Rockwell Automation

Kinetix® Motion – Modernization & Migration

expanding **human possibility**®

PUBLIC

Agenda

1 Understand the Path

2 Consider the Architecture

3 Consult the Resources

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Understand the Path

Step Forward to Modernization

Steps along the modernization path

WHY MODERNIZE?
Better performance, greater flexibility, and more informed decisions

EVALUATE
Determine if you will reuse, replace, or redesign the hardware

EXECUTE
Use Rockwell Automation® + partners to help you execute your plan

STEP 1: Why?

STEP 2: Evaluate the Machine + Application

Step 3: Execute

REUSE
You must keep your existing machine and its equipment

REPLACE
You must keep your existing machine but replace some hardware

REDESIGN
You will redesign all or most of the machine and application

Whitepaper – Consider Motion Modernization
Whitepaper – Step Forward to Motion Modernization

Modernization Path: Step 1 – Why?

What does modernization mean?

STEP 1: Why? | STEP 2: Evaluate your Machine + Application | Step 3: Execute

WHY MODERNIZE?
Better performance, greater flexibility, and more informed decisions

Modernization may be necessitated by outdated components, but it can also bring improvements:

- **Higher productivity**
- **Improved human and machine safety**
- **Increased energy efficiency & sustainability**

Modernization Path: Step 2 – Evaluate your Machine + Application

Reuse

STEP 1: Why? | STEP 2: Reuse | Step 3: Execute

REUSE
You must keep your existing machine and its equipment

REUSE (Implementation: easiest):	Engineering Time	ROI	Cost	Expertise
	low	low/med	low	low/med

When leveraging existing machine hardware, modernization may be realized by upgrading software and firmware.

Modernization Path: Step 2 – Evaluate your Machine + Application

Replace

STEP 1: Why? | STEP 2: Replace | Step 3: Execute

REPLACE
You must keep your existing machine but replace some hardware

REPLACE (Implementation: medium):	Engineering Time	ROI	Cost	Expertise
	med	med	low/med	med

Replacement may be a small retrofit:

- **Keep controller and network but replace drives and IO systems**

...or may be a small to medium retrofit:

- **Keep controller but replace the drive and network technology**

Modernization Path: Step 2 – Evaluate your Machine + Application

Redesign

STEP 1: Why? | STEP 2: Redesign | Step 3: Execute

REDESIGN
You will redesign all or most of the machine and application

REDESIGN (Implementation: harder):	Engineering Time	ROI	Cost	Expertise
	high	high	med/high	med

Revisiting the design of your machine can uncover opportunities for improvements in flexibility, sustainability, and maintainability.

Modernization Path: Step 3 – Execute

What does execution entail?

STEP 1: Why? → STEP 2: Evaluate your Machine + Application → Step 3: Execute

EXECUTE
Use Rockwell Automation® + partners to help you execute your plan

Rockwell Automation has an extensive ecosystem to support you. Be sure that your modernization plan is executed at YOUR pace.

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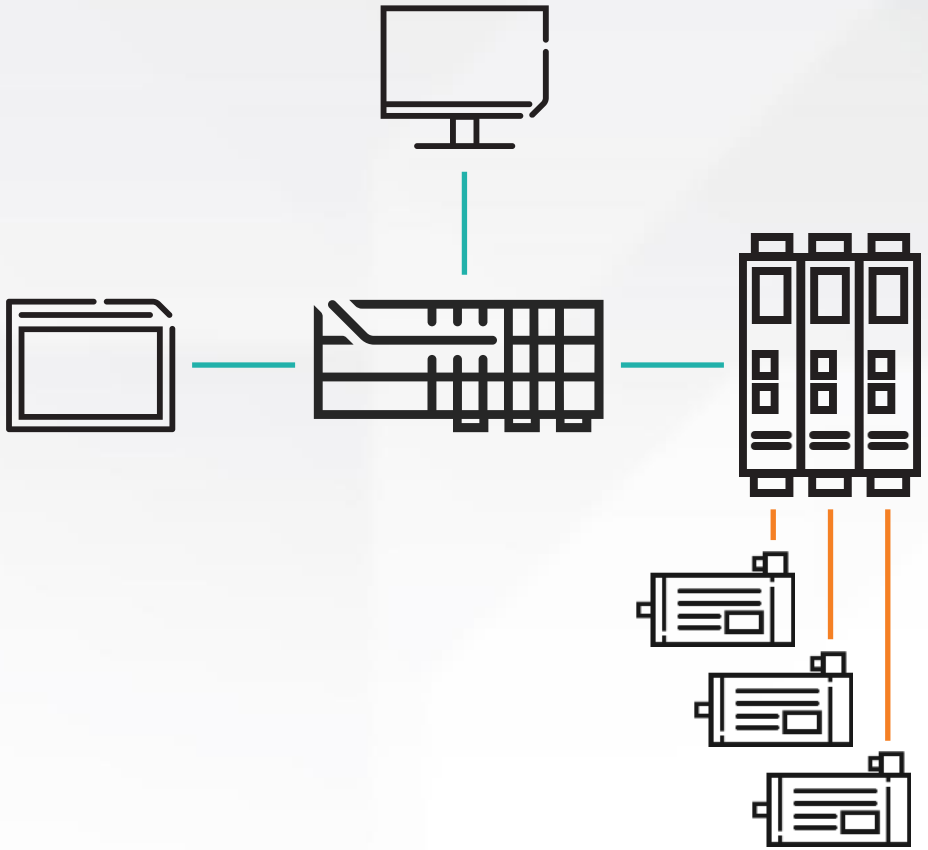
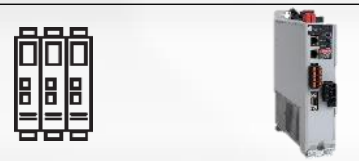
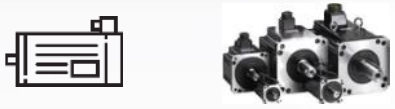
Consider the Architecture

Understand the Components

What components create a motion system?



Motion Control axes consist of:

Controller	
Communication	
Drive Architecture	
Actuator + Feedback	

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Controller - Logix Architectures

Consider modernization requirements

- Will one or more existing controllers be replaced?
- If considering a new controller, do the features & functions meet or exceed the existing?

Leverage available resources

- With Logix, use the Controller's Selection Guide for controller technical information

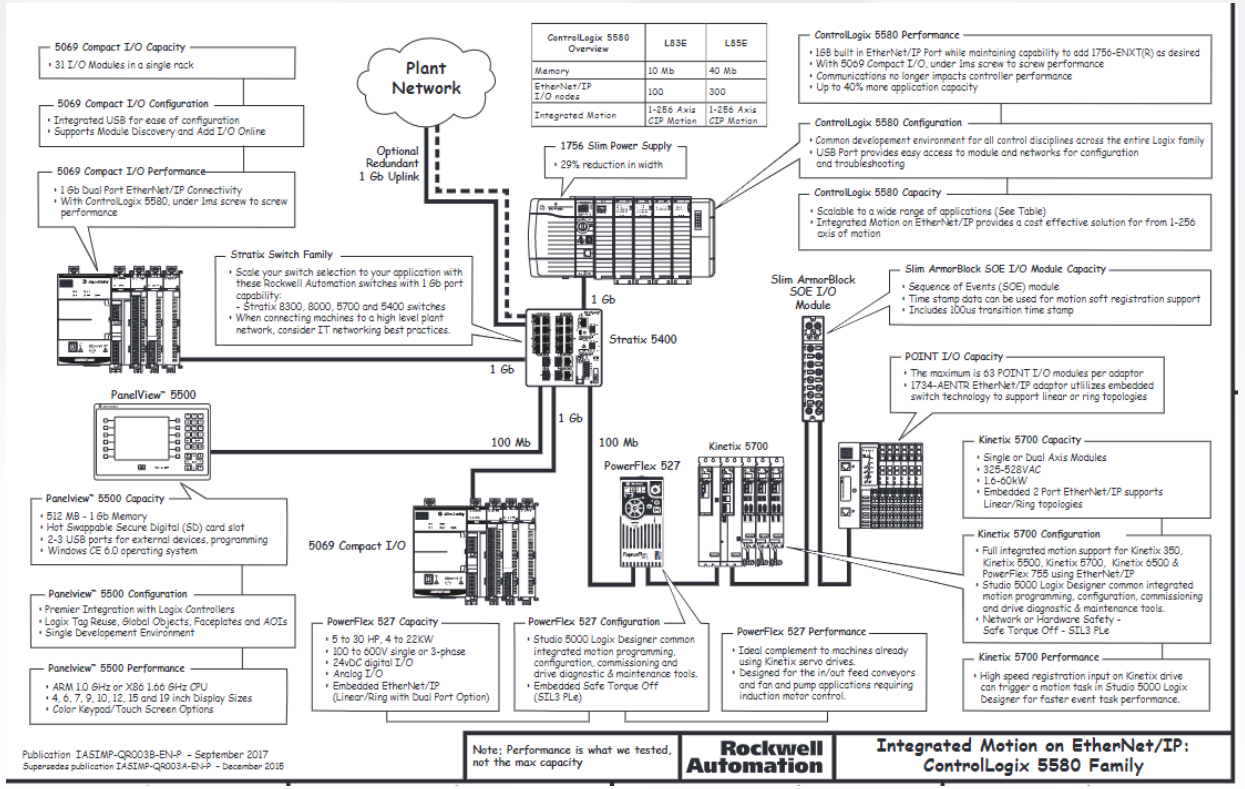
Communication – Discrete or Network

Consider modernization requirements

- Will the existing communication layer be modernized (ex. Sercos to EtherNet/IP)?

Leverage available resources

- Use IAB (Integrated Architecture® Builder) to design and evaluate the network architecture
- See the popular architecture drawings for system layout examples



Drive Families – Add & Mix

Consider drive technologies that were not available in the past

Drive Architecture

Standalone Machines

Kinetix® 5100 Core Features

- EtherNet/IP standalone drive
- Standalone / simple machines
- Low axes count
- Indexing drive
- Hardwired safety
- KNX5100C configuration tool

Small to Medium Machines

Kinetix® 5300 Core Features

- Entry-level CIP motion drive
- Simple to medium machines
- Low axes count
- Hardwired safety
- Load observer

Medium machines

Kinetix 5500 Core Features

- Mid-range CIP motion drive
- Medium machines
- Low axes count
- DC bus-sharing
- Single-axis modules
- Hardwired and network safety
- Load Observer

Large Machines

Kinetix® 5700 Core Features

- Multi-axis CIP motion drive
- Large machines
- High axes count
- Diode / active front end power source with DC bus-sharing
- Single- and dual-axis modules
- Hardwired and network safety
- Drive safety features
- Load Observer

Rotary – Add & Mix

Actuator + Feedback

Consider rotary motor combinations that were not available in the past

Kinetix® TL/TLY

Kinetix MPS / MPF

Kinetix MPL / MPM

Kinetix® RDB

Kinetix® HPK

Kinetix® TLP

Kinetix VPH / VPF

Kinetix VPL / VPC / MPM

Kinetix® RDB

Kinetix® MMA

Wide range of power

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Linear – Add & Mix

Actuator + Feedback

Consider linear motor combinations that were not available in the past

Linear Motors

- High levels of acceleration and servo responsiveness to increase throughput
- No mechanical wear items results in highly reliable motion

Linear Stages / Thrusters

- Varying degrees of payload for high thrust force applications
- Provide an out-of-the-box precise two-dimensional linear motion solution

Linear Actuators

- Flexible servo-controlled rod actuation
- Fully assembled, ready to install
- Clean, energy-efficient alternative to pneumatic and hydraulic actuators

Independent Cart Portfolio

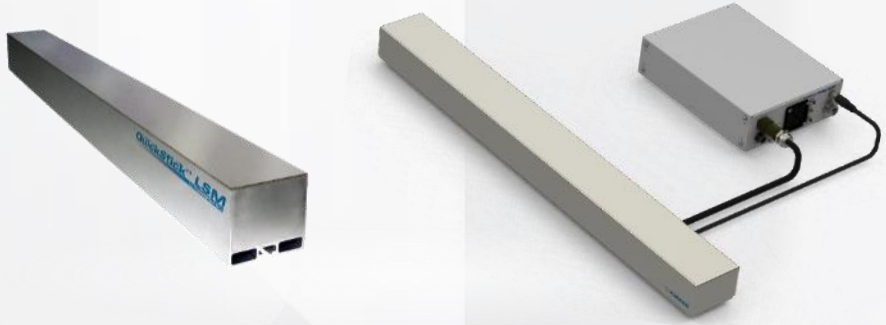
Broadest Portfolio in the Industry

MagneMover® LITE

- Intelligent conveyor system for light payloads (<10 kg)
- Easy design and setup
- Flexible, modular, and scalable
- Simple programming and control of 1,000 s of carts

QuickStick® QuickStick® HT™

- Intelligent propulsion and control system
- Payloads from 10 s to 1,000 s of kilograms
- Flexible, modular, and scalable
- Simple programming and control of 1,000’s of carts



iTRAK® SYSTEM

- Intelligent positioning and flexible conveyor system
- Deterministic closed loop servo performance
- Automatic synchronization with other motion axes
- High dynamic performance and force

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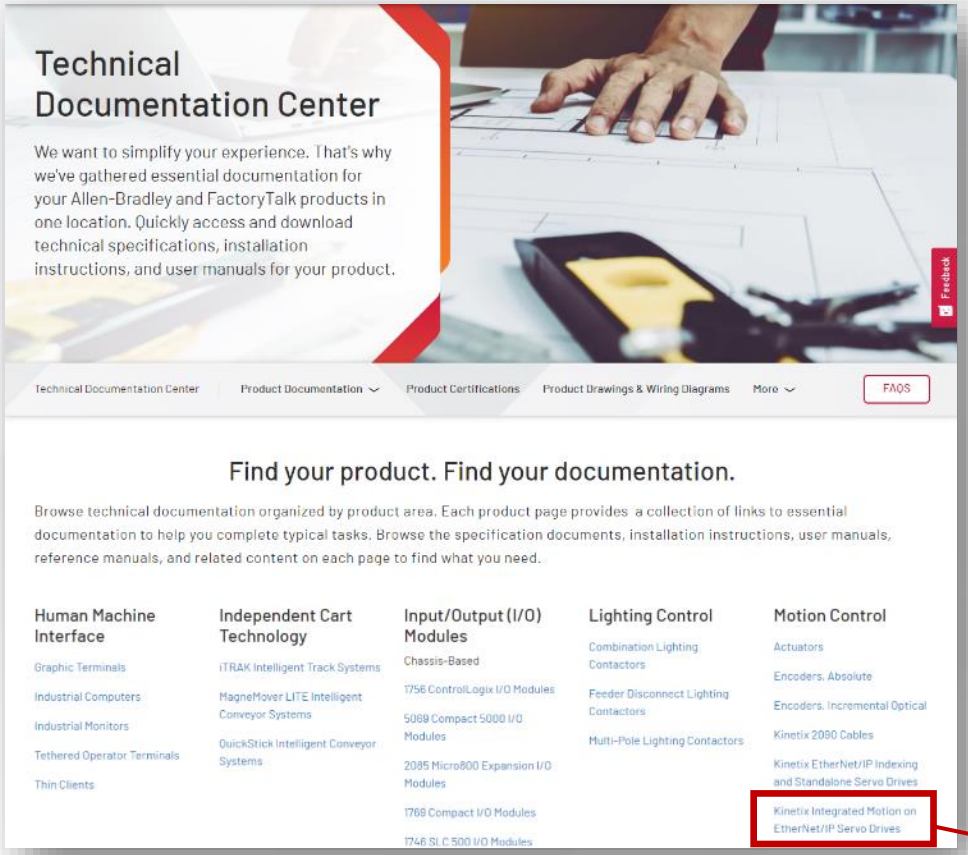
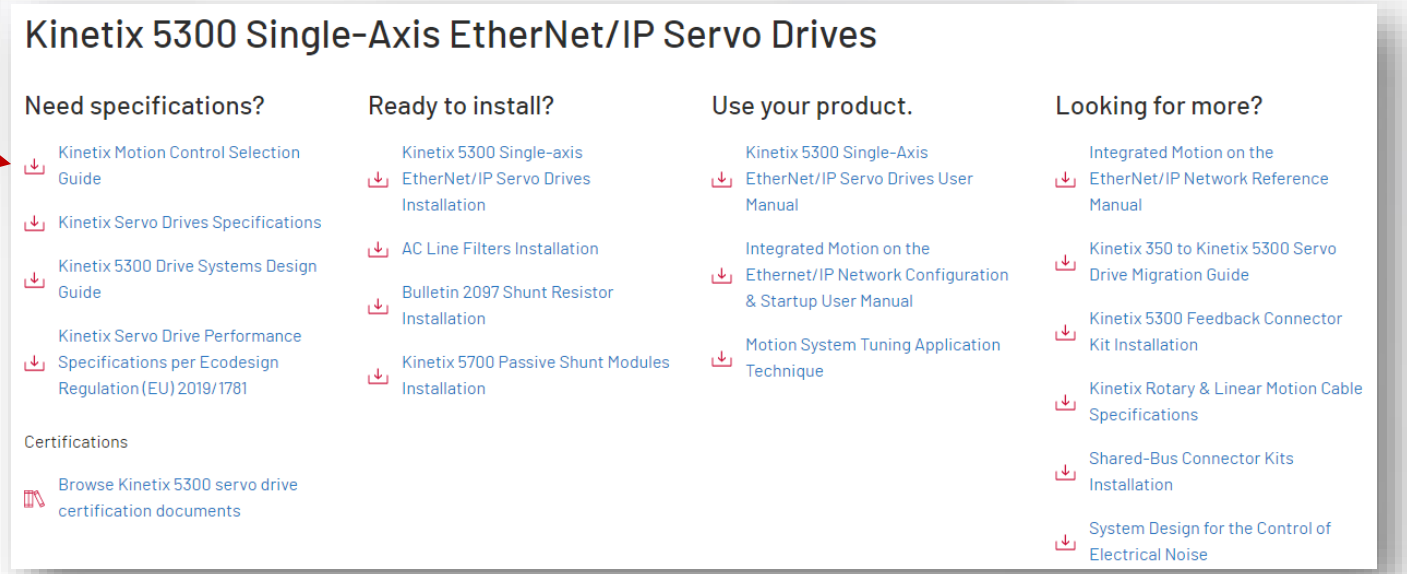
Consult the Resources



Technical Documentation Center

- Access technical content organized by product line
- Each page includes links to essential manuals to help you install, configure, and use your product
- No need for multiple searches; find what you need, all in one place



[Visit the Technical Documentation Center](rok.auto/techdocs)

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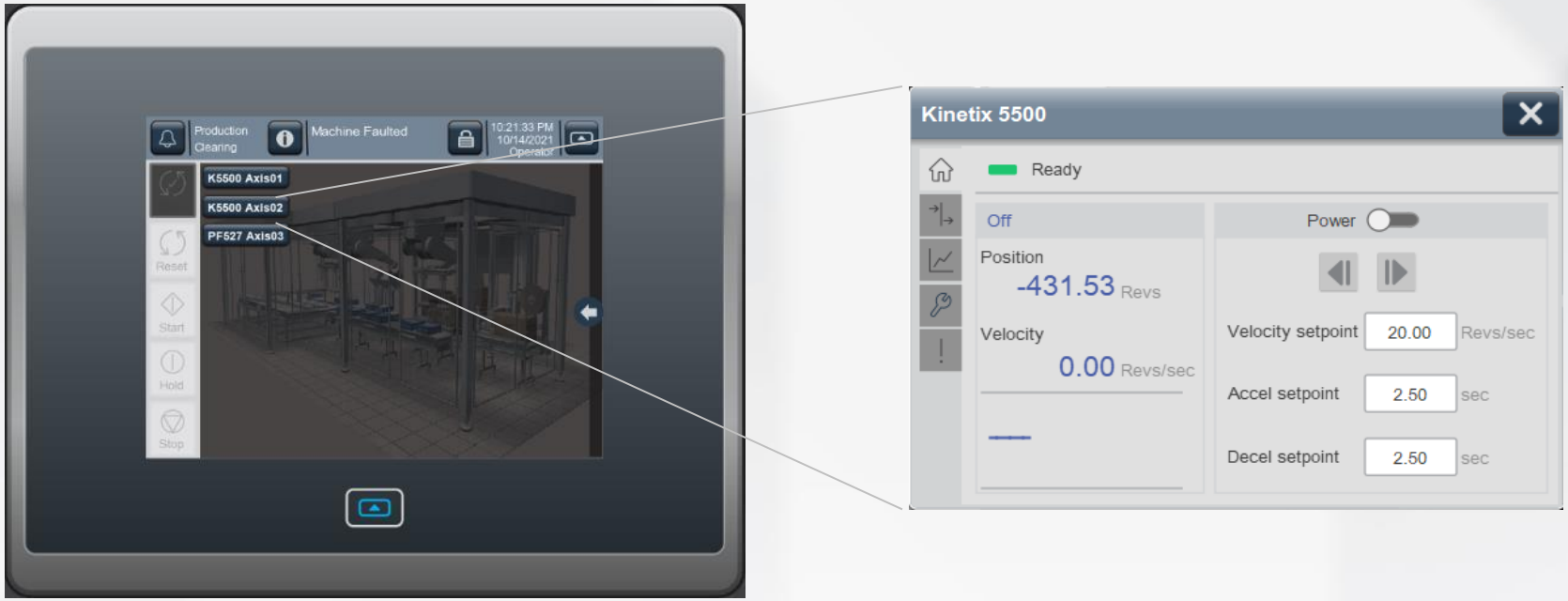
Or scan here.



Rockwell Automation Code Libraries

- Leverage libraries to accelerate design and implementation
- Tested, documented, and lifecycle managed library objects for devices and applications
- Consistent with common industry programming standards
- Available for free on the Product Compatibility and Download Center

Modernization – Resources

We are here to help, consult your Rockwell Automation® resources

You can start here:

Consulting and Integration services

Thank you

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expanding **human possibility**™

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