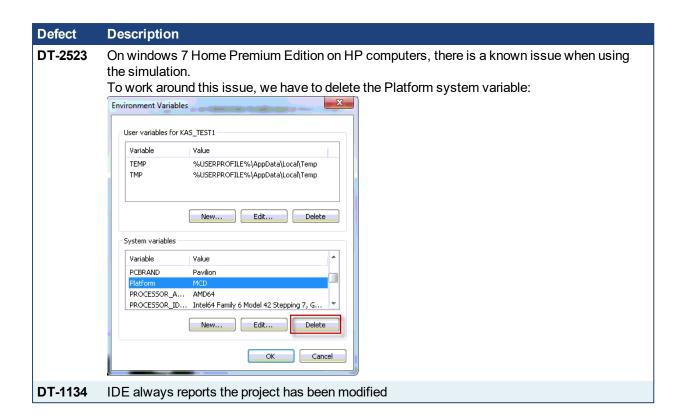
6 What's Fixed in KAS v3.0

Items fixed by KAS v3.0

Defect	Description
BZ-9794	Missing pop-up warning with ECAT MDP device when adding ESI file
BZ-9784	KAS crashes in RuntimeProbes-IsConnected when starting the Oscilloscope
BZ-9776	Online Change does not update controller project version
BZ-9770	MC_TouchProbe.RecordedPosition is reset to 0 when Execute is toggled
BZ-9769	MC_TouchProbe outputs are not updated when Execute is FALSE
BZ-9767	MC_TouchProbe and MC_AbortTrigger cause Sinope to crash on dual-core PCMM
BZ-9765	Run-time on dual core crashes when staring PLC program through IDE and then immediately stopping through IDE
BZ-9762	Crash when changing PLC axis properties
BZ-9761	Simulator Displays a Single Axis when no Physical Axis is mapped to a PipeNetwork Axis
BZ-9748	PCMM Dual-Core motion jitter
BZ-9655	EtherCAT IO Coupler stuck in Init mode
BZ-9652	PhaseCmd value in O-Scope does not use master scaling
BZ-9640	MLPNAxisCreate(...) generated with missing drive number argument
BZ-9621	AKD2G PLL Lock Fault
BZ-9616	Runtime download from IE 11 or Edge browser fails with PxMM Recovery image
BZ-9553	Ethercat recovery fails with Analog Slice
BZ-9550	When EtherCAT network fails, the last frame data is zero
BZ-9502	MC_Power(...) status output always on with simulator.
BZ-9454	Running the program and looking in the drive parameters page, stopped the and the IDE then crashed
BZ-9406	ECAT diagnostic device status not available with 36 (or more nodes)
BZ-9361	IDE crashes when creating a new project on Windows 10. This problem may occur with Windows 7, if a default printer is not assigned. To avoid the problem with previous KAS versions, set a default printer in the "Devices and Printers" configuration.
BZ-8665	Tree view on the Left side of integrated Workbench doesn't appear at times
BZ-8518	Imported ENI file can crash the PDMM Sinope process
BZ-8229	KVB checkbox is present for variable of type PLC lib xxx structures.
BZ-7786	"Find unused variables" used while program is running opens error pop ups.
BZ-7267	In Online change mode, deleted variables are allowed for HMI selection.
BZ-6659	User units are not applied to the "spinning wheels".
DT-3383	IDE displays LREAL with same precision as REAL.

7 Known Issues

Defect	Description
BZ-9496	AKD-N firmware download fails if 4x drives are selected
BZ-9495	Scope trace times selection causes lost channels
BZ-8608	IDE views do not scale if Windows text scaling is > 100%
DT-3442	PDO objects not defined in the object dictionary (or 24bit size) will not work properly with MLSmpXxxxx(...) functions
DT-3439	IDE hangs if AKD variable added to watch window before opening AKD-GUI. To work-around, open the AKD-GUI (Configuration tab) first.
DT-3431	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.
DT-3427	E21 when IDE running O-Scope is disconnected
DT-3419	Adding ESI File After Scanning Results in No Selected PDOs
DT-3418	PLCopen S-Curve move may not reach target with small Jerk
DT-3417	EtherCAT scan fails after a AKD drive firmware download failure with a wrong EtherCAT topology
DT-3413	KAS IDE cannot open projects with Korean characters in path
DT-3410	Recovered projects don't recover imported libraries (.kal files)
DT-3408	When a crash report fails due to error (ex - timeout, connection failure, …) report is lost. User cannot resend.
DT-3382	MLInitTrig does not configure the AKD Capture engine correctly for a negative edge trigger.
DT-3367	ECAT network restore fails to recover from drive FW download failure.
DT-3328	PipeNetwork Trigger block inaccuracies due to 6 sample latency
DT-3290	PDOs need padding to meet byte boundary requirement. The IDE PDO Editor does not automatically pad PDOs on non-byte boundaries. The problem can be avoided by manually adding dummy objects to pad the PDO size to line-up on byte boundaries. For more details, see the article on KDN (kdn.kollmorgen.com/content/how-do-i-insert-pdo-padding-kas-pdo-editor).
DT-3287	KL3314 Operation. Temperature values are not calibrated properly to the thermocouple. To work-around the problem, use ECATWriteData to setup the control word (16xE0) and send value (16x2006) to Register R32 and a second ECATWriteData to write zero (0) to the control word to set up the continual output of the temperature.
DT-3265	Modbus renumber address does not work with String variables. In the Fieldbus Editor Modbus configurator, if you right click input registers and choose the renumber address option, it will make the addresses overlap.
DT-3041	Missed cycles while doing file operations
DT-3013	Modified cam file is not downloaded when forcing an Online Change.
DT-2940	WebBrowser component not working for TxB panels
DT-2935	K-Bus slices analog inputs Offset parameter does not work
DT-2798	IDE disconnects from the controller after several days(
DT-2590	Breakpoint with For(…) loop, increases VM load significantly
DT-2560	IDE animation with non-matching project versions

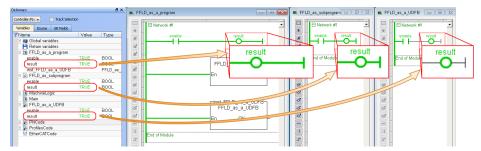| Defect	Description
DT-2523	On windows 7 Home Premium Edition on HP computers, there is a known issue when using the simulation. To work around this issue, we have to delete the Platform system variable:
DT-1134	IDE always reports the project has been modified

8   Known Limitations

- The undo action is not possible for all operations.
- Find/Search/Replace function: Search & 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 64kByte size due to the bytecode engine. If the SFC program exceeds 64kBytes, the compiler will generate 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:
    - Modbus for an HMI
    - Or to an PDMM Onboard IO
    - Or to an external driver

    For example, a PLC variable cannot be mapped to Modbus and Onboard PDMM IO at the same time.

8.1   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.

8.2   EtherCAT Limitations

- **Cabling:** Plugging the EtherCAT cable from an OUT port to an OUT port is not detected and 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. It can be found at
`C:\Users\<user.name>\AppData\Local\Kollmorgen\KAS\Astrolabe\ESI\`.

9 Third Party EtherCAT Device Support

This section summarizes the known capabilities and limitations with KASsupport for 3rd party EtherCAT devices:

9.1 Requirements

- All 3rd 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 may not discover MDP fieldbus gateway devices that require MDP gateway profiles, implemented to the ETG 5001.3 specification. This includes gateway protocols: CAN, CANopen, DeviceNet, Interbus, and IO Link.
- 3rd party drives are not supported by the motion engine. Mapping axes to 3rd party drive is not supported.
- PDO upload is not supported.
- Manual slot configuration is not supported with MDP devices.

About KOLLMORGEN

Kollmorgen is a leading provider of motion systems and components for machine builders. Through world-class knowledge in motion, industry-leading quality and deep expertise in linking and integrating standard and custom products, Kollmorgen delivers breakthrough solutions that are unmatched in performance, reliability and ease-of-use, giving machine builders an irrefutable marketplace advantage.

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