Kollmorgen Automation Suite

KAS Getting Started User Manual

Document Edition: GG, February 2026
Valid for KAS Software Revision: 4.05
Valid for Kollmorgen Essentials Drive Firmware Version: <Adjust in target>
Part Number: 959713

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

KOLLMORGEN
A REGAL REXNORD BRAND

Table of Contents

1 Introduction

This guide covers these main procedures to have your KAS system up and running:

- **Hardware (HW) Installation** (Connection and Wiring): Wiring and hardware details, connectors, system diagrams.
- **HW Configuration**: Basic configuration and settings needed to start the HW components (e.g., HMI, Industrial PC, Fieldbus, I/O).
- **Software (SW) Installation**: KAS software setup.

1.1 Related Documents

See the Kollmorgen Downloads page for documentation about controllers, drives, motors, and other components.

1.2 Alerts and Warnings

When alert symbols are seen in a manual, be aware of the potential for personal injury.

Follow the recommended precautions and safe operating practices included with the alert symbols.

- Safety notices in the manuals provide important information.
- Read and be familiar with these instructions before attempting to install, operate, or perform maintenance.
- This section alerts users to possible safety hazards associated with equipments and the precautions that need to be taken to reduce the risk of personal injury and damage to the equipment.
- Failure to observe these precautions could result in serious bodily injury, damage to the equipment, or operational difficulty.

2 System Overview

The Kollmorgen Automation Suite (KAS) is a complete system solution.

This includes a variety of software packages designed for complete control over your hardware.

2.1 Software Packages

Software	Description
KAS-IDE	The KAS Integrated Development Environment (KAS-IDE) provides all necessary tools for designing, programming, configuring, debugging, and maintaining machine applications.
KAS Runtime	The KAS Runtime engine includes a soft PLC and a motion controller.
KVB (optional)	The Kollmorgen Visualization Builder assists in designing an HMI panel.

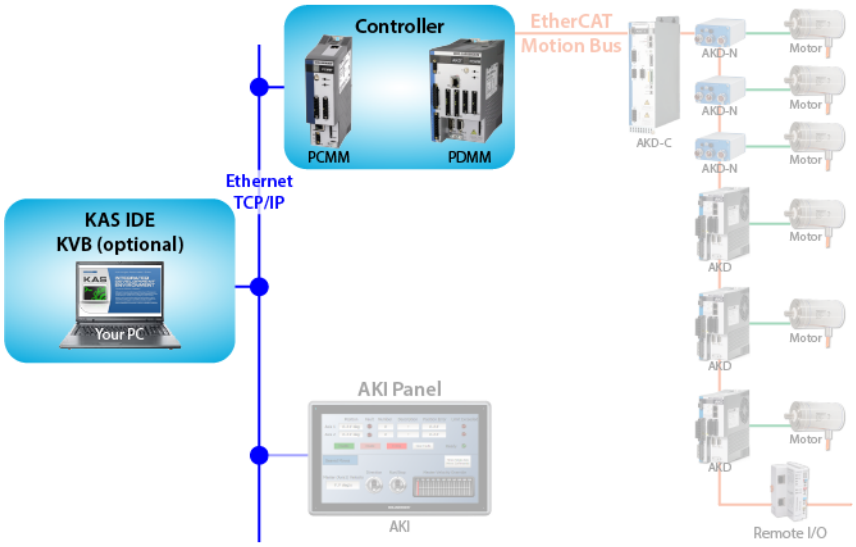


Figure 2-1: Software

2.2 Hardware Components

The KAS system is comprised of these hardware components.

Component	Models	Description
Controller	PCMM PCMM2G	• Standalone programmable controller. • Provides a real-time platform with a PLC engine and motion engine to execute application programs and communicate with all network devices (e.g., remote I/O, drives, HMI, other PLCs, etc.)
Controller + Drive	AKD PDMM	• Integrated programmable controller and servo drive. • Provides a real-time platform with a PLC engine and motion engine to execute application programs and communicate with all network devices (e.g., remote I/O, drives, HMI, other PLCs, etc.)
Drive	AKD AKD2G AKD-C AKD-N	Servo drives specifically designed with versatility, communications, and power to expand machine performance.
HMI	AKI AKI2G	Provides a graphical interface for the operator to manage the machine's operations.
Motor	AKM AKM2G	Servo motor is an actuator used for precise control of position, velocity, and acceleration by closing the control loop with a feedback device.
Remote I/O	AKT AKT2G	Digital and analog input and output signals . These signals provide sensor feedback and actuation between an automation system and the physical world.

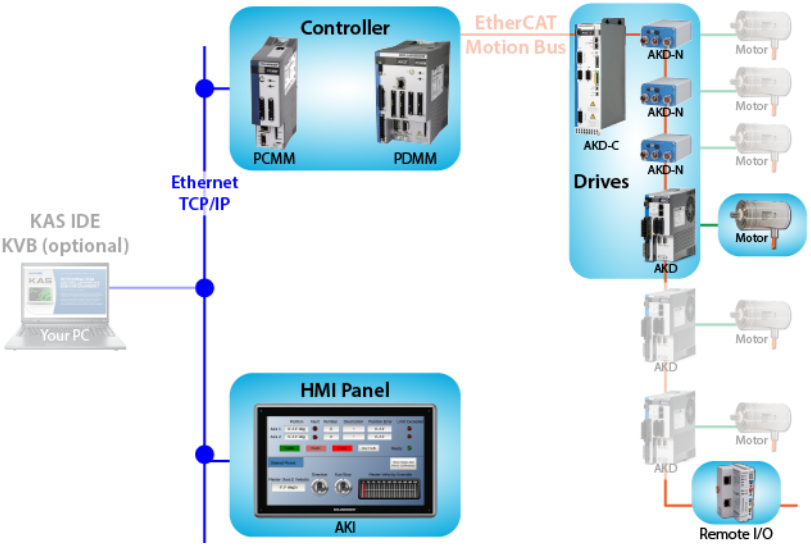


Figure 2-2: Hardware

2.3 Digital Signatures

The KAS-IDE Installer and the executables are digitally signed to protect the integrity of these files and identify the distributor of the software components.

The digital signature appears as part of the file properties.

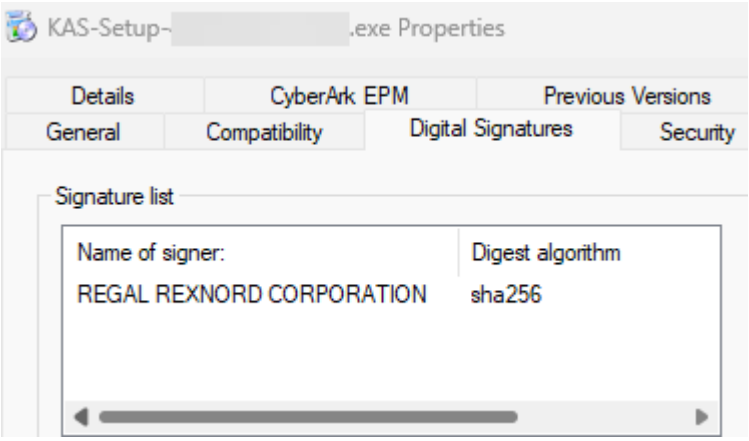


Figure 2-3: Example: KAS Setup Properties Digital Signature

3 Install KAS-IDE

3.1 System Requirements

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

Component	Description
Supported Operating Systems	• Microsoft® Windows® 11 (64-bit). • Microsoft® Windows® 10 (32-bit or 64-bit). • For optimal performance, verify the operating system is fully updated with the latest patches.
Connectivity	• 1 Ethernet port or WiFi connectivity, at either 100 MB or 1 GB. • See Note #2.
Display	• WXGA+ (1440 x 900) or higher-resolution monitor with 24-bit, 16.7M colors. • See Note #1.
Hard Disk	Free space required on hard disk: • 32-bit hard disk: 16GB • 64-bit hard disk: 20GB
Network	Internet connection for downloading and updating WebView2 Runtime.
Processor	Intel® Pentium® M or equivalent processor at 1.5GHz or greater.
RAM	• 32-bit: 1GB RAM • 64-bit: 2GB RAM or greater • Recommended for complex applications.
Software	• Microsoft Edge WebView2 Runtime (Evergreen) version 133.0.3956.59 or newer. • .NET Framework 4.8.1 or newer.
Web Browser	• A modern web browser is required to access the controller Web server and online help. • We recommend Microsoft Edge.

NOTE

1. Better results are achieved with OpenGL and 3D cards.
2. A 100MB or 1GB network is required to allow the KAS-IDE to Runtime communication to work in all conditions.
   The AKD WorkBench AutoTuner and Scope both require 100MB of bandwidth to function properly.

TIP

See Connect Remotely about the ports used by the KAS.
The ports may need to be opened to support connecting to a controller from an external network.

3.2 Digital Signatures

The KAS-IDE Installer and the executables are digitally signed to protect the integrity of these files and identify the distributor of the software components.

The digital signature appears as part of the file properties.

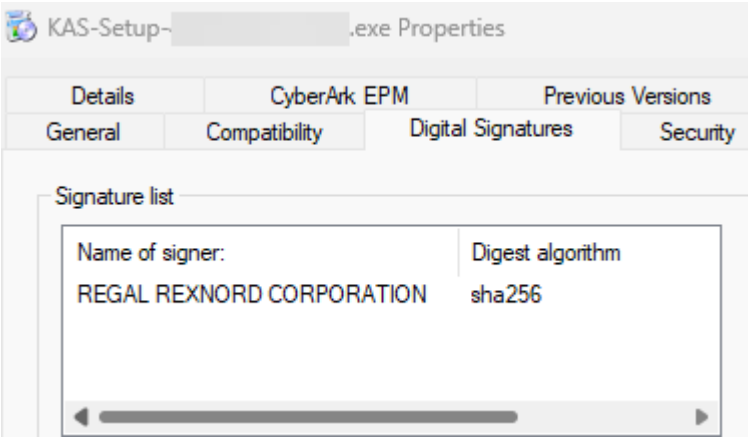


Figure 3-1: Example: KAS Setup Properties Digital Signature

3.3 Download

The latest version of the Kollmorgen Automation Suite is available from the Kollmorgen Support Network here: KAS IDE Distribution.

NOTE

This is a restricted site.
You must be given access based on having purchased KAS.
If you do not have access, contact "Support and Services" (→ p. 43).

Procedure

1. Open the KAS IDE Distribution site.
2. Login to the site.
3. In the table, click the applicable Full or Small Installer link.
   The file starts downloading.
4. When the download is completed, continue with the "KAS-IDE Installation" (→ p. 9).

3.4 KAS-IDE Installation

IMPORTANT

Installation of the KAS-IDE can require you to change your firewall setting.
If you do not have sufficient privileges to configure your firewall, you must stop the relevant Windows Service.

TIP

- Adding the **KAS-IDE** application as an exception in your firewall settings is recommended to avoid security issues.
- See the FAQ entry How can I fix security issues? about firewall recommendations.

Procedure

1. On the computer, locate the folder where the EXE file was downloaded to.
2. Double-click the EXE file.
   The Kollmorgen Automation Suite Setup starts loading.

   IMPORTANT

   The **Verified Publisher** in the installation wizard dialog must be **REGAL REXNORD CORPORATION**.
3. Wait for the setup splash screen to vanish after being displayed.
   The Kollmorgen Automation Suite Setup wizard starts.
   The **Welcome** window opens showing the version number of the KAS-IDE. (Figure 3-2)

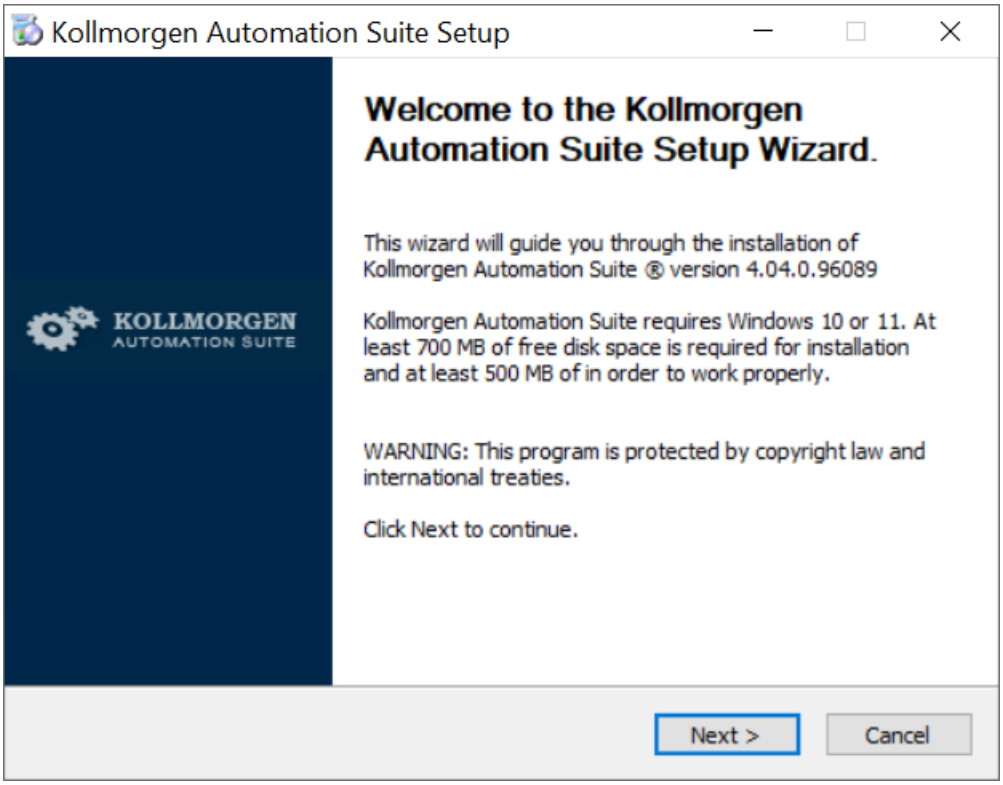


Figure 3-2: Welcome window

4. Click **Next**.
   The **License Agreement** window opens. (Figure 3-3)

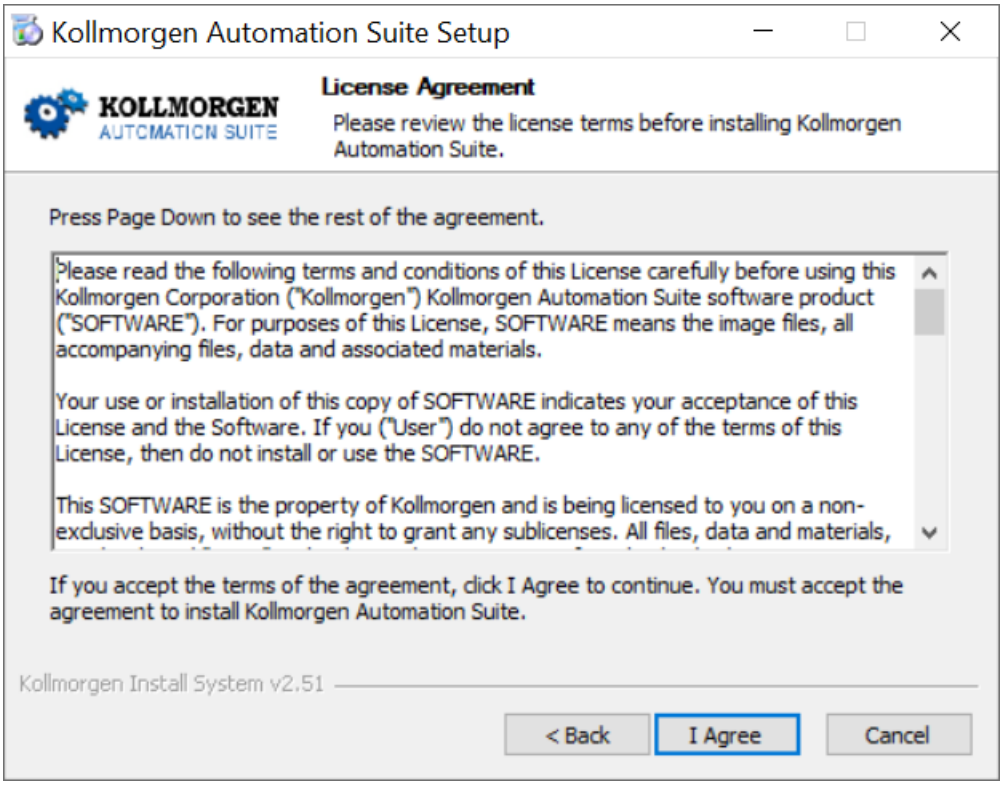


Figure 3-3: License Agreement window

5. Review the License Agreement and click **I Agree**.

NOTE

You must accept the agreement to install KAS.

The **Choose Components** window opens. (Figure 3-4)

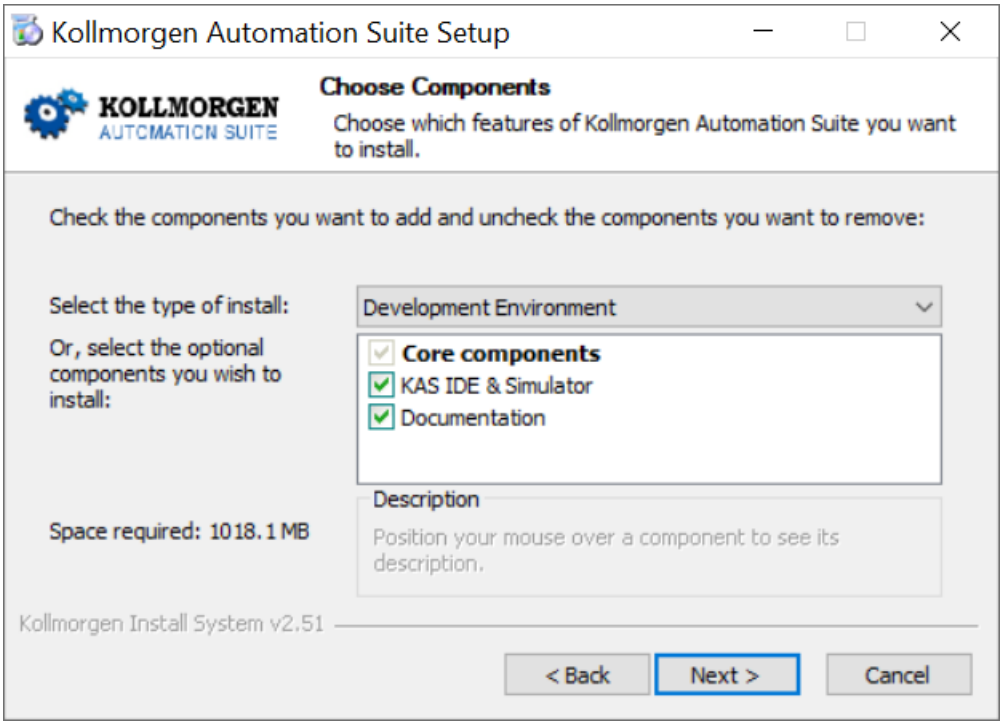


Figure 3-4: Choose Components window

6. From the drop-down menu, verify the **Development Environment** installation type is selected.
7. Click **Next**.
   The **Choose Users** window opens. (Figure 3-5)

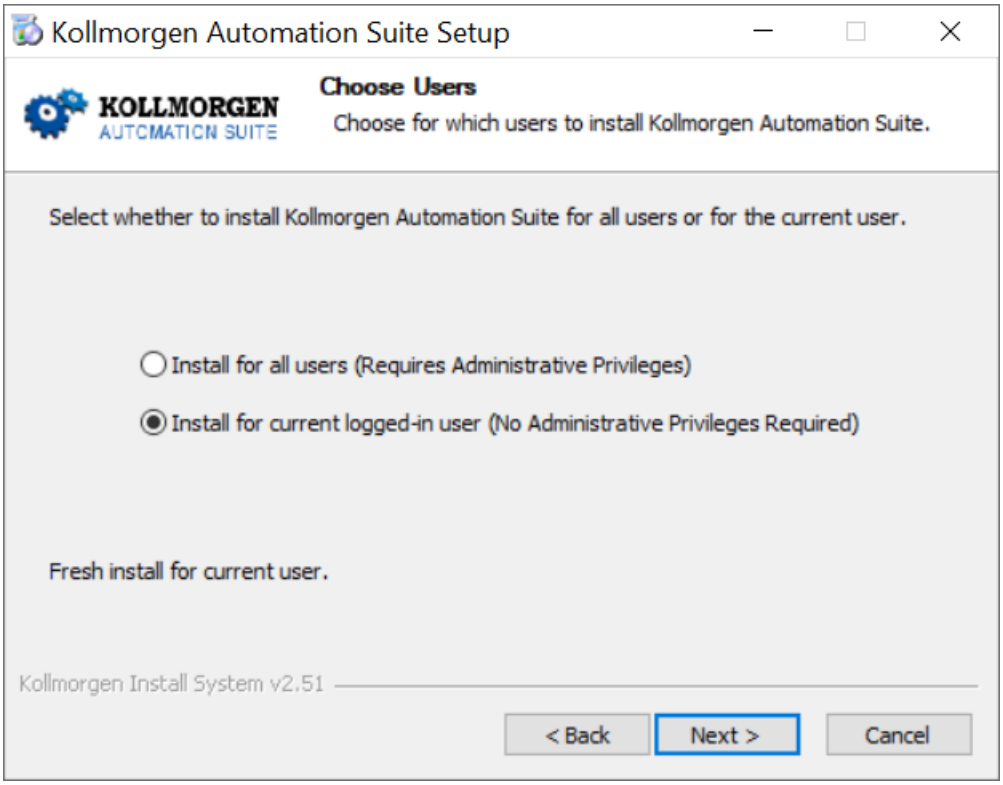


Figure 3-5: Choose Users window

8. Select either:
   - Install for all users (Requires Administrative Privileges)
   - Install for current logged-in user (No Administrative Privileges Required)

TIP

Kollmorgen recommends installing for **All Users** if this is a first time KAS-IDE installation on the computer.

NOTE

The KAS-IDE software requires these Windows components to be installed on your system:
- .NET Framework 4.8.1 Runtime
- WebView2 Runtime

If these components are not already installed, the installer prompts you to install them.
Administrative privileges may be required for the initial installation of these components.

9. Click **Next**.
   The **Choose Install Location** window opens. (Figure 3-6)

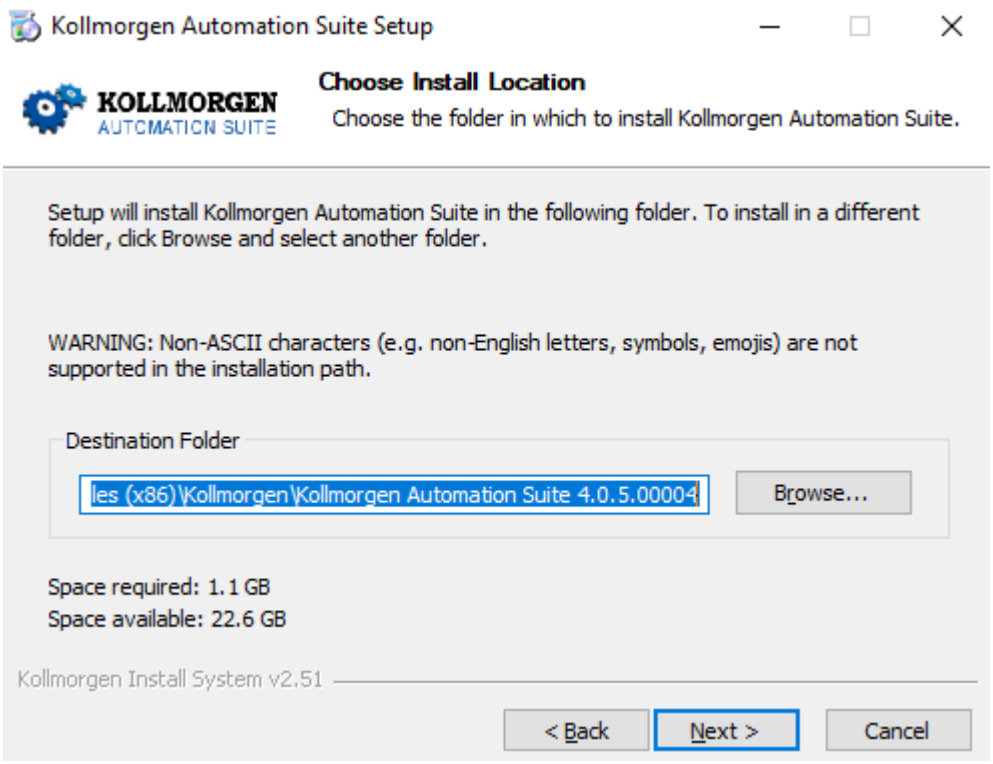


Figure 3-6: Choose Install Location window

10. Accept the recommended default location.
    Option: Click **Browse** to specify a custom install directory.

⚠WARNING

Kollmorgen does not support non-ASCII characters in the install location path.
If these characters exist in the path, you must specify a different installation directory.

TIP

Kollmorgen recommends accepting the default destination folder:

- For the All Users option, the location is here:
  - C:\Program Files\Kollmorgen\Kollmorgen Automation Suite\Kollmorgen Automation Suite <<KAS-VERSION-ID>>.
- For the Current User option, the location is here:
  - C:\Users\{{user.name}}\AppData\Local\Kollmorgen\Kollmorgen Automation Suite <<KAS-VERSION-ID>>.

11. Click **Next**.
    The **Choose Start Menu Folder** window opens. (Figure 3-7)

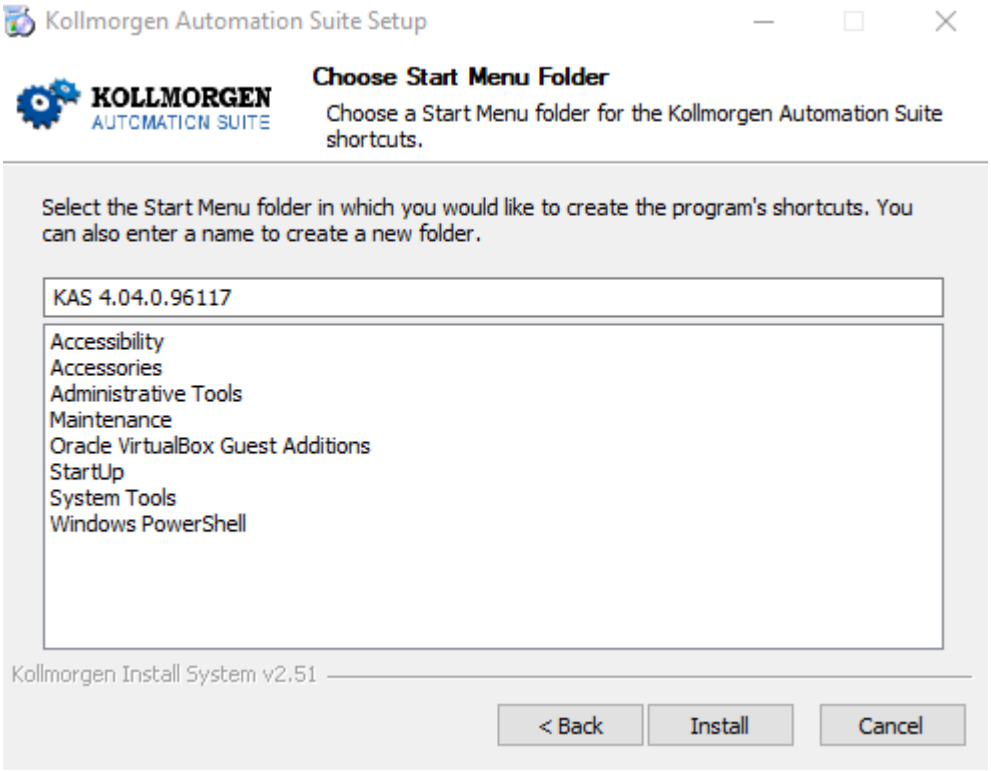


Figure 3-7: Choose Start Menu Folder window

12. Accept the recommended default folder name.
    Option: Edit the text to specify a custom folder name.
13. Click **Install**.
    KAS-IDE is installed in the designated install location.
    a. If WebView2 is **not** installed, the Figure 3-8 message appears.

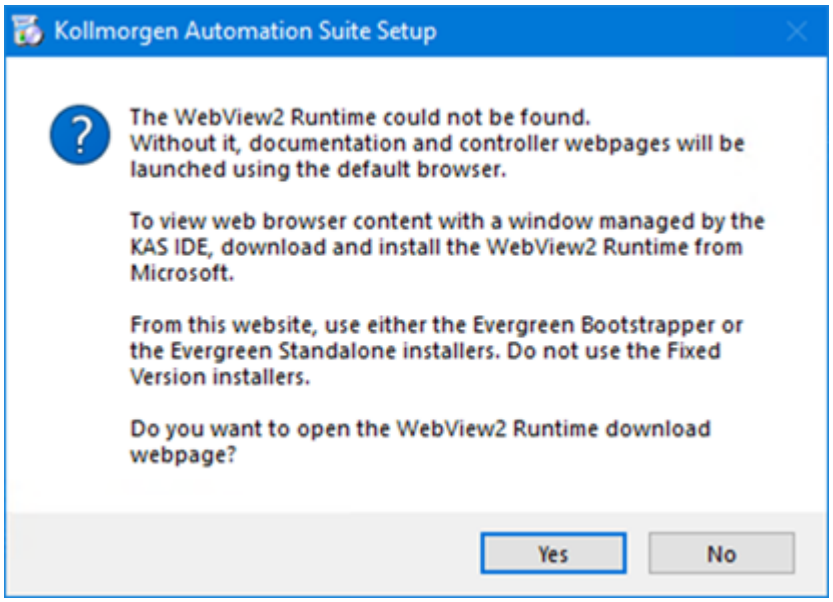


Figure 3-8: WebView2 Confirmation message

    b. Continue with "WebView2 Installation" (→ p. 14).

When the installation is complete, the **Completing KAS Setup** window opens. (Figure 3-9)

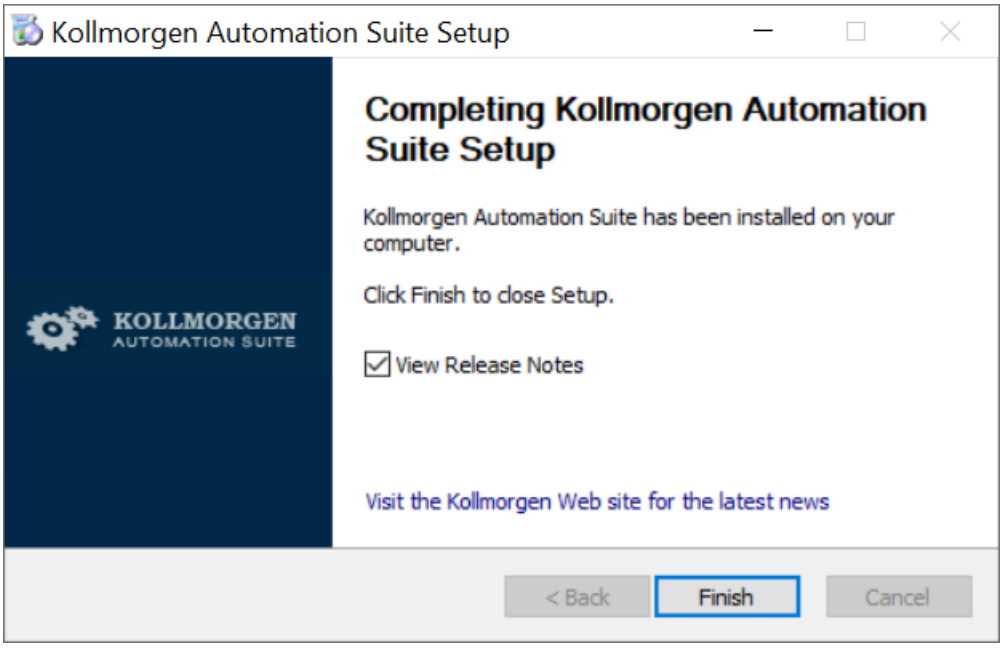


Figure 3-9: Completing KAS Setup window

14. Click **Finish** to close the wizard and open the Release Notes.

3.4.1 WebView2 Installation

IMPORTANT

- The KAS software uses Microsoft WebView2 Runtime software to display the documentation and web server pages from the KAS-IDE.

Notes

- If Microsoft WebView2 is **NOT** installed, the KAS-IDE installer prompts the user to download and install it from the Microsoft website here: Microsoft Edge WebView2 Runtime software.
- Use either the Evergreen Bootstrapper or the Evergreen Standalone installers.
  - **Do not use the Fixed version installers!**
- The user must follow the provided link to install WebView2 to view the documentation and access the web server from the KAS-IDE.

Procedure

1. Click **Yes**.
   The Download area of the Microsoft Edge WebView2 website opens.
   - Use either the Evergreen Bootstrapper or the Evergreen Standalone installers.
     - **Do not use the Fixed version installers!**
2. Download the applicable Evergreen installer.
3. Click the Accept and Download link to the license terms and download the software.
4. Locate and install the MicrosoftEdgeWebview2Setup.exe file.
   Wait until the installation process is complete.

3.4.2 User Data

- User-generated data (e.g., log files, project sources, field bus configurations, function blocks, etc.) are stored in the Windows® User directory and are maintained between installations.
- This applies to files on AKD PDMMs, PCMMs,PCMM2G, and Simulator files.

3.5 Additional Literature

Document Title	Description
Release Notes	The KAS Release Notes contain a summary of: • New features, fixed and known limitations, workarounds • Information on all hardware and software components that have been updated, changed, or added in the release. • See KAS Release Notes EN.
Getting Started	Contains these main steps to get the KAS system up and running. • **Hardware (HW) Installation** (Connection and Wiring): Wiring and hardware details, connectors, system diagrams. • **HW Configuration**: Basic configuration and settings needed to start the HW components (e.g., HMI, Industrial PC, Fieldbus, I/O). • **Software (SW) Installation**: KAS software setup. • See KAS IDE Getting Started EN.

30 Minutes to Motion	Contains the main topics to get started quickly with KAS-IDE.
	The objective is to familiarize you with the basic principles and the way the program works by creating a simple motion application project.
	See KAS IDE 30 Minutes to Motion EN about:
	• Key Features in KAS.
	• Explore the Workspace
	  • See Describing the KAS Graphical User Interface.
	• Build a Motion Project
	  • **Start Projects** - Create a project from scratch or modify an existing project.
	  See Create a Project.
	  • **Add Components** - Add necessary elements to build the project and control the motion part of the system.
	  This includes: Create Variables, Adding Motion, and Programs: Structure and Syntax.
	  • **Build Output** - Select a device and generate the application to deliver to users.
	  See Run the Project.
	  • **Run Output** - Make the output accessible to end-users.

KAS-IDE User Manual	Contains content to help with KAS-IDE except the topics included in the Reference Manuals. See KAS-IDE User Manual EN.
KAS-IDE PLC Library Reference Manual	Contains Technical References on **PLC** Programming Languages and Library. See KAS-IDE PLC Library Reference Manual EN.
KAS-IDE Motion Library Reference Manual	Contains Technical References on **Motion** Library for Pipe Network and PLCopen. See KAS-IDE Motion Library Reference Manual EN.

4 Installing KAS Runtime

The controller has all the necessary software installed (including KAS Runtime).

NOTE

KAS Runtime is only supported with Kollmorgen controllers.

4.1 Update the Runtime on AKD PDMM, PCMM, and PCMM2G

The KAS Runtime is contained in the AKD PDMM, PCMM, and PCMM2G firmware and comes pre-installed.

This procedure is for updating the firmware and runtime using the KAS web server.

IMPORTANT

The firmware files for "AKD PDMM and PCMM File Type: .IMG" (→ p. 16) are different than those for "PCMM2G File Type: .ZIP" (→ p. 17).

4.1.1 AKD PDMM and PCMM File Type: .IMG

- **.IMG File Formats**
  - "AKD PDMM" (→ p. 16)
  - "PCMM" (→ p. 16)
- "Model Code" (→ p. 16)

4.1.1.1 AKD PDMM

Controller	File Name Format	Example File Name
AKD PDMM	`KAS-PDMM-M-{Model-Code}-{Software-Version}.img`	`KAS-PDMM-M-K1EC-4.01.0.91992.img`

4.1.1.2 PCMM

Controller	File Name Format	Example File Name
PCMM	`KAS-PCMM-M-{Model-Code}-{Software-Version}.img`	`KAS-PCMM-M-M2EC-4.01.0.91992.img`

4.1.1.3 Model Code

Model Code	CPU Speed	Core
KCEC and MCEC	800MHz	Single
K1EC and M1EC	1.2GHz	Single
M2EC	1.2GHz	Dual

4.1.2 PCMM2G File Type: .ZIP

- **.ZIP File Formats**
  - "Operating System (OS) + KAS Runtime (RT)" (→ p. 17)
  - "OS Only" (→ p. 17)
  - "KAS Runtime (RT) Only" (→ p. 17)
- "Model Code" (→ p. 17)

4.1.2.0.1 Operating System (OS) + KAS Runtime (RT)

- These files contain both the operating system and the KAS runtime.

Firmware File	File Name Format	Example File Name
Operating System (OS) + KAS Runtime (RT)	KAS-PCMM2G-{Processor/RAM Code}-{Storage-Code}-{OS-Version}-{RT-Version}.zip	KAS-PCMM2G-Cx-08-OS-1.0.0.00288-RT-4.01.0.91998.zip

4.1.2.0.2 OS Only

- Operating system security update.
- These are provided as security patches.
- The KAS Runtime is not affected, but must not be less than a specific version.

Firmware File	File Name Format	Example File Name
OS Only	KAS-PCMM2G-{Processor/RAM Code}-{Storage Code}-{OS-Version}.zip	KAS-PCMM2G-Cx-08-OS-1.0.0.00281.zip

4.1.2.0.3 KAS Runtime (RT) Only

- Unofficial runtime patch file.
  - These files are very small.
  - They may be sent to individual users when troubleshooting specific issues.

Firmware File	File Name Format	Example File Name
KAS Runtime (RT) Only	KAS-PCMM2G-{Processor/RAM Code}-{Storage Code}-{RT-Version}.zip	KAS-PCMM2G-Cx-08-RT-4.01.0.91978.zip

4.1.2.1 Model Code

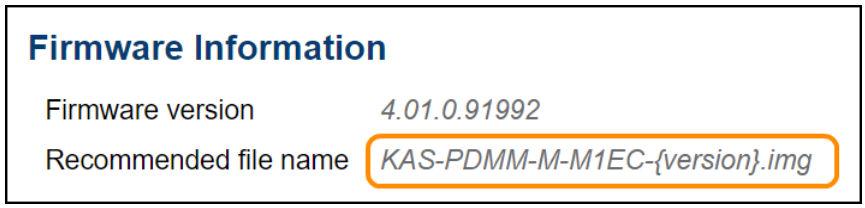
Processor / RAM / Storage Code	CPU Speed	Core	RAM	Storage
Cx-08	1.5GHz	Quad	2 / 4 / 8GB	8GB
Cx-16	1.5GHz	Quad	2 / 4 / 8GB	16GB
Cx-32	1.5GHz	Quad	2 / 4 / 8GB	32GB

Procedure

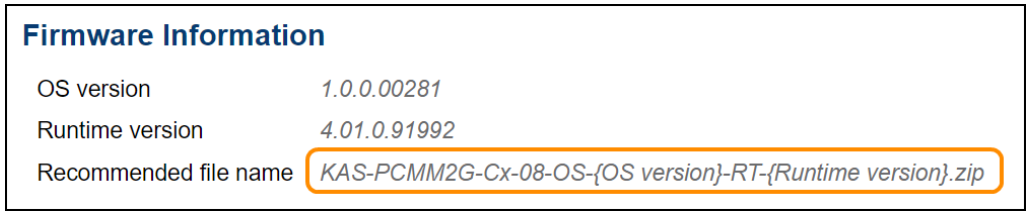
1. Download the latest drive firmware and/or runtime firmware from Kollmorgen.com.
2. Open the controller's web server in your web browser by entering its IP address.
3. Select the **Settings** tabbed-page.
4. In the **Firmware** pane, click the **Choose File** button to select the new firmware image file for the KAS Runtime.

   The recommended file is shown in the **Firmware Information** section.
   Examples:

   AKD PDMM and PCMM

   PCMM2G

5. Click **Upgrade** to start the procedure.

   TIP
   If the **Upgrade** button is disabled, log into the webserver.
   Click **Login** at the top of the web page and enter the password.

   A message and a throbber are shown across the web page, indicating that maintenance is in progress.
   The 7-segment display on the controller animates with chasing lights.

Successful Upgrade	• The controller automatically reboots with new firmware. • Press **<CTRL+F5>** in the web browser to force a page refresh so the **Firmware Version** updates to the new version number.

Incompatible Firmware	**Example: AKD PDMM and PCMM Error Message**
	An error message, similar to this, appears if the wrong firmware file was downloaded:
	`The file provided is not compatible with this device.`
	`The file name should be...`
	`"KAS-PDMM-M-MCEC-{version}.img"`
	Example: PCMM2G Runtime Error Message
	`Minimum runtime version requirement not met.`

6. After the download is complete, click **Reboot**.

   A message and a throbber are shown over the web server while the reboot is in progress.

   The login session is no longer valid when the reboot is complete.
   The webserver displays a message to indicate the user has been logged out.

   NOTE

   This step is not necessary if the controller automatically reboots during the upgrade (previous step).

7. Press **<CTRL+F5>** to force the web browser to refresh the page.

   IMPORTANT

   Do **not** try to refresh the web page until firmware upgrade is completed.

5 Install Hardware (HW)

Before a motion application can be up and running, all hardware components need to be connected, wired, and configured.

The **Getting Started** guide contains procedures for installing and configuring hardware components (e.g., HMI, controllers, I/O Terminals, EtherCAT Motion Bus, AKD2G Drive, and AKM2G Motor).

NOTE

For extensive information about installing the different hardware components, see:

- www.Kollmorgen.com
- KAS-IDE online help (after KAS has been installed)

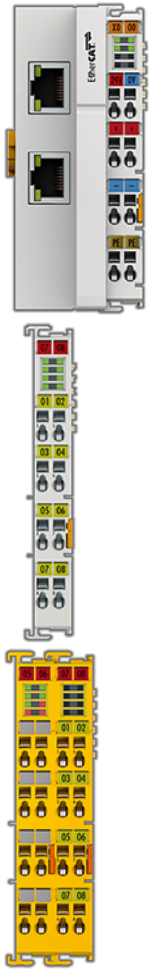
This table has links to installation procedures for hardware components.

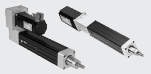
Domain	Product	Product Example Image	Concept (Technology)	Installation	Tasks (Tools)	Reference
Controller	AKD PDMM PCMM PCMM2G	  	Programmable Drive Multi-axis Master: Controllers	• Install the AKD PDMM, PCMM, or PCMM2G controller. • See "Install Controllers" (➔ p. 26).	• Add the Controller • Configure the Controller	Controllers

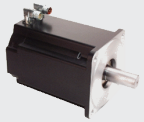
Domain	Product	Product Example Image	Concept (Technology)	Installation	Tasks (Tools)	Reference

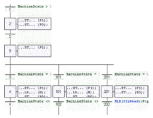
Drives	AKD
	AKD-C
	AKD-N
	AKD2G
	S300
	S700
			• Drives	• Install a AKD or AKD2G Drive.
				• See either the:
				  • AKD Installation Manual
				  • AKD Quick Start
				• Available from: AKD Downloads.
					• Add and Configure a Servo Drive
					• AKD Drive Configuration
					• "Update Kollmorgen Servo Drives Firmware" (→ p. 31)
						Drives

Fieldbus	EtherCAT		EtherCAT	• Set up EtherCAT Motion Bus Communication. • See AKD®EtherCAT Communication.	Configure EtherCAT Motion Bus	Motion Bus and Fieldbuses Cables
HMI	Human-Machine Interface			• Install the graphic operator interface. • See "HMI - Graphic Operator Interface" (→ p. 26).	• Use the Kollmorgen Visualization Builder (KVB) • Add an HMI Device	HMI

Domain	Product	Product Example Image	Concept (Technology)	Installation	Tasks (Tools)	Reference
I/O Terminal			EtherCAT	• Install the remote Input/Output Terminal. • See "Remote Input/Output - I/O Terminal" (➔ p. 27).	• Add and Configure I/O Slices • Map Input and Output to Variables	Remote Input/Output Terminals

Domain	Product	Product Example Image	Concept (Technology)	Installation	Tasks (Tools)	Reference
Mechanical						Linear Actuators Gearheads
Motion Engines		 	Motion Concept: • Pipe Network Concept • PLCopen		• Design Pipe Network • Pipe Network Editor • Create Cam Profile • Cam Profile Editor • Soft Oscilloscope	

Motors	AKM
	AKM2G
			Kollmorgen Servomotor	• Install the AKM or AKM2G Motor.
				• Mechanical and Electrical installation.
				• Available from:
				  • AKM Downloads
				  • AKM2G Downloads
						• AKM
						• AKM2G
						• Cartridge DDR
						• Direct Drive Linear
						• Housed DDR
						• KBM
						• TBM

PLC			IEC 61131-3		• Free Form Ladder Diagram (FFLD) Editor • Function Block Diagram (FBD) Editor • Sequential Function Chart (SFC) Editor • Soft Oscilloscope (Softscope) • Structured Text (ST) / Instruction List (IL) Editor • Variables tab for Dictionary	• FBD Language • FFLD Language • IL Language • SFC Language • ST Language

Domain	Product	Product Example Image	Concept (Technology)	Installation	Tasks (Tools)	Reference
Safety			Safety over EtherCAT	"SafePLC2 Projects" (➔ p. 30)	1. "SafePLC2 Projects" (➔ p. 30) 2. Set Up a Variable to Monitor Safety Data 3. AKD2G Safety Parametrization Using FSoE with SCU-1-EC and PxMM / PCMM2G 4. Set Up FSoE Master and an AKD2G with SafeMotion Monitor	• BBH FSoE Master • Related Documents • AKT2G-SDI-004-000 • AKT2G-SDO-004-000

5.1 HMI - Graphic Operator Interface

NOTE

Download the applicable documentation from here: KAS HMI Panel Downloads.

HMI Part Number	Description	KVB
AKI-CDC-MOD-21T-000	Graphical Display 21.5" TFT LCD, Touchscreen	v2.0
AKI-CDC-MOD-15T-000	Graphical Display 15.4" TFT LCD, Touchscreen	v2.0
AKI-CDC-MOD-12T-000	Graphical Display 12.1" TFT LCD, Touchscreen	v2.0
AKI2G-CDA-MOD-07T-000	Graphical Display 5" TFT LCD, Touchscreen	v2.20
AKI2G-CDA-MOD-05T-000	Graphical Display 7" TFT LCD, Touchscreen	v2.20
AKI2G-CDB-MOD-12T-000	Graphical Display 12" TFT LCD, Touchscreen	v2.20
AKI2G-CDB-MOD-07T-000	Graphical Display 7" TFT LCD, Touchscreen	v2.20

5.2 Install Controllers

The controller installation information is found here:

Document Title	Description	Manual
AKD PDMM Installation Manual	• Covers the most important points to install the drive hardware and software. • Provides instructions for basic drive setup and connection to a network.	
PCMM Installation Manual	Covers the most important points of the installation and setup of the controller.	
PCMM2G Installation Manual	Covers the most important points of the installation and setup of the controller.	

5.3 EtherCAT Motion Bus

One EtherCAT master must be connected with all the slaves (drives and I/O terminals) of your system.

Details about the installation procedure for the EtherCAT Motion Bus are here:

- AKD2G: Website - Installation and Setup
  - Click **Apply** to set the Fieldbus filters on the website.
- AKD: Website - Download - AKD EtherCAT Communications Manual
  - Select the PDF from the list.

5.4 Remote Input/Output - I/O Terminal

This is a list of available I/O components.

See the AKT2G I/O Manual or the online help for detailed information on setting up I/O.

I/O Terminal Part Number	I/O Terminal Description
AKT2G-AC-FAN-001	Fan cartridge for EtherCAT and Bus Terminals.
AKT2G-AN-240-000	• 2-channel input terminal PT100 (RTD) for resistance sensors. • 16-bit, 2-, 3-wire system.
AKT2G-AN-400-000	• 4-channel thermocouple input terminal. • Preset to type K, with wire breakage detection. • 16-bit
AKT2G-AN-430-000	• 4-channel analog input. • Parameter capable • -10/0 to 10V • -20/0/+4 to +20mA • 16-bit
AKT2G-AT-410-000	• 4-channel analog output terminal. • 0 to 10V • 1-wire system • 12-bit
AKT2G-AT-425-000	• 4-channel analog output terminal. • -10V to +10V • 4 x 2-wire system • 12-bit
AKT2G-BRC-000-000	Brake Chopper Terminal
AKT2G-DN-002-000	• Up/down counter $24V_{DC}$ • 100 kHz • 32-bit counter depth
AKT2G-DN-008-000	• 8-channel digital input terminal $24V_{DC}$. • Filter 3.0ms • 1-wire system
AKT2G-DNH-008-000	• 8-channel digital input terminal $24V_{DC}$. • Filter 10µs • 1-wire system
AKT2G]-DT-008-000	• 8-channel digital output terminal $24V_{DC}$ • 0.5A • 1-wire system
AKT2G-ECT-000-000	EtherCAT Coupler for E-bus terminals
AKT2G-EM-000-000	• Bus end cover for E-bus terminals • Cover for power and E-bus contacts, gray
AKT2G-ENC-180-000	• 1-channel incremental encoder interface • 32-bit
AKT2G-ENC-190-000	• Incremental encoder interface with differential input • 16-bit / 32-bit

I/O Terminal Part Number	I/O Terminal Description
AKT2G-PSF-024-000	• Power supply terminal with fuse • $24V_{DC}$
AKT2G-SDI-004-000	• 4-channel digital input terminal $24V_{DC}$. • Safety
AKT2G-SDO-004-000	• 4-channel digital input terminal $24V_{DC}$. • Safety • 0.5A
AKT2G-SM-L15-000	• Stepper motor terminal • $24V_{DC}$ • 1.5A • Vector control
AKT2G-SM-L50-000	• Stepper motor terminal • $50V_{DC}$ • 5A • Vector control

5.5 Install AKD Drives

Drive Manuals	Description
AKD EtherCAT Manual	Describes the installation, setup, range of functions, and software protocol for the EtherCAT AKD product series.
AKD Installation Manual	• Installation manual for AKD and AKD PDMM drives. • Describes the AKD series of digital drives and includes mechanical, electrical, and software installation information needed to safely install AKD.
AKD PDMM Fault Card	• Describes the AKD PDMM (including AKD) faults, warnings, error messages, and alarms. • Provides cause and remedy instructions to determine the specifics of the failure and to correct the underlying problem.
AKD PDMM User Manual	• Describes the software installation, setup, and operation for the AKD PDMM drive. • Includes basic topics and examples to help set up and use the various features in the drive.
AKD, AKD2G, S700 (in NA) Accessories Manual	Describes the accessories for Kollmorgen digital drive systems and servo drive motors.
AKD2G EtherCAT Manual	Describes the installation, setup, range of functions, and software protocol for the AKD2G product series.
AKD2G Installation Manual	• Describes the AKD2G series of digital drives. • Includes mechanical, electrical, software, and functional safety options.

MKD Installation Manual	• Installation manual for MKD drive system modules:
	  • MKD-C power supply.
	  • MKD-N servo drives.
	• It includes mechanical, electrical and software installation information needed to safely install the MKD system modules.

S300 Reference Documentation	Kollmorgen website with access to all S300 manuals.
S700 Reference Documentation	Kollmorgen website with access to all S700 manuals.

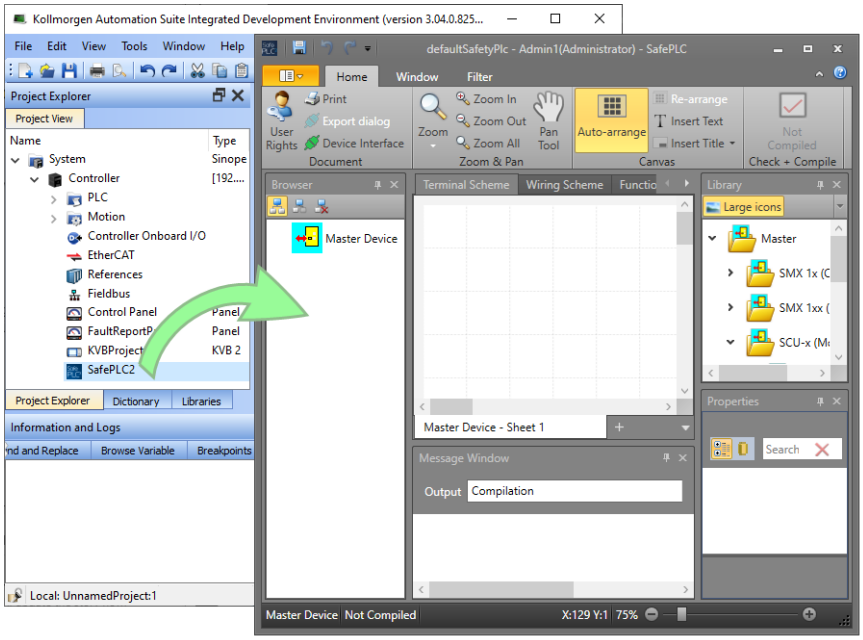
5.6 Install AKM or AKM2G Motors

See either the AKM Instructions Manual or the AKM2G Installation Manual.

5.7 SafePLC2 Projects

A node can be added to the Project tree connected to a SafePLC2 project.

- This is used to synchronize a SafePLC2 project with a KAS project.
- The KAS-IDE automatically generates the PDOs for the connected devices and establishes the Black Channel with the EtherCAT Safety network.



See the online help or the AKT2G I/O Manual for more information.

6 Kollmorgen Servo Drives Firmware

6.1 Verify Kollmorgen Servo Drives Firmware

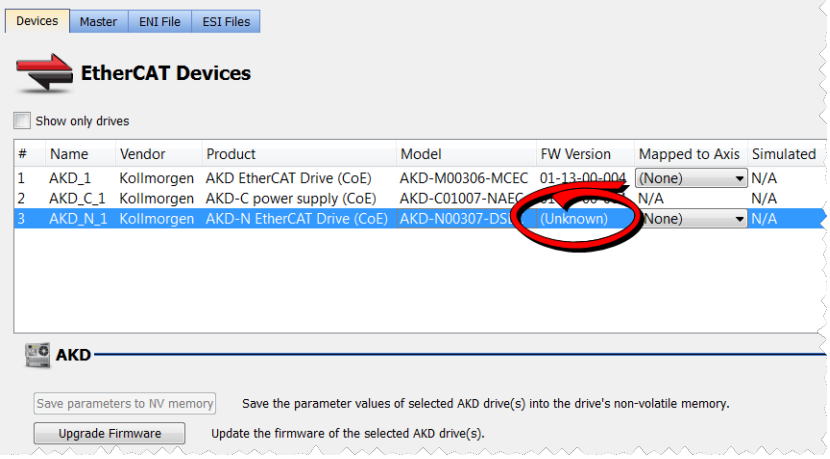
This procedure is for the Kollmorgen AKD Series Servo Drives and Kollmorgen Essentials™ Servo Drive.

Procedure

1. Create a new project.
2. Set the controller type and IP address.
3. In the Project Explorer, double-click the **EtherCAT** node to open the EtherCAT Devices summary window.
4. In the Devices tab, click the **Scan Devices** button.
5. Choose the **Create...** option to map the physical device to a new device.

NOTE

If a Kollmorgen drive is showing the firmware version as **Unknown**, the drive has valid resident firmware (to boot from), but does not have valid operational firmware.
Download and install the latest operational firmware and reboot the AKD / AKD2G.



6. If the version is not correct, continue with this procedure:
7. Compile the project.
8. Connect to the controller.
9. Download the project to the controller.
10. If the version is not correct, download the new firmware from these product sites:
    - AKD PDMM® Programmable Drive
    - AKD2G Servo Drive
    - AKD® Series Servo Drives
    - AKD-N Decentralized Servo Drive
    - Kollmorgen Essentials Drive EDIT THIS LINK WHEN PRODUCT IS RELEASED
11. Continue with "Update Kollmorgen Servo Drives Firmware" (➔ p. 31).

6.2 Update Kollmorgen Servo Drives Firmware

This procedure is for the Kollmorgen AKD Series Servo Drives and Kollmorgen Essentials™ Servo Drive.

Product	Firmware Download Link
AKD	AKD Servo Drive Firmware Download
AKD PDMM	AKD PDMM Servo Drive Firmware (AKD-M-MCEC)
AKD2G	AKD2G Servo Drive Firmware Download
Kollmorgen Essentials Drive (KED)	KED Servo Drive Firmware

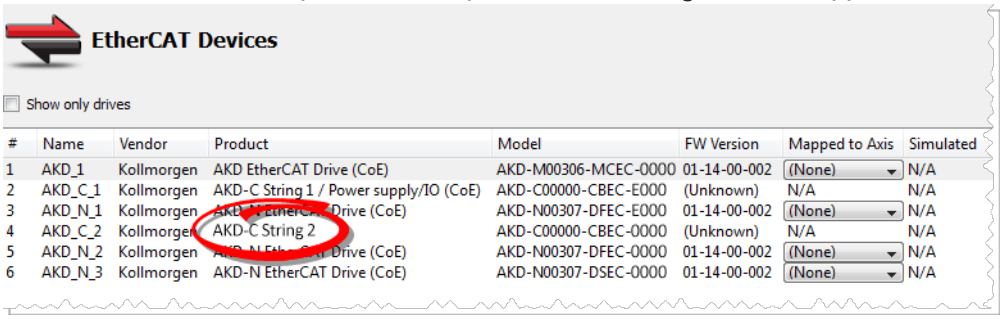
IMPORTANT

This procedure **cannnot** be used when applications are running and when the drive is in Online Configuration Mode.

Procedure

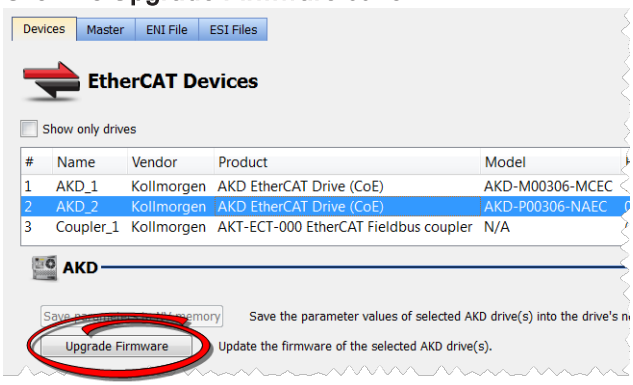
1. Scan the devices to verify all devices are created.
2. Compile the project.
3. Connect to the controller.
4. Download the project to the controller.
5. Open the **EtherCAT Devices** tab.
6. Select the drives requiring the same firmware version to be updated.
   - **NOTE**

     Multiple drives of the same type can be selected.
     The firmware download is limited to 16 drives at a time.
   - **AKD-C**: Devices with the product description **AKD-C String 2** do not support firmware download.

   - **AKD-N**: The last four characters can be different.
     However, the firmware file selected to download must support all the selected models.
     The file `AKD-N-xxEC-********.i00` supports multiple AKD-N models.
   - **AKD-P**: The last four letters of the model number must be the same for simultaneous firmware download.
   - **NOTE**

     The firmware download is limited to 16 drives at a time.
7. Click the **Upgrade Firmware** button.

   IMPORTANT

   Warning dialogs may appear at this point.
   These warnings include important information about preventing damage to the drives.
8. Browse to the new firmware file.
   See the Release Notes for the latest supported firmware.
9. Click **Open** to start the updating procedure.

   IMPORTANT

   This procedure **cannnot** be used when applications are running and when the drive is in Online Configuration Mode.

During the firmware download, the Firmware Update window displays a progress bar and these messages appear:

- Uploading firmware to the drive.
  - During the download process, the drive LED displays [dL].
  - Additional codes may appear during the download.
    - See these Display Codes for a code descriptions related to the firmware download:
      - AKD: Fault and Warning Messages
      - AKD2G: Faults and Warning Messages
      - Kollmorgen Essentials Drive: Faults and Warnings
- Resetting the drive.
- Firmware update is complete.

⚠CAUTION

While the firmware is downloading to your drive, **do not** remove the $24V_{DC}$ logic power.
If you remove the $24V_{DC}$ logic power during a firmware download, a severe drive crash can occur.
If a crash occurs, the drive will restart in a special mode and prompt you to reload the firmware.

ⓘIMPORTANT

An AKD drive executing the resident firmware is detected as a different device than an AKD or AKD2G drive executing the operational firmware.
Re-scan the network and compile it if a drive's executed firmware has changed since the last scan.
KAS uses the File Access over EtherCAT (FoE) protocol.

TIP

Power cycling is recommended after completing the update for all drives.

7 Installing Kollmorgen Visualization Builder

Kollmorgen Visualization Builder (KVB) is used to design HMI running on AKI panels.

KVB is an optional feature that is only included in some licenses.

NOTE

Kollmorgen Visualization Builder contains these two installation packages:

- Kollmorgen Visualization Builder(KVB IDE) for development PC
- Visualizer RT (KVB RT) for AKI panel runtime

7.1 Download

Component	Version
Latest Version of Kollmorgen Visual Builder	v.2.40 [2.43.17.0]
Visualizer RT (KVB RT)	v.2.40 [2.43.17.0]

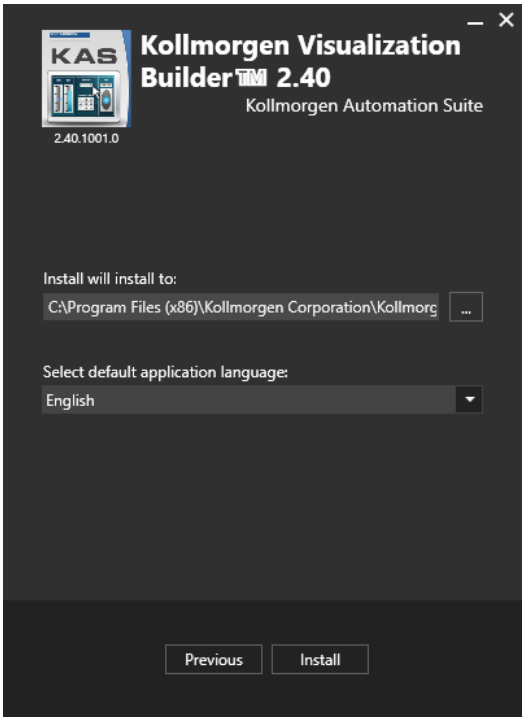
7.2 Installation Procedure

These programs automatically install during the KVB installation.

- Microsoft .NET Compact Framework 3.5
- Microsoft SQL Server Compact 3.5
- Microsoft Visual C++ 2013 - Redistributable Setup

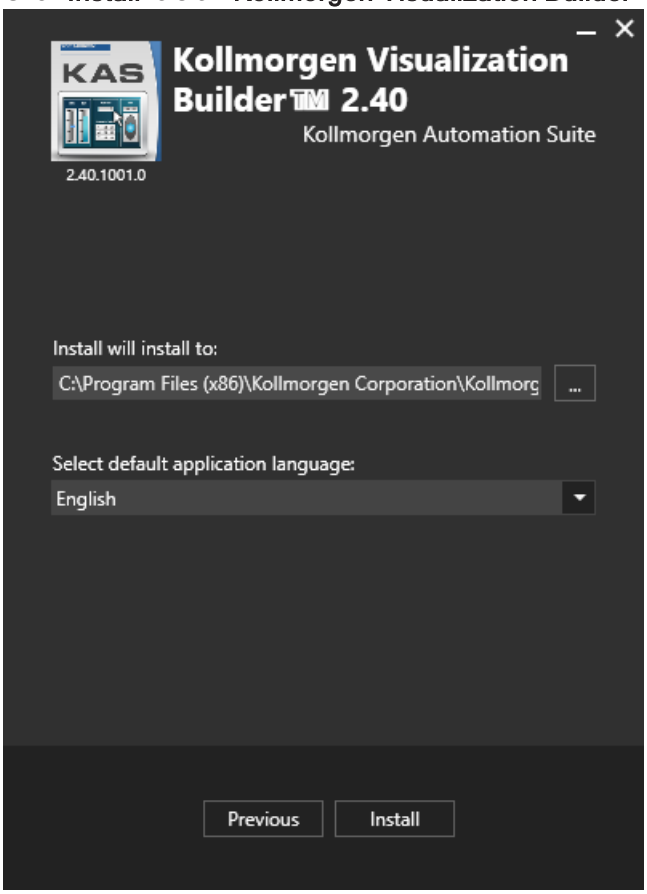
Once Kollmorgen Visualization Builder has finished downloading, complete these installation steps:

1. Double-click the **Setup.exe** file to run the installation Wizard.
   NOTE
   If KVB was already installed and you want to update to a new version, then running **NeoSetup.msi** is enough.
2. Select the check box to accept the License agreement and click **Next** to start installing **Kollmorgen Visualization Builder**.
3. Select where you want to install **Kollmorgen Visualization Builder** and the application language, then click **Next**.



Kollmorgen strongly recommends accepting the default destination folder under `C:\Program Files (x86)\Kollmorgen\Kollmorgen Visualization Builder\`.

4. Click **Install** to start **Kollmorgen Visualization Builder** installation.



5. Click **Close** or to start using KVB right away, click **Launch**.

KVB Manuals	Description
Kollmorgen Visualization Builder™ Quick Start Guide	The Quick Start covers these important points to: • Install and use Kollmorgen Visualization Builder. • Configure HMI Panels and PC operated control applications.
Kollmorgen Visualization Builder™ User Manual	Contains all the content to help with Kollmorgen Visualization Builder.

8 Finalize Installation

Optional: To complete the KAS installation, either:

- Test the system.
- Create a backup image.

8.1 Test the Installation

To conclude the installation, the whole system has to be tested.

A test could be done with the standard Two-Axis Template that corresponds to a simple application.

See the KAS **30 Minutes to Motion** User Manual.

9 Troubleshooting

Faults occur for a variety of reasons, depending on the conditions in your installation.

The causes of faults in multi-axis systems can be especially complex.

TIP

Find more information here:

- The **Troubleshooting** section here: Troubleshooting.
- These sections:
  - Controller Error and Alarm Descriptions
  - AKD2G Faults and Warnings
  - AKD Faults and Warnings
- Search the Kollmorgen Support Network (KSN) at Kollmorgen Support Network for answers or submit a question.

10 Copyrights, Trademarks, Licenses, and Disclaimer

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PCMM2G

The PCMM2G's Operating System (OS) and boot loader (U-Boot) are based on free and open-source software.

- The individual copyright notices, license texts, and disclaimers of warranty for the software components are located in the controller, under the directory: /usr/share/common-licenses/.
  - For more information about accessing the PCMM2G's files, see SSH Login to a Controller.
- The OS, bootloader, and their software component's source codes including modifications, copyright notices, license texts, disclaimers of warranty, and the compilation scripts to build the OS image are available at the Kollmorgen webpage PCMM2G Operating System (OS) License Sources.
- The OS image and its corresponding sources file is identified by an "OS-Sources" designator, followed by its version number: OS-Sources-x.xx.x.xxxxx.
- The compilation scripts and sources file are available at the Kollmorgen webpage PCMM2G Operating System (OS) Build Sources.
- See PCMM2G - File Naming Conventions in the KAS online help.

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- Mongoose Library software (distributed under the MIT License - see Mongoose license).
- Qt Framework cross-platform SDK (distributed under the terms of the LGPL3; Qt source is available on KSN).
- the Qwt project.
- U-Boot, a universal boot loader is used by the AKD PDMM and PCMM (distributed under the terms of the GNU General Public License 2.0).
- Zlib software library (distributed under the Zlib License).

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Technical changes which improve the performance of the device may be made without prior notice!

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Kollmorgen Support Network

See the Kollmorgen Support Network for product support, product downloads, knowledge base answers, and information.

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