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

Valid for AKD2G Firmware Version: 02-12-00-001

Part Number: 959720



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

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# 1 Introduction

Welcome to Kollmorgen Automation Suite (KAS) v4.01!

This release contains new features and many improvements.

This document is to help existing users understand the differences between this v4.01 release 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:

- "What's New in KAS v4.01" (→ p. 5) - This is an overview of new features.
- "What's Fixed in KAS v4.01" (→ p. 9) - This is a list of issues addressed in this release.
- "Known Issues" (→ p. 10) - This contains issues we are aware of and may include methods for avoiding or working around them.
- "Installation" (→ p. 14) - 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 4.01-R2.x.y\Help`.

## 2 What's New in KAS v4.01

These new features have been implemented for this release.

- "PCMM2G" (→ p. 5)
- "AKD Firmware v1-23-00-000" (→ p. 8)
- "AKD2G Firmware v2-12-00-001" (→ p. 8)
- "KAS-IDE-WB (Workbench)" (→ p. 8)
- "MC\_Power(...) State Machine for 3rd Party Drives" (→ p. 8)
- "New KAS-IDE Features" (→ p. 8)
- "New PLC Functions" (→ p. 8)

### 2.1 Windows® 11

- The installer, KAS-IDE, and Simulator are supported with Windows 11.
  - There were no changes to support Windows 11.

### 2.2 PCMM2G

The PCMM2G controller is fully supported with this release.

If you are migrating from a AKD PDMM or PCMM, see [Migrate from a PxMM to a PCMM2G Controller](#) for details about porting applications.

Here's a summary of the new PCMM2G features and the main differences between the PCMM2G and AKD PDMM / PCMM controllers:

- "Backup/Restore" (→ p. 5)
- "Boot Sequence" (→ p. 5)
- "Controller Errors and Alarms" (→ p. 5)
- "Controller Performance" (→ p. 6)
- "Controller Shared Directory" (→ p. 6)
- "Filename Format" (→ p. 6)
- "Flash Fallback and Recover Modes" (→ p. 6)
- "Flash Partitions" (→ p. 6)
- "GetCtrlPerf()" (→ p. 6)
- "KAS-IDE Compilation Option" (→ p. 6)
- "O-Scope Trace Time Channels" (→ p. 7)
- "PROFINET Adapter" (→ p. 7)
- "Real-time Clock" (→ p. 7)
- "SSH Password" (→ p. 7)
- "Temperature Monitor" (→ p. 7)

#### 2.2.1 Backup/Restore

The backup/restore files are different between the AKD PDMM / PCMM and the PCMM2G.

**They are NOT cross-compatible.**

See [PCMM2G Controller and EtherCAT Devices Backup](#).

The [Import / Export tab](#) (under the Backup & Restore section of the Web server) is supported in PCMM2G.

#### 2.2.2 Boot Sequence

The boot sequence and 7-segment display LED pattern is different for the PCMM2G.

See [Boot Sequence](#).

#### 2.2.3 Controller Errors and Alarms

There are some differences between the PCMM2G and AKD PDMM / PCMM Error and Alarm codes.

- See [Controller Errors and Alarms](#).
- Codes are logged both to the KAS-IDE's controller log and in the controller's flash. See [Controller Log Files - Error and Alarm History File \(PCMM2G only\)](#).
- Error and Alarm log files are accessible from the Web server.

## 2.2.4 Controller Performance

- [Controller Performance](#) measurement graphs are available for PCMM2G.
- EtherNet/IP and PROFINET performance guidelines are available. See [Controller Performance Guidelines](#).

## 2.2.5 Controller Shared Directory

The Shared Directory feature on the Kollmorgen Controllers (i.e., AKD PDMM, PCMM, and PCMM2G) allows access to the files on a remote computer using the Server Message Block (SMB) protocol.

- The SMBv2 and SMBv3 are the newer versions that are more secure.
  - PCMM2G controller supports both SMBv2 and SMBv3.
  - AKD PDMM / PCMM support SMBv1.

## 2.2.6 Filename Format

The PCMM2G firmware filename format is different.

See [PCMM2G - File Naming Conventions](#).

## 2.2.7 Flash Fallback and Recover Modes

- In case of a flash corruption, there are Fallback and Recovery modes. See [Boot from Inactive Partition Image - PCMM2G](#).
- In case of a flash failure, Recovery is possible using the Web server or USB flash drive. See [Recover Using the Web server](#).

## 2.2.8 Flash Partitions

There are four flash partitions: Boot, Active, Inactive, and Data.

- See [Booting the PCMM2G Controller](#).
- The data partition contains the KAS application, user data, logs, crash reports, and any EtherCAT and controller backup files.
  - The data partition makes it possible to run the application from either partition A or B until a corrupted partition can be repaired.

## 2.2.9 GetCtrlPerf()

GetCtrlPerf() function block values are different for the PCMM2G.

- The **MeanCpuIdlePct**, **StdDevCpuIdlePct**, **MinCpuIdlePct**, and **MaxCpuIdlePct** values in the GetCtrlPerf() function block are measured based on the controller CPU idle period.
  - The CPU idle period is measured across two CPU cores running the MotionEngine and PLC program.
  - See [GetCtrlPerf](#) for controller differences.

## 2.2.10 KAS-IDE Compilation Option

IDE **Compilation** option for **Optimized Code Generation** is NOT supported by the PCMM2G.

- This option is not selectable for PCMM2G or Simulation controller projects.
  - See [Set the Compilation Options](#).

### 2.2.11 O-Scope Trace Time Channels

The 4<sup>th</sup> channel is different between AKD PDMM / PCMM and PCMM2G:

- AKD PDMM / PCMM (RealTimeMargin).
- PCMM2G (PLCMarginTime).
- See [Oscilloscope Control Panel](#).

See [Practical Application: Using Trace Time To Measure CPU Load](#) for using trace times to measure the CPU load in Normal, Heavily, and Over Loaded scenarios.

See these examples:

- [Example: AKD PDMM and PCMM Heavily Loaded CPU](#)
- [Example: AKD PDMM and PCMM Over Loaded CPU](#)
- [Example: PCMM2G Heavily Loaded CPU](#)
- [Example: PCMM2G Over Loaded CPU](#)

### 2.2.12 PROFINET Adapter

- The PROFINET adapter identification for the controllers are:
  - AKD PDMM and PCMM: **tsec0**.
  - PCMM2G: **eth1**.
  - See [Configure a PROFINET IO Controller](#).
- When the application is compiled, based on the controller type, the PROFINET adapter identification is changed to match the required name.

### 2.2.13 Real-time Clock

The PCMM2G has a Real-Time Clock, including an optional battery to retain the date/time when the PCMM2G is powered off.

- The date/time, time zone, and Network Time Protocol (NTP) is configurable from the **Webserver Settings > Date/Time** tab.
  - If NTP is disabled and the battery is bad or missing:
    - The date/time is lost at power-off.
    - At startup the date/time will be incorrect.
      - In this condition, an A05 alarm occurs, warning that the date/time is incorrect.
      - See [Controller Errors and Alarms](#).

### 2.2.14 SSH Password

PCMM2G has a default unique password for SSH login:

- See [SSH Login to a Controller](#).
- The password can be changed using SSH.
  - See [Change Controller's Password using SSH](#).

### 2.2.15 Temperature Monitor

The PCMM2G behaves differently than AKD PDMM / PCMM in cases where the temperature reaches the error limit

- An E01 stops the project execution and the OS reduces the CPU clock rate by up to 50% at 85 °C.
  - See [Controller Errors and Alarms](#).

## 2.3 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.

## 2.4 AKD2G Firmware v2-12-00-001

- The KAS-IDE and Runtime have been tested with Production Release v2-12-00-001.
- The ESI files have been updated in the installation package.

## 2.5 KAS-IDE-WB (Workbench)

- The KAS-IDE's embedded WorkBench has been updated to v2.14.0.9469.
  - See [WorkBench Release Notes](#).

## 2.6 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](#).

## 2.7 New KAS-IDE Features

- The WSTRING data type is available as a selection to create variables in the KAS-IDE but is **not** supported yet.
  - **Do not use the WSTRING data type yet!**
  - It will be available to support UNICODE characters in a future software release.
- Modbus supports 64-bit variables (4x words).
- Optimized constant expressions with multiplication and division.
- The ST editor animation displays values for complex expressions (arrays and structures).

## 2.8 New PLC Functions

- Added:
  - MUX64 function to select one of 64x inputs.
    - See [Selectors](#).
  - The KAS-IDE toolbar button to enable/disable:
    - The execution order display in the FFLD Editor.
      - See [Free Form Ladder Diagram \(FFLD\) Editor](#).
    - A fieldbus configuration in the Fieldbus Editor.
      - See [Fieldbus Editor](#).
- Changed: Modbus now supports 64-bit variables (4x words).

### 3 What's Fixed in KAS v4.01

These issues have been fixed for this release.

Defect	Description
<b>BZ-11268</b>	E21 with PCMM dual-core and AKD2G drive.
<b>BZ-11263</b>	Coordinated Motion bad velocity profile with cycle rate 2kHz or 4kHz.
<b>BZ-11254</b>	EtherCAT Backup/Restore does not work with Modular topology and middle nodes disconnected.
<b>BZ-11248</b>	Controller Log Error: YMutex.cpp: Operation not permitted.
<b>BZ-11245</b>	Pipe Network adder block may cause integrator and derivator blocks to produce incorrect outputs.
<b>BZ-11244</b>	Unable to Get data from function block <b>GetCtrlInfo-CTRLINFO_PROJECT_BUILD_NO</b> .
<b>BZ-11230</b>	MCFB_StepLimitSwitch compiler error.
<b>BZ-11229</b>	Compile warning after making change to Axis Setup value.
<b>BZ-11220</b>	Compiler warning when adding PLCopen Axis.
<b>BZ-11240</b>	EtherCAT network with AKT2G-AT-410 does not reach op-mode.
<b>BZ-11222</b>	EtherCAT op-mode delayed with AKD2G firmware v02-10-04 (or later).
<b>BZ-11233</b>	PLC error 76 (calling FB twice in same VM cycle) is returned incorrectly with a PCMM dual-core.
<b>BZ-11231</b>	Kollmorgen EtherCAT device DC configuration set to default at scan / discovery.
<b>BZ-11234</b>	IDE fails to load ESI files from ESI library if FIPS security policy is enabled.
<b>BZ-11188</b>	Changing rollover parameter, followed by <b>MC_SetPos</b> causes incorrect final position for <b>MC_MoveAbsolute</b> .

## 4 Known Issues

These are the known issues for this release.

Defect	Description
BZ-11257	ST Editor no longer auto-fills function block data type.
BZ-11252	Deleting variables with KVB option causes <b>[[MODBUS-S]:(...)] Unknown Symbol</b> 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 <b>MC_MoveLin/Circ</b> 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	<b>MLInitTrig</b> 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"> <li>The KAS-IDE PDO Editor does not automatically pad PDOs on non-byte boundaries. <ul style="list-style-type: none"> <li>The problem can be avoided by manually adding dummy objects to pad the PDO size to line-up on byte boundaries.</li> </ul> </li> <li>See this article on KDN: <a href="#">How do I Insert PDO Padding in the KAS PDO Editor?</a> for more information.</li> </ul>
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.

## 5 Known Limitations

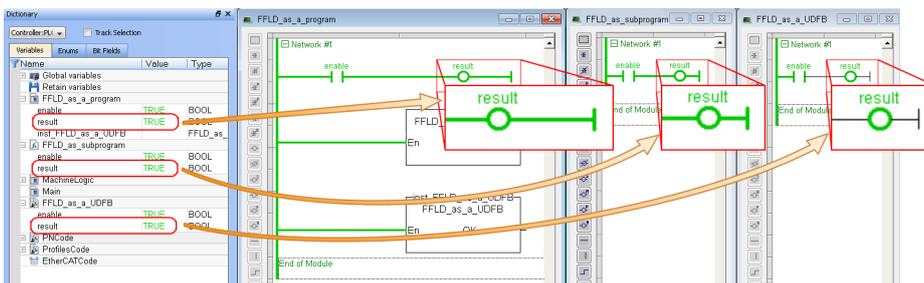
- KAS-IDE drive status bar cannot detect if AKD2G is active or inactive in pre-op mode.
- RGM is not supported.
- The undo action is not possible for all operations.
- Find/Search/Replace function:
  - Search and Replace function is not supported in Pipe Network.
  - Search and Replace for HMI are supported 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.

### 5.1 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\.`

### 5.2 FFLD Animation Limitation

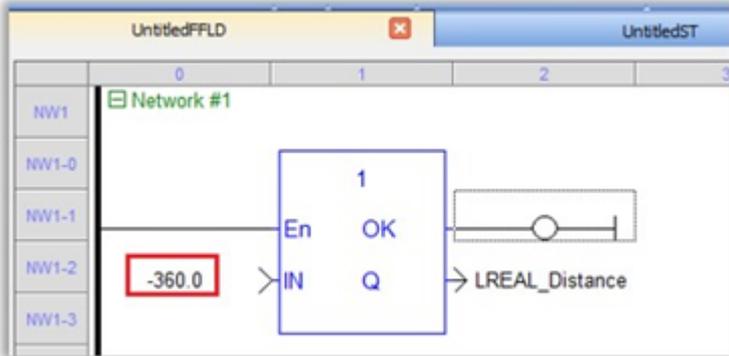
- The FFLD animation for UDFBs has a limitation, where the ladder rung is not fully animated.
  - Example: In a program and sub-program, the rung is fully animated, where in the UDFB it is not fully animated.



### 5.3 FFLD Programs Limitation

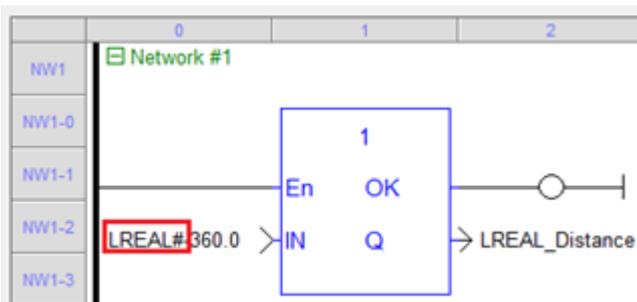
The FFLD has a limitation where a compile error is reported when the application has a function input when a negative REAL/LREAL constant expression is used.

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



```

Local log  Controller log  Find and Replace  Browse Variable  Breakpoints  Compiler Output
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
    
```



## 5.4 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:

- 8 (or more) Axes.
- Large memory usage from PLC variables.
- Heavy PLC load.

### 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.
- Reduce the PLC load by:
  - Schedule PLC programs using the cycle period and phase to reduce the peak and average CPU load.
  - See [Define the PLC Cycle](#).

A future software release will include improvements for the 4kHz EtherCAT cycle jitter performance.

## 6 Installation

Use this information for KAS installation:

- "System Requirements" (→ p. 14)
- "Firmware and Software Requirements" (→ p. 15)
- "Computer Software" (→ p. 15)
- "Firmware Requirements" (→ p. 15)
- "Mandatory Resident Firmware for AKD" (→ p. 16)
- "Kollmorgen Visualization Builder (KVB)" (→ p. 17)
- "BBH Safety Software" (→ p. 18)
- "KAS Controls" (→ p. 18)
- "Allow Simulator to Use HTTP Communication" (→ p. 19)

### 6.1 System Requirements

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

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

#### NOTE

1. Better results are achieved with OpenGL and 3D cards.
2. A 100MB network is required in order 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.

## 6.2 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.

### 6.2.1 Computer Software

Software Images	Recommended Version
KAS-IDE	4.01-R2.0

### 6.2.2 Firmware Requirements

- "Controller Firmware" (→ p. 15)
- "Drive Firmware" (→ p. 16)
- "Firmware Compatibility" (→ p. 16)
  - "F106 Error" (→ p. 16)
  - "FBUS.PARAM05 Bit 5" (→ p. 16)

#### 6.2.2.1 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](#).

### 6.2.2.2 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"> <li>AKD-M-KCEC-01-23-00-000.i00</li> <li>AKD-M-MCEC-01-23-00-000.i00</li> </ul>
	AKD PDMM 1.2GHz	AKD PDMM Servo Drive Firmware <ul style="list-style-type: none"> <li>AKD-M-K1EC-01-23-00-000.i00</li> <li>AKD-M-M1EC-01-23-00-000.i00</li> </ul>
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

### 6.2.2.3 Firmware Compatibility

#### 6.2.2.3.1 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.

#### 6.2.2.3.2 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.

### 6.2.3 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.

## 6.2.4 Kollmorgen Visualization Builder (KVB)

### 6.2.4.1 Software Images

Software Images	Recommended Version	Download
KVB	2.40 [2.43.17.0]	

### 6.2.4.2 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.

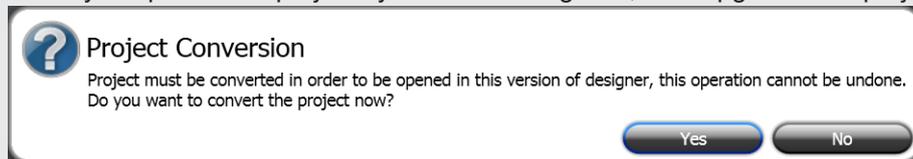
### 6.2.4.3 Hardware / Software

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.

## 6.2.5 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

## 6.3 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 <sup>nd</sup> Generation High Performance Multi-Axis Controller
PCMM	1.2GHz Dual-core	<a href="#">AKC-PCM-M2-120-00N-00-000</a>	High Performance Multi-Axis Controller
PCMM	1.2GHz Single-core	<a href="#">AKC-PCM-M1-120-00N-00-000</a>	High Performance Multi-Axis Controller
PCMM	800MHz Single-core	<a href="#">AKC-PCM-MC-080-00N-00-000</a>	Standard Multi-Axis Controller
AKD PDMM	1.2GHz	<a href="#">AKD-M0xxxx-M1EC-0000</a> <a href="#">AKD-M0xxxx-K1EC-0000</a>	High Performance Drive Resident Controller
AKD PDMM	800MHz	<a href="#">AKD-M0xxxx-MCEC-0000</a> <a href="#">AKD-M0xxxx-KCEC-0000</a>	Standard Drive Resident Controller

## 6.4 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.

## 7 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).

## 8 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.

### 8.1 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.

### 8.2 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.

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## 10 Support and Services

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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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