

Kollmorgen Automation Suite

Release Notes



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Valid for KAS Software Revision 3.02

Valid for AKD firmware version: 01-18-00-004

Valid for AKD2G firmware version: 02-02-00-000

Part Number: 959720



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- [U-Boot](#), a universal boot loader is used by the AKD PDMM and PCMM (distributed under the [terms](#) of the GNU General Public License). The U-Boot source files, copyright notice, and readme are available on the distribution disk that is included with the AKD PDMM and PCMM.

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2 Introduction

Welcome to KAS v3.02! This release contains new features and many improvements. This document is intended to help existing users understand the differences between this and KAS v3.01. 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"](#) — 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 v3.02"](#) — a list of issues addressed in this release.
- ["Known Issues" \(p. 13\)](#) — this section contains issues we are aware of, and methods for avoiding or working around them.

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://www.kollmorgen.com/developer-network/>, take a look around, and don't forget to register.

NOTE

This PDF contains links to the KAS help system, and as such works best when read from within the KAS IDE installation directory. Please be advised that the links to content will not work if the PDF is located somewhere other than `(install directory)\Kollmorgen\Kollmorgen Automation Suite 3.02.x.x\Help\`.

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 100Mbps/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 the KAS IDE 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 Computer Software

Software Images	Recommended Version
KAS IDE	3.02.0

3.2.2 Firmware Requirements

Controller Firmware to use with KAS version 3.02

Description	Type	Name
800 MHz PCMM	KAS Runtime	KAS Runtime Firmware for AKD-PCMM (KAS-PCMM-M-MCEC)
800 MHz AKD 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 AKD PDMM	KAS Runtime	KAS Runtime Firmware for AKD-PDMM (KAS-PDMM-M-M1EC)

Supported drives include: AKD-M (AKD PDMM Drive), AKD2G, AKD-P (Motion Tasking Drive or Position Indexer), and AKD-C/-N. The recommended firmware version is dependent upon your drive's model and revision. Controller firmware is available on [KDN](#).

Drive Firmware to use with version 3.02

Description	Type	Name
AKD Firmware for KAS	Operational	AKD-Firmware-for-KAS-V01-18-00-004
	Resident	R_00-00-63-000.i00
Firmware for drive built into AKD PDMM	800 MHz AKD PDMM	AKD PDMM Servo Drive Firmware AKD-M-MCEC-01-18-00-004.i00
	1.2 GHz AKD PDMM	AKD PDMM Servo Drive Firmware AKD-M-M1EC-01-18-00-004.i00
AKD Drive Firmware	AKD-N	AKD-N-xxEC-01-18-00-004.i00
	AKD-P	AKD-P-NBxC-01-18-00-004.i00
AKD2G Drive Firmware	AKD2G-SPE	AKD2G-SPE-A-02-02-00-000.i00

AKD and AKD2G 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 for AKD

The recommended resident firmware is v63 (R_00-00-63-000). The recommended resident firmware for AKD-C and AKD-N is v63 (R_00-00-63-000). 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)	2.40	

The new installation package contains both the IDE and runtime for TxC panels. The KVB ZIP file contains two different installers:

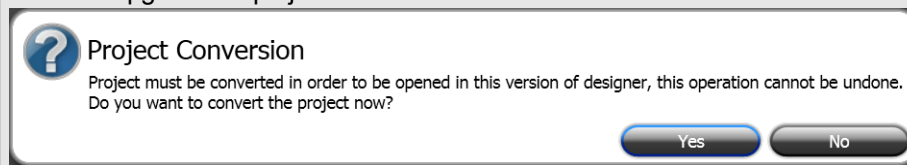
Install Type	File	Notes
New installation	setup.exe	This is the complete package which will install all prerequisite components.
Runtime	RuntimeSetup.exe	This package contains runtime software for TxC panels.

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 version 2.0 project by double-clicking on it, KVB will upgrade the project to version 2.40.



⚠ 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
AKD PDMM, 800 MHz	AKD-M0xxx-MCEC-0000	Standard Drive Resident Controller
AKD PDMM, 1.2 GHz	AKD-M0xxx-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](#).

4 What's New

KAS v3.02 introduces the following new features.

4.1 Multiple IDE instances

More than one instance of the KAS IDE may now be run at the same time. This enables you to copy and paste between the instances. Programs, text, and PLC variables may all be copied from one instance to another of the same version of the KAS IDE. Some resources to look at in order to more fully understand this function include:

- [General information](#)
- [How log files are handled](#)
- [How multiple instances interact with the Simulator](#)
- Understanding file recovery, see "[How does file recovery work?](#)"

4.2 Reorder programs

The KAS IDE supports dragging-and-dropping programs and sub-programs within the project tree. See "[Programs](#)" in the help for information.

4.3 Same units for KAS IDE and WorkBench

The IDE's PipeNetwork and PLCopen axis properties support configurations for the user units type (Counts, Degrees, Radians, and Custom) and a label. The user units configuration is written to the AKD2G drive's parameters, allowing WorkBench to automatically synchronize the units in its views to the PxMM controller.

- [PipeNetwork information](#)
- [PLCopen information](#)

4.4 New help system

The KAS IDE now boasts a new help system with enhanced search capabilities, including auto-completion and predictive search. The new help system is hosted online, but F1 searches from the KAS IDE still work. A browser window will open and you'll go to the help. The KAS IDE will detect if you don't have an internet connection and fall back to the built-in help system.

For more information see:

- [Is the Help System Online or Offline?](#)
- [Advantages of Using the Online Help](#)

4.5 AKD2G Support

This release of KAS supports the new AKD2G drives. This release supports both single and dual-axis models. Functional Safety Option #1 are supported. Functional Safety Options #2 and #3 will be supported in a future release.

TIP

If you are using AKD2G drives, please consider contacting us to get the latest (beta) KAS IDE software package and drive firmware to have the latest AKD2G features.

Present limitations include:

- Backup/Restore is not supported

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.

4.6 v1.18 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 in KAS v3.02

- Map PLCopen digitizing axis to EtherCAT device

The PLCopen axis properties window in the IDE has been improved to make it easier to select an EtherCAT device, PDO object, and feedback resolution.

For more information, please see:

- [Working With A Digitizing Axis in PLCopen](#)
- [MC_InitAxisFeedback](#)

- PipeNetwork Sample block properties

The Sampler block properties in the KAS IDE has an "Input Source" tab to configure an EtherCAT device, object index, and sub-index. For more details, please see [MLSmpConECAT](#).

The following have been deprecated by MLSmpConECTAT: MLAxisRead2ndFB and ML_SECOND_FEEDBACK_POSITION (used by MLSmpConPNAxis). The compiler and Runtime support the functionality these provided.

- PLCopen User Units with AKD2G

The KAS IDE and PxMM controllers with the AKD2G use standard DS-402 compliant definitions for user units. The PLCopen axis properties view in the KAS IDE has been simplified to hide the Drive Interface Units and to apply the User Units as a floating point value. The internal MC_CreatePLCAxis (...) function has not changed and is backwards compatible. For more details, see:

- [Axis Data Parameters](#)
- [MC_CreatePLCAxis](#)

6 What's Fixed in KAS v3.02

Items fixed by KAS v3.02

Defect	Description
BZ-7743	Setting up digitizing axis help file has wrong information
BZ-8667	KAS IDE hangs if AKD variable added to watch window before opening AKD-GUI
BZ-10072	Conversion from LREAL to PLCOpen fixed point numbers loses precision
BZ-10085	KAS IDE freeze with Coupler->AKD, when Workbench and DriveParamRead are running simultaneously
BZ-10092	KAS IDE Crashes when opening Workbench Axis View w/ heavy GUI load
BZ-10095	Upgrading drive firmware fails when updating 5 (or more) drives simultaneously
BZ-10101	AVERAGEL returns unexpected value
BZ-10126	Password does not open project file after canceling a project compare
BZ-10164	AKM2G Motors are not supported in IDE-Workbench
BZ-10172	Opening help by F1 generates a script error warning
BZ-10200	PipeNetwork Linear Axis Modulo is limiting max velocity
BZ-10217	post-3.00 versions of the IDE and Simulator cannot run if a pre-3.01 version of KAS IDE is installed
BZ-10282	E20 alarm appears on PCMM Dual-Core when the controller temperature is above 80 deg during power cycle
BZ-10312	EtherCAT Diagnostics does not handle the Forwarded RX Error Counter while drawing node errors
BZ-10331	KAS IDE un-installer not deleting the entire contents of the install directory
BZ-10335	PDOs unmapped from variables if the ESI file in the project is not in the ESI Library
BZ-10345	Very slow KAS IDE Editor response

7 Known Issues

Defect	Description
BZ-10275	PxMM controller bus time not synchronized with DC master time
BZ-9975	KAS IDE crashes in the Workbench Performance Servo Tuner Window
BZ-9928	ESI file list is not updated when good and bad ESI files are added at the same time
BZ-9848	KAS IDE broken if Windows user name contains non-ascii characters
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-9832	Cannot add libraries (.KAL files) with non-ASCII file names
BZ-9496	AKD-N firmware download fails if 4x drives are selected
BZ-9359	PDO objects not defined in the object dictionary (or 24bit size) will 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-8654	E21 when KAS IDE running O-Scope is disconnected
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-8633	When a crash report fails due to error (ex - timeout, connection failure, ...) report is lost. User cannot resend.
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	ECAT network restore fails to recover from drive FW download failure.
BZ-8508	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 .
BZ-8504	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.
BZ-8482	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.
BZ-8242	Missed cycles while doing file operations
BZ-8212	Modified cam file is not downloaded when forcing an Online Change.
BZ-8138	WebBrowser component not working for TxB panels
BZ-8132	K-Bus slices analog inputs Offset parameter does not work
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

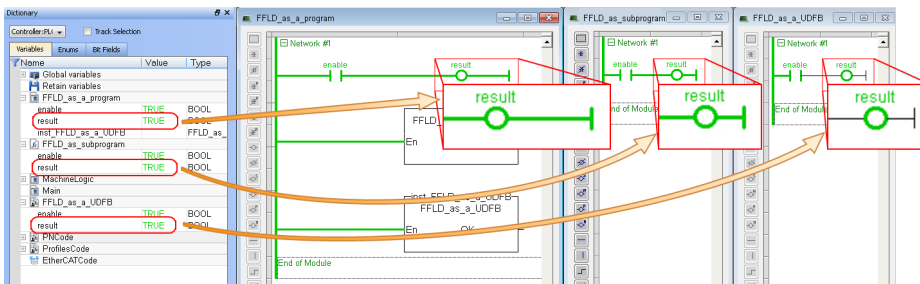
8 Known Limitations

- 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\\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.
- PDO upload is not supported.
- Manual slot configuration is not supported with MDP devices.

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