Nidec

Drives

Machine Control

Contents

Flexible machine control without compromise

We have been innovators in motion control for over 50 years. During this time, we have continuously developed our drive and hardware capabilities, software tools, application solutions and global support network to ensure peak performance in machines all around the world.

Our comprehensive machine control offering is fully scalable to meet your operational and budgetary requirements without compromising on performance. Using our technology to make your machines smarter can be done with minimal investment.

Nidec Drives - The only motion supplier you need

With ever more complex designs, single machines are expected to perform more operations, with varying loads or materials, while the control of accuracy, efficiency and performance remains vital. Whether you are running applications with single or 50+ axes, we can meet all your motion requirements with scope for future advancements.

Enhancing your machines with our technology

Our motion control products bring many benefits to your machines and can work in standalone applications, or together on a full production line.

The scalable nature of our machine control solutions provide increasing capabilities through the number of axes they can manage, along with performance levels such as execution times and accuracy.

All components integrate to create comprehensive motion architecture, blending multiple platforms to manage both sectional and full machine automation control.

Moreover, our software, programming tools, and user interfaces seamlessly synchronise with your machinery, simplifying setup and operation while providing the flexibility needed for future expansion.

Motion control highlights

Empowering businesses to maximise operations

We want to empower you to be self-sufficient, but you will always have the design, commissioning and engineering expertise of Nidec Drives available to you to ensure your machine meets its essential operational, energy-saving and performance targets.

Minimal investment, maximum performance

Our decentralised control solution leverages the on-board motion control capabilities of the drive, often eliminating the need for costly external components such as PLCs, additional wiring, and other hardware. This approach enhances response times by enabling efficient on-drive processing, thereby avoiding signal delays. Additionally, our free PC tools and Application Solution software will reduce development time and optimise the use of your engineering resources.

Universal integration with external PLCs

Our products seamlessly integrate with all major PLC brands, such as Siemens and Rockwell, as well as any CODESYS-based controller. This gives you the opportunity to increase performance or expand machine flexibility in line with diversifying machine outputs. Nidec Drives solutions can augment existing architecture rather than having to redesign the whole process.

Scalable motion programming for all skill levels

Our motion programming solutions cater for users of all skill levels, ensuring optimal performance and synchronisation of our hardware.

- Our entry level PTi210 option module uses Power Tools Studio, requiring no specialised skills or coding.
- Machine Control Studio enables motion with on-board PLC or MCi modules, offering a flexible and intuitive programming environment.
- PLC Controlled Motion allows multi-axis applications with a PLC or Motion Controller without software development.
- MCe and MCz Motion Controllers are compatible with common open CODESYS programming.

The above software packages are free of charge, support multiple skill levels and aim to connect all the elements of your automation, to meet machine performance requirements.

Easy user interface to optimise machine set-up and operation

We provide our customers with the tools to maximise their machines' potential during setup, operation, and future expansion phases. Along with our PC Tools, we offer exceptionally intuitive, multilingual keypads, apps, and HMIs with enhanced displays to easily access drive features and maximise machine productivity.

These tools include:

- Easy-to-follow configuration wizards
- Detailed parameter and diagnostic help tools
- Wireless and remote connectivity
- Clear and intuitive graphical displays for operating instructions and system monitoring

These features support you throughout the lifetime of your application, ensuring optimal performance and ease of use.

Safe motion, protecting people and productivity

Our drives feature integrated Dual Safe Torque Off (STO) inputs, certified to SIL3 / PLe, providing a reliable and efficient safety solution. The addition of an MiS safety module further enhances functionality, allowing for advanced safety functions such as SLS, SSM, SLP, and SDI to safely monitor and restrict motion.

For maximum flexibility in safety system architecture, these modules support both wired and network safety connections, integrating with external safety controllers using CIP-Safety on EtherNet/IP or Safety over EtherCAT (FSoE) as part of a factory-wide system. This ensures workforce safety, maximises productivity, and allows issues to be safely resolved while meeting essential safety standards. Often, our technology eliminates the need for a separate safety PLC, reducing costs, installation, and setup time.

Scalable
motion control

Our Machine Control Solution offers multiple levels of motion control. This provides you with the flexibility to choose the right Motion Controller based on the complexity of your application and the number of axes you need to control.

MCz601
Controller for up to 50 axes.*

MCz201
Controller for up to 20 axes.*

MCe200
Controller for up to 10 axes.*

PLC Controlled Motion
Motion package on-board of the Machine PLC.

MCi200/210
Integrated controller for up to 4 axes.*

PTi210. Simple, fast and effective motion control solutions to control up to 1.5 axes.*

Advanced Motion Control (AMC) & On-board PLC
Controller for up to 1.5 axes.*

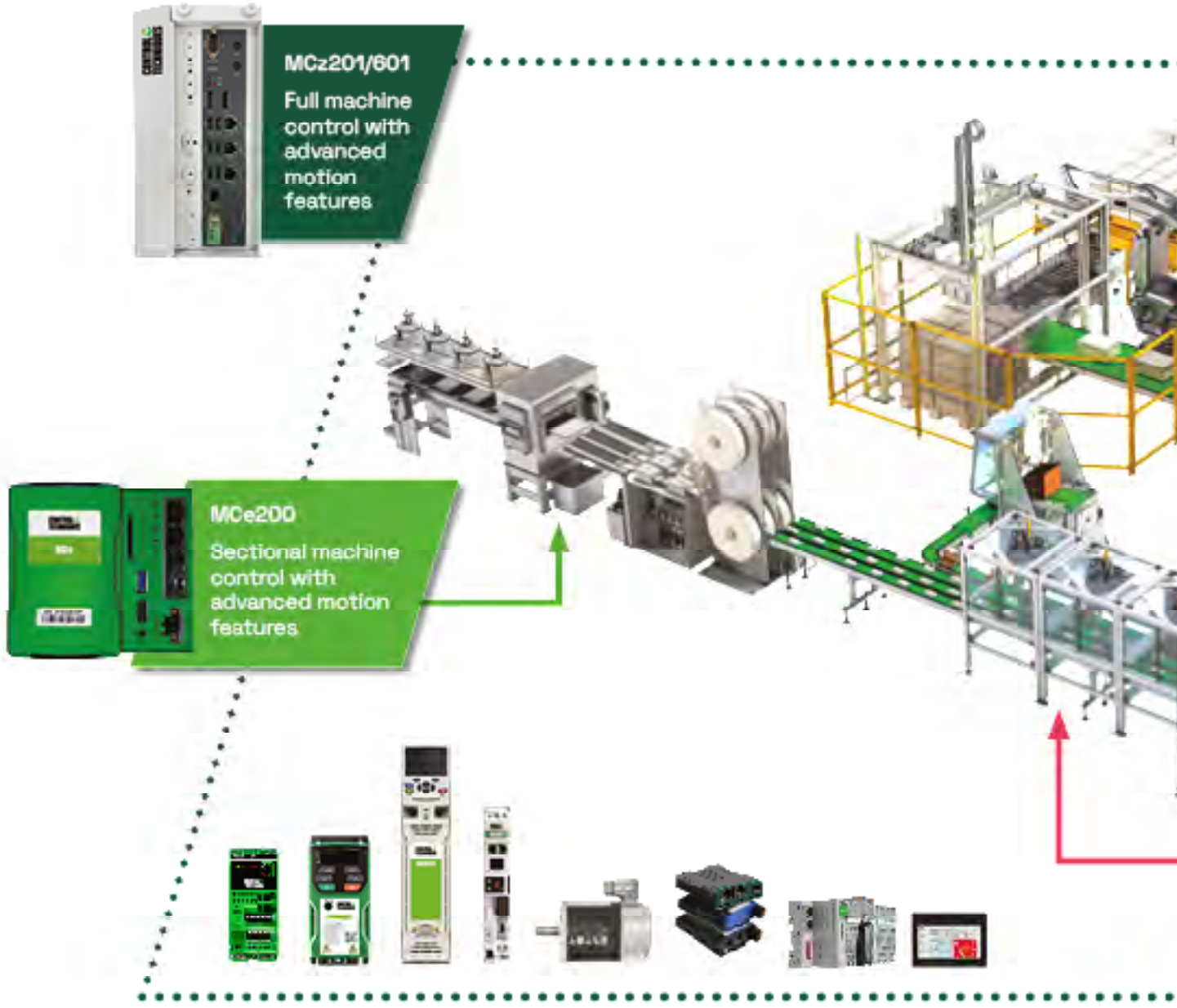
Programmed/configured with	Machine Control Studio	PowerTools Studio
Minimum execution time for the motion task	4 ms	250 µs
	Drive based	Drive + Option based

*Note that the maximum number of axes supported depends upon the required minimum execution time for the motion task.

Machine Control Studio	Connect	CODESYS	CODESYS
250 µs	10 ms	1 ms	1 ms
Drive + Option based	PLC based	Controller based	Controller based

For more details about these products please visit www.controltechniques.com

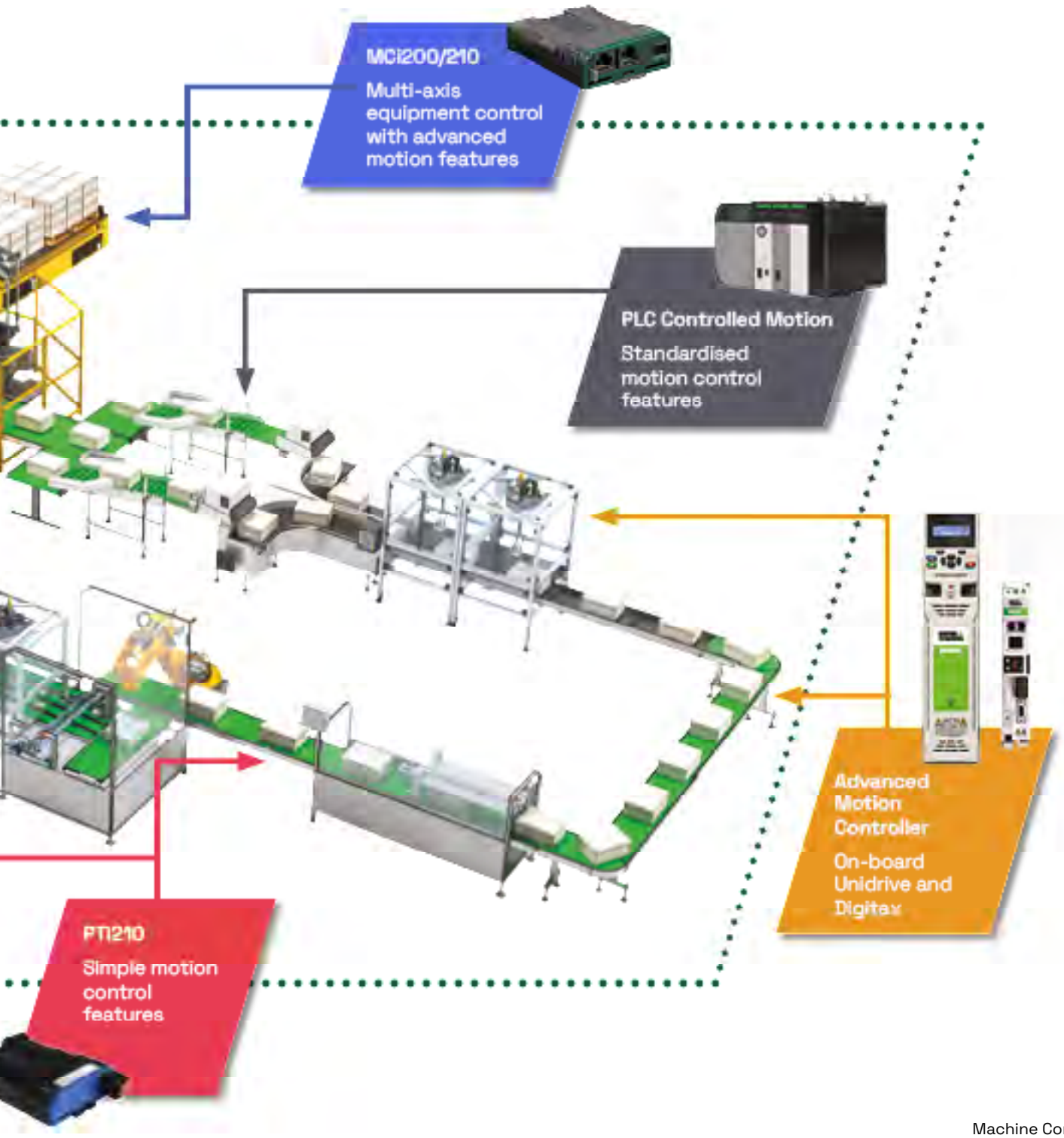
Complete
automation portfolio



For more details about these products please visit www.controltechniques.com

Exceptional performance to suit all budgets

With the flexibility of our product portfolio, you can discover the optimal solution in terms of both performance and cost. Each section of the line can be seamlessly connected, forming a macro environment where your machinery operates at the necessary levels to meet essential business productivity and output targets.

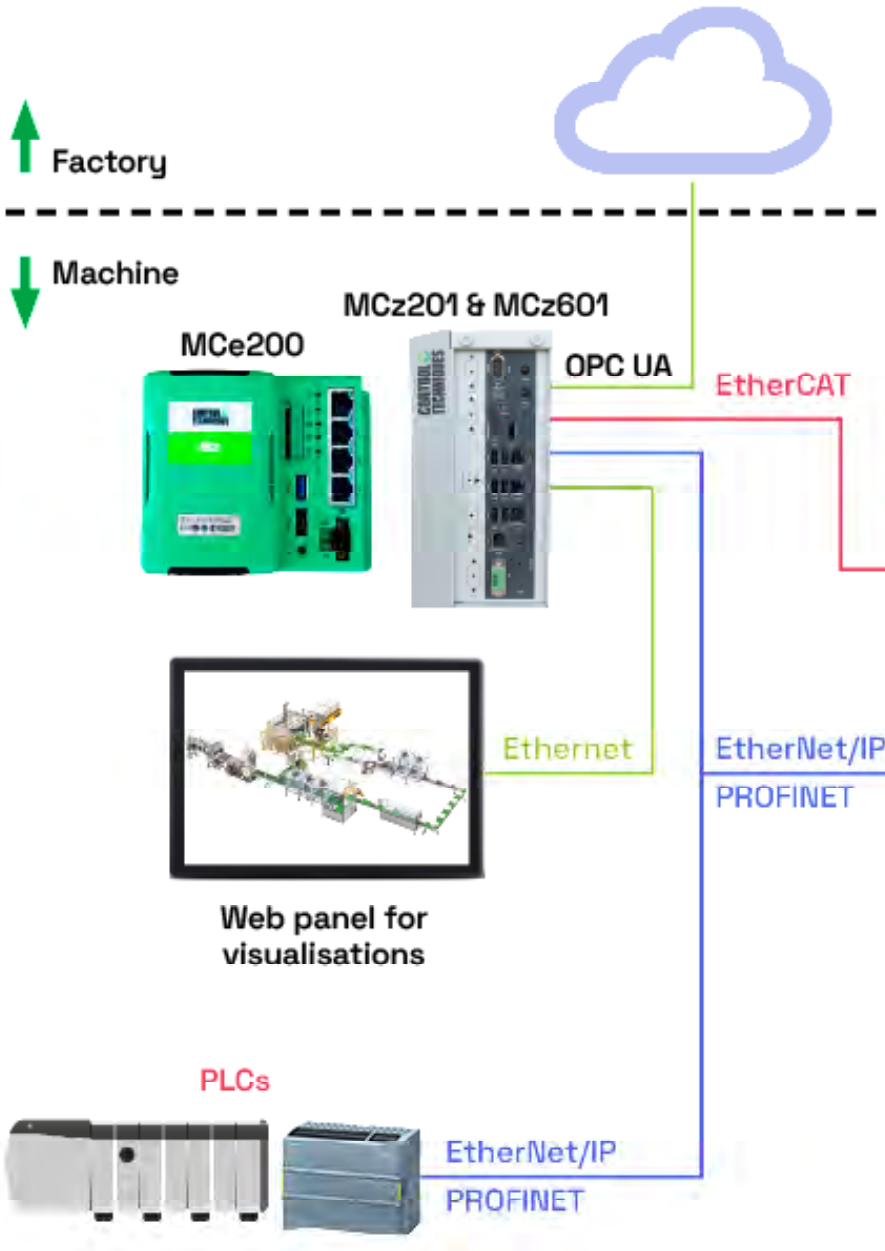


Total flexibility to build the architecture you need

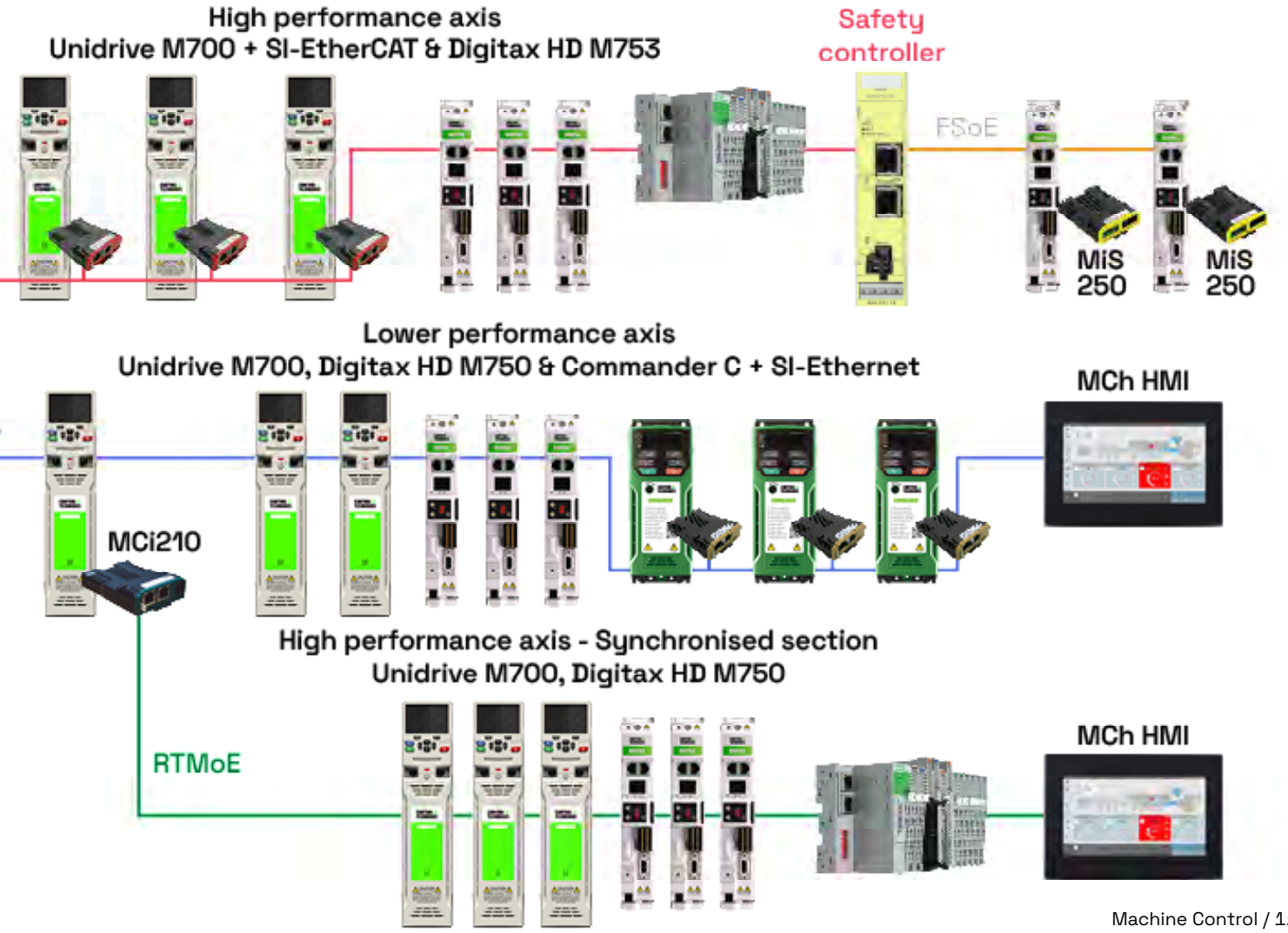
With our versatile product range, building the precise motion architecture you require is simple. By combining different platforms, you can tailor the setup to your needs. For instance, you could have a high-performance section of a production line controlled by a basic PLC for overall line control.

This approach enables you to achieve high-speed/performance control in specifi sections of the line without requiring expensive controllers, thus minimising investment while achieving maximum productivity.

Additionally, any safety controller that utilises standard CODESYS can be seamlessly integrated into the system, ensuring the highest levels of safety to protect your workforce, maximise uptime and meet essential conformance standards.



OPC UA Master – Link up to factory level and/or monitor on machine cabinet for application visualisation



Nidec Drives

Integrated safety
The new paradigm of system design

Modern industrial processes face a three-fold challenge: the constant demand for increased machine throughput, matched by a parallel need to reduce complexity and points of failure, all the while ensuring the health and safety of human operators and allowing them interaction with the running process.

Modern system design includes replacing traditional electro-mechanical safety components with the integrated safety capabilities of variable speed drives. This is the new standard across industries to provide maximum protection for the people using the equipment.

Our drives offer integrated single or dual Safe Torque Off (STO) inputs, certified to SIL3 / PLe, providing a smarter and more reliable solution over traditional motor contactors.

MiS210/250

Enhanced and flexible motion safety

Deploying a distributed safety architecture reduces wiring cost and software complexity.

Our MiS safety option modules extend the built-in STO with motion safety capabilities and offer flexibility with the option of safety over network connectivity. This can reduce the demand on, and consequently the cost of, the central safety PLC, while also decreasing wiring requirements and improving reaction times.

Installing safety option modules is straightforward as they simply click into place without requiring screws or additional mounting equipment. Once installed, the safety functions provided by the MiS option modules seamlessly integrate into the drive's feature set and can be programmed using our Connect commissioning PC tool. Leveraging the Safe EnDat protocol, the MiS safety option modules achieve up to SIL3 / PLe with just a single encoder.

MiS option modules add the following motion safety functions to Unidrive and Digitax:

- Safe Stop 1 (SS1)
- Safe Stop 2 (SS2)
- Safely Limited Speed (SLS)
- Safe Operating Stop (SOS)
- Safe Direction (SDI)
- Safe Speed Monitor (SSM)
- Safe Emergency Stop (SES)
- Safely Limited Position (SLP)
- Safely Limited Acceleration (SLA)
- Safe Brake Control (SBC)
- Two Hand Control

The MiS safety option modules have been independently assessed by TÜV Rheinland to meet the following standards:

- IEC 61508 SIL3
- IEC 62061
- ISO 13849-1 PLe
- IEC 61800-5-2
- European Machinery Directive 2006/42/EC

Additionally, these motion safety functions can be controlled over the following safe networks:

- Safety over Ethernet with CIP Safety
- Fail Safe over EtherCAT, FSoE

TÜVRheinland CERTIFIED

Safety over EtherCAT®

CIP Safety™

For more details about these products please visit www.controltechniques.com

On-board Advanced Motion Controller (AMC)

Unidrive and Digitax, your powerful low-cost solution

For applications requiring motion control on a single axis, such as simple or synchronised conveyors, there's no need to incorporate an external controller. Our high performance drives feature AMC and PLC capabilities on-board the drive. These, along with the standard capability to connect an additional line encoder, make for a highly cost-effective, compact, high-performance motion solution.

The on-board AMC offers a powerful yet cost-effective solution capable of performing various motion functions, including:

- Motion profile generation
- Electronic gearbox
- Simple cam profiles with point-to-point selectable interpolation
- Homing function
- High-speed position freeze (Touch probe)
- Drive Master/Follower functionality

There are multiple ways of configuring these features through the keypad or our intuitive Connect commissioning software, with wizards to guide you through the process.
See page 34 for more details.

With the on-board PLC, you can perform sequencing to control motion functionalities. This can be programmed using Machine Control Studio, which provides a flexible and intuitive environment. See page 32 for more details.

Typical applications:

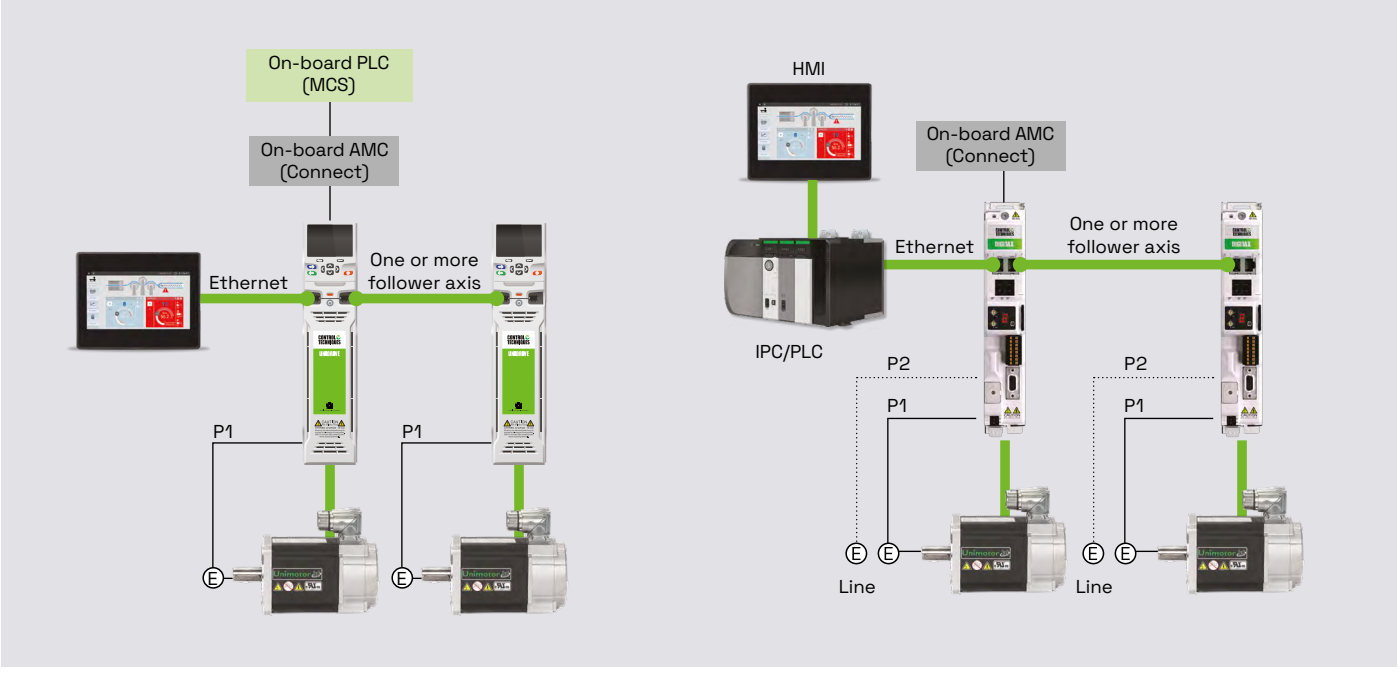
- Speed and position control for gearing and ratio control
- Winding (coilers)
- Intelligent conveyor
- Metal cutting
- Test stands
- Textiles
- Woodworking
- Tyre manufacturing

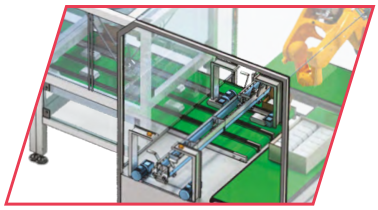
AMC and an on-board PLC are available on both Unidrive and Digitax. They are compatible with our Remote IO and HMI panels. The integration of these components ensures that all motion elements function cohesively, and the system remains user-friendly for operation and performance monitoring.

To see more detailed information about the Remote IO and HMI, you can refer to:

Page 26 for details on Remote IO

Page 28 for details on HMI.





PTi210 and PowerTools Studio Motion Made Easy™

Configure motion control applications in minutes

For single-axis motion with complex controls like flying shear or phase synchronisation, the PTi210 and PowerTools Studio software package is ideal. With over 50 years in motor control, our next-gen Motion Made Easy™ solution for Digitax and Unidrive drives ensures rapid deployment with no software development needed—just plug in the PTi210 module and connect the software to your PC. Set up complex applications in minutes through parameter adjustment and function selection.

Upgrading from legacy Epsilon EP and SM-EZMotion applications to PTi210 is straightforward. This solution is also compatible with our Remote IO and HMI panels for smooth integration and easy performance monitoring.

PTi210 PowerTools integration module

PTi210 is a cost effective way to provide simple, fast and effective motion control solutions.

Characteristics include:

5 high speed digital I/O points (3 inputs & 2 outputs) in addition to the on-board drive I/O.

1.5 axes synchronised encoder following with an optional encoder system integration module.

It provides rapid integration for applications such as:

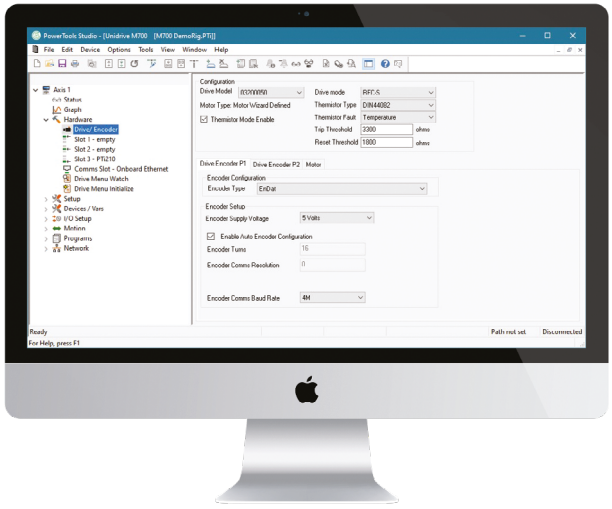
- Conveyor synchronisation
- Parts alignment
- Rotary knife
- Electronic gearing
- Phase synchronisation
- Slip compensation
- Feed to sensor/ torque
- Point-to-point positioning
- Thermoforming
- Flying cutoff
- Product spacing
- Traverse winding
- Labelling and printing
- Random infeed control
- Web control
- Multi-lane merge control
- Registration control

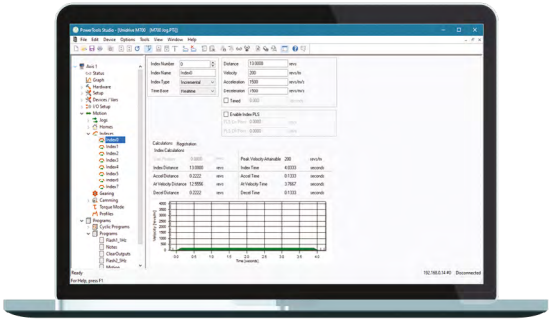
PowerTools Studio software

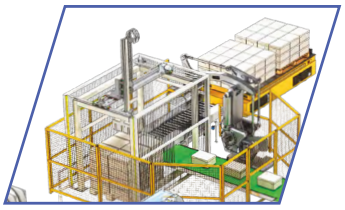
PowerTools Studio offers an unmatched setup and commissioning experience for users of all skill levels, whether professional motion control engineers, occasional users, or those with no servo experience.

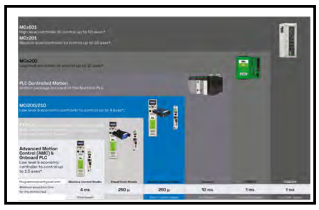
Key features include:

- Easy configuration and programming of Digitax or Unidrive drives.
- Connectivity via Modbus RTU or Ethernet.
- A user-friendly visual interface with simple configuration and programming tools.
- Fill-in-the-blank, point-and-click, drop-down menu selections.
- Drag-and-drop parameters and I/O assignments.
- Instant access to all parameters through the project tree view.









MCi200 and MCi210
High performance machine control

For high-performance motion on single or synchronised multiple axes, there's no need for an external controller. MCi option modules, combined with the Advanced Motion Controller in Unidrive M700 or Digitax, extend machine control capabilities. MCi facilitates easy connectivity of additional components and software, creating a complete application solution.

This flexible plug-in option module format streamlines system design by eliminating the need for PLCs and extra external equipment. Machine control is quickly achieved with the user-friendly Machine Control Studio software, which uses the industry-standard IEC 61131-3 programming environment.

MCi200

MCi210

Build high performance systems and productive machines

MCi modules execute comprehensive programs that control multiple drives and motors simultaneously across real-time networks. RTMoE (Real Time Motion over Ethernet) uses the Precision Time Protocol (IEEE1588 V2) for synchronisation and communication between drives. Performance is optimised by embedding a motion controller in each networked drive.

Decentralised control

Centralised control

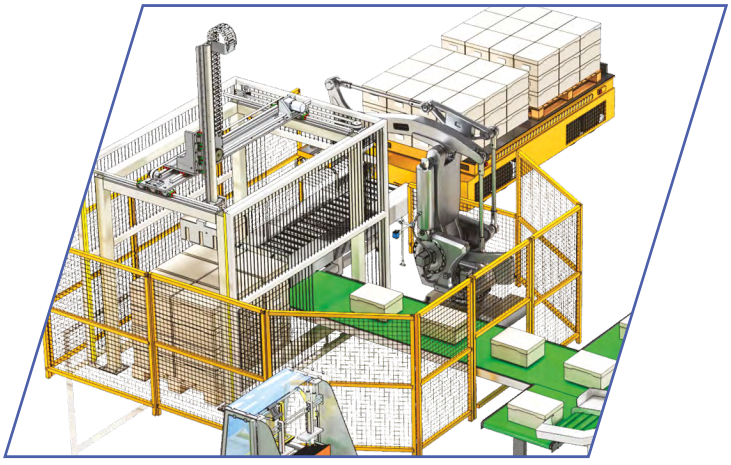
For more details about these products please visit www.controltechniques.com

Full control with MCi option modules

- **High-speed communications:** Achieve optimal performance with 250µs high-speed communications.
- **High bandwidth:** Control multiple drive and motor axes using MCi210's second Ethernet port.
- **Ease of use:** Quickly create machine control programs in Machine Control Studio, designed with extensive human-centered research and based on the IEC 61131-3 standard.
- **IEEE 1588 Ethernet Protocol and IEC 61131 Software** offer open machine control programming, enhancing component connectivity options.
- **Streamlined design:** The plug-in option module format reduces wiring, physical space, and costs while simplifying design.
- **User programming:** MCi option modules are programmed via Machine Control Studio, supporting all five IEC 61131-3 programming languages (ST, LD, FBD, SFC, IL) and Continuous Function Chart (CFC).
- **Optimum connectivity:** Easily integrate with external components like I/O, HMIs, and other networked drives using Unidrive and Digitax's standard Ethernet ports (with RTMoE or standard protocols) or fieldbuses supported by SI option modules (EtherCAT, PROFINET, PROFIBUS, POWERLINK, CANopen).

MCi210 features include:

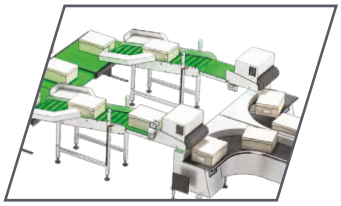
- Two Ethernet ports with an internal switch.
- Support for standard Ethernet protocols, along with RTMoE for PTP (IEEE 1588) synchronisation.
- Modbus TCP/IP master (up to 5 nodes).
- Parallel interface with drive processor provides faster data exchange.
- Machine control over two segregated Ethernet networks enables greater flexibility in machine design.
- Extended connectivity with 3 x digital inputs, 1 x digital output and 1 x digital I/O.



This solution is compatible with our Remote IO and HMI panels, ensuring seamless integration and cohesive operation of all motion components. It also simplifies operation and performance monitoring.

To see more detailed information about the Remote IO and HMI, you can refer to:

Page 26 for details on Remote IO. Page 28 for details on HMI.



PLC controlled motion

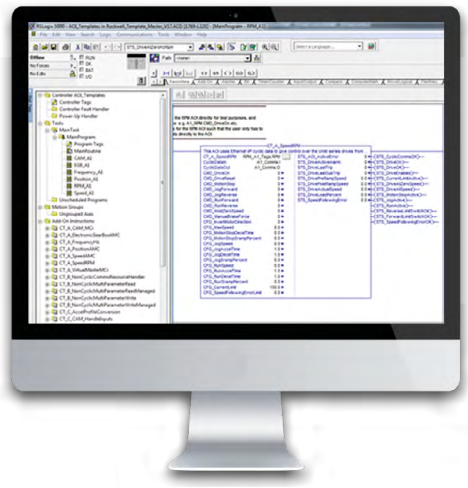
Bring high performance motion to a standard PLC

Application benefits

- **Enhanced performance:** Utilising the Advanced Motion Controller (AMC) on-board the drive provides significant performance benefits and allows for complex, high-performance motion independent of the external PLC's performance and computational power.
- **Simplified setup:** The use of PLC function blocks and the Connect PC Tool wizard simplifies the creation of motion, drive commissioning, and PLC control logic.
- **Wide compatibility:** Designed to work with Siemens, Rockwell, or any PLC/Controller that runs with standard CODESYS.

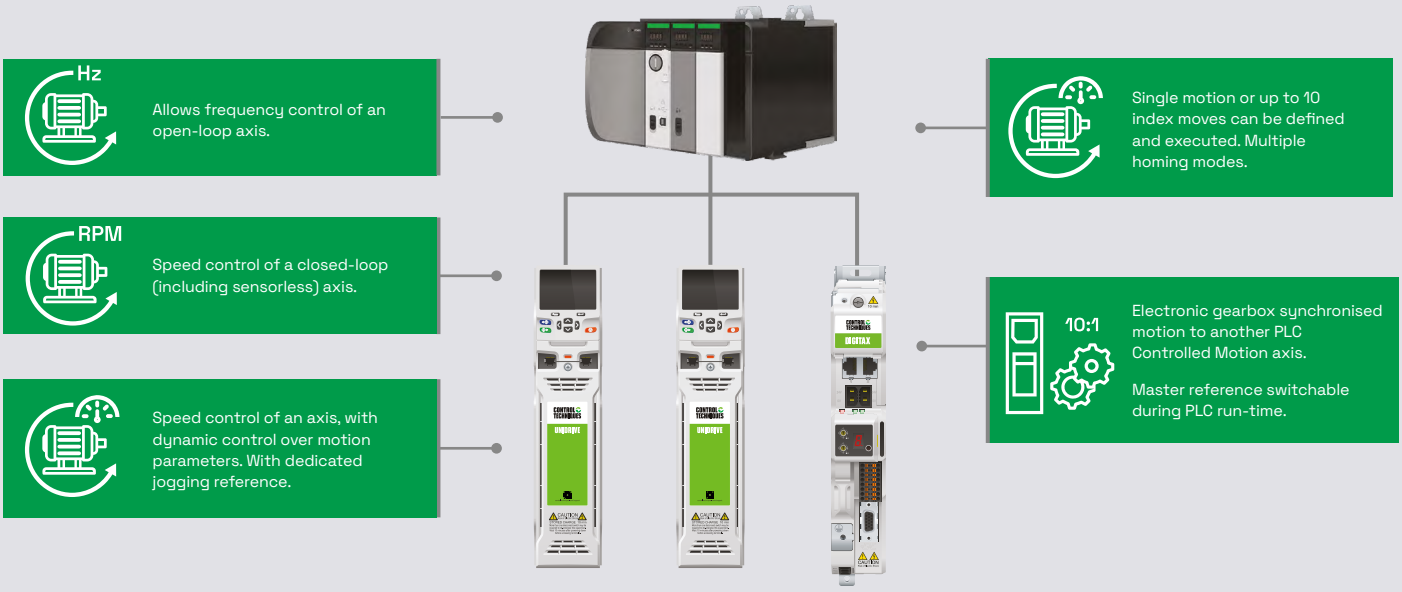
Installation and configuration

- **Comprehensive installation:** A single installation includes PLC function blocks, example projects, and documentation to facilitate a fast and efficient setup process.
- **Streamlined communications configuration:** PLC Controlled Motion automatically configures communication links between drives and PLC, minimising setup time and allowing more focus on application development.



Motion configuration

Five function blocks provide functionality to support applications across the motion spectrum.

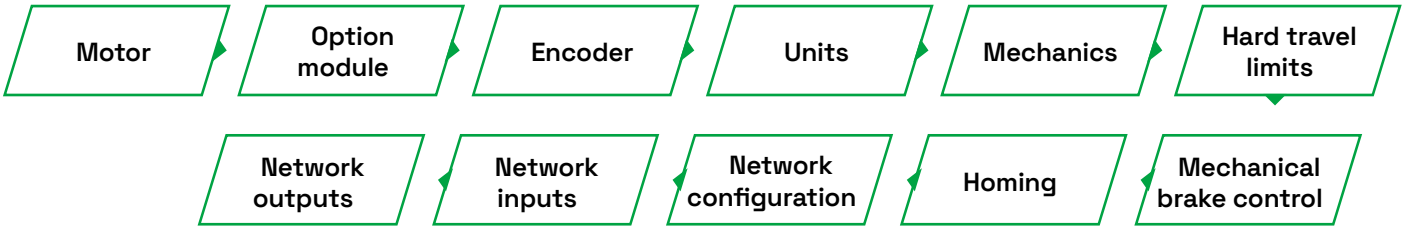


Machine mechanics

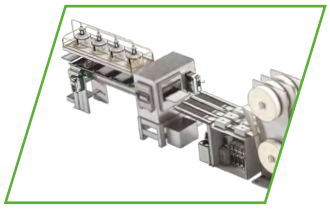
Entering the machine mechanics allows the use of user-selectable units across the application; removing the burden of scaling calculations.

Standard gearbox ratio | Belt and pulley | Ball screw linear slide | Rack and pinion | Conveyor | Worm drives | User defined rotary ratio

PLC Controlled Motion will guide you through the steps needed to easily configure your application.



For more details about these products please visit www.controltechniques.com



MCe200 machine controller

Increase machine throughput with our embedded controller

Our Embedded Controllers are stand-alone Machine Controllers with high performance Motion features that can manage all aspects of industrial solutions.

They run on the Windows operating system and use the latest version of CODESYS, and are fully compatible with third party software or hardware.

Streamlined machine development

Our Nidec Drives solution facilitates fast machine development by integrating logic, motion, and visualisations seamlessly in our programming environment.

Ease of use with open standards

Utilising standard CODESYS ensures ease of use and compatibility with the majority of automation vendors. Most automation engineers are already trained to use it, simplifying the development process.

Maximum choice for component integration

The PC-based architecture, including the Windows operating system, allows easy integration of third-party components. This flexibility empowers machine builders to select the best-in-class components for their applications.

Simple application integration

With four Ethernet and two USB ports, our embedded controller can be effortlessly integrated into any application or machine, ensuring seamless connectivity.

Robust design for reliability

The Embedded Controller features a rugged design without rotating fans or internal cabling, making it suitable for operation in elevated temperatures and dusty environments. This enhances reliability and reduces maintenance requirements

To see more detailed information about the Remote IO and HMI, you can refer to:

Page 26 for details on Remote IO

Page 28 for details on HMI.

Hardware specification:

- Intel® Atom E3825 Dual Core 1.33 GHz
- Windows 10
- Inbuilt NVRAM
- 8GB solid state hard drive
- Multiple 1GB Ethernet ports
- Multiple USB ports
- Real time clock
- SD Card storage for application (not included in the product)
- Fanless
- Operating temp: -20 to 60 °C (-4 to 140 °F)
- DIN Rail mounted

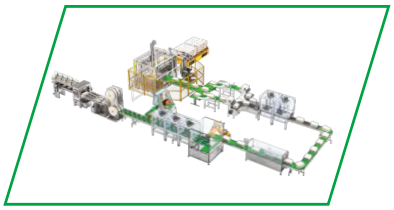
Communication protocols supported:

- EtherCAT Client (PLCopen)
- OPC UA Server
- PROFINET Server
- EtherNet/IP Client & Server
- Modbus TCP/IP Client & Server

Programmed via latest version of CODESYS with these licences included

- SoftMotion
- WebVisu

CODESYS

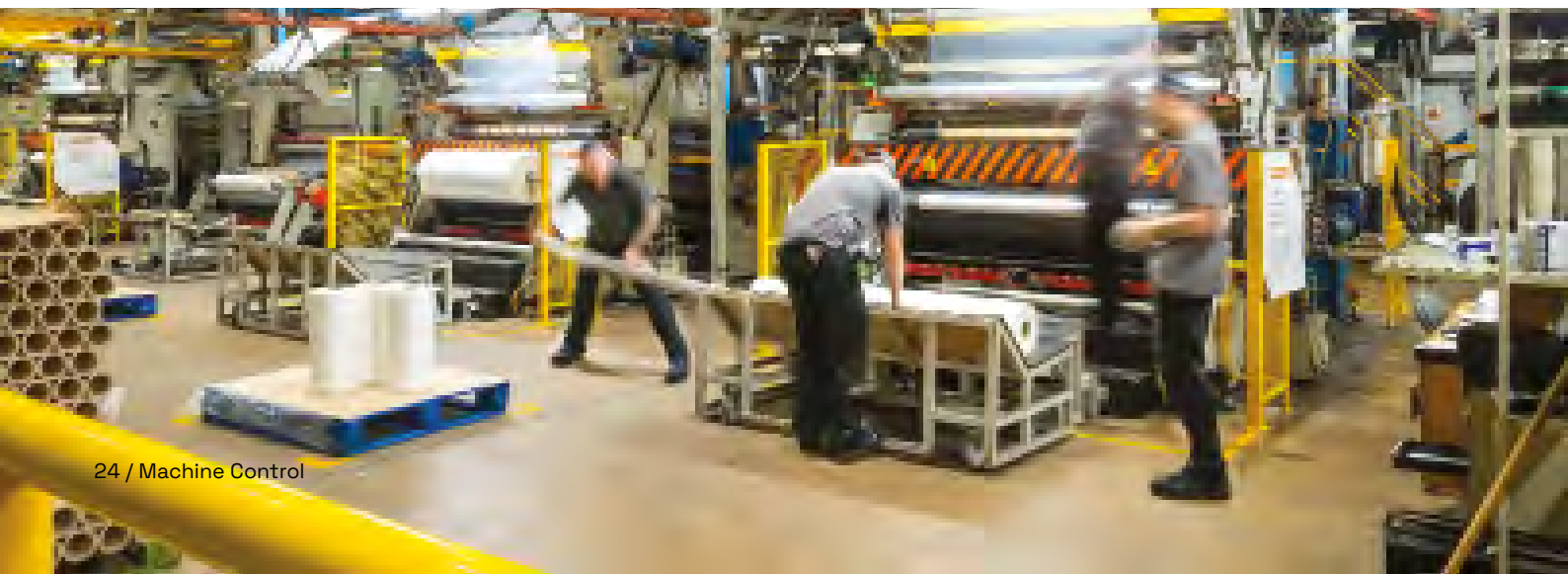


MCz201 and MCz601 machine controllers

Comprehensive machine control

Our Industrial PC Machine Controllers serve as versatile general-purpose computers, managing every aspect of industrial processes and broader tasks like big data analysis. They operate on the Windows OS and the latest CODESYS version, ensuring compatibility with third-party software and hardware while optimising integration with Nidec Drives' products.

The MCz201 and MCz601 are engineered for fast installation and commissioning, addressing the pressure on machine builders to develop products quickly and flexibly. With their robust, flexible design, these controllers streamline development and simplify the integration of components and applications, ultimately enhancing overall efficiency and throughput for all machines.



Our fastest and most powerful machine controller

- Our Nidec Drives solution facilitates fast machine development by integrating logic, motion, and visualisations seamlessly in our programming environment.
- Ease of use ensured through standard CODESYS, widely supported in the automation industry.
- PC-based architecture, including Windows OS, allows easy integration with third-party components, offering flexibility to machine builders.
- Standard on-board interfaces, including multiple Ethernet and USB ports, enable simple integration with any application or machine.
- Robust design of the Industrial PC Machine Controller, without rotating fans or internal cabling, ensures reliability even in harsh environments.
- Compatibility with Remote IO and HMI panels ensures smooth integration and easy operation while monitoring performance.

To see more detailed information about the Remote IO and HMI, you can refer to:

Page 26 for details on Remote IO

Page 28 for details on HMI.

Description	MCz201	MCz601
CPU	Intel® processor via COM Express® type 6: Celeron® G4930E: 2x 2.4 GHz, 2 MByte cache	Intel® processor via COM Express® type 6: Core™ i7-9850HE: 6x 2.7 GHz, 9 MByte cache
Ethernet ports	4x 10/100/1000 MBit/s Ethernet with IEEE1588 support, WOL	4x 10/100/1000 MBit/s Ethernet with IEEE1588 support, WOL
USB ports	3x USB 3.0, 3x USB 2.0	3x USB 3.0, 3x USB 2.0
485/232 ports	1x RS232/RS422/RS485, 2nd COM port optional via adapter module	1x RS232/RS422/RS485, 2nd COM port optional via adapter module
24V	1x RS232/RS422/RS485, 2nd COM port optional via adapter module	1x RS232/RS422/RS485, 2nd COM port optional via adapter module
Temp range	0 °C to + 50 °C (32 °F to 122 °F) planned	0 °C to + 50 °C (32 °F to 122 °F) planned
RAM	Memory 4GB RAM	Memory 4GB RAM
SSD	SSD 128GB 2.5”	SSD 128GB 2.5”
NVRAM	NVRAM mPCIE with 1MB MRAM	NVRAM mPCIE with 1MB MRAM
Video ports	2x DisplayPort, optional 3rd DP or Kontron Widelink via adapter module	2x DisplayPort, optional 3rd DP or Kontron Widelink via adapter module
OS	Windows 10	Windows 10
CODESYS licences	SoftMotion WebVisu TargetVisu	SoftMotion WebVisu TargetVisu

Nidec Drives

Remote I/O

Easily interface with your machine's devices

A series of I/O modules is available for Nidec Drives products, designed to facilitate the management of applications with moderate complexity without the requirement for a PLC system. These modules extend the Remote I/O directly to the drive, providing a seamless real-time connection between our controllers and the machine's sensors and actuators.

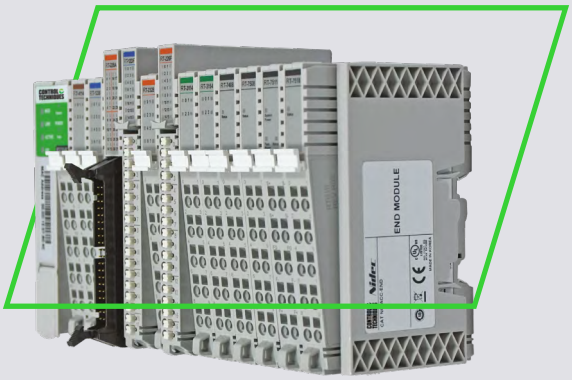
Benefits:

- **Design simplicity:** Ensures easy setup and operation.
- **Field power connection:** Only required on the first module, reducing wiring complexity.
- **Simple DIN Rail mechanism:** Easy plugging/unplugging on DIN rail for convenience.
- **Configuration via Machine Control Studio:** Streamlines setup and customisation.
- **Rugged design:** Ensures longevity even in challenging industrial environments.
- **Simple wiring:** Facilitates straightforward installation and maintenance.
- **Robust wiring:** Provides reliable connections for uninterrupted operation.
- **Compact design:** Ideal for applications with limited space availability.
- **Modular I/O for industrial network**s: Offers convenient expansion and customisation.
- **Guaranteed interoperability:** No network programming required for seamless integration.
- **Full range of digital and analogue slices:** Provides flexibility to accommodate various sensor and actuator types

Specifications:

- Mounts on standard 35mm DIN rails.
- Ethernet network for motion and I/O.
- Use a single programming environment for I/O and motion application development.
- CE, UL approved.
- Temperature range -20 to 60 °C (-4 to 140 °F).
- IP20.
- Compatible with Modbus TCP/IP, EtherCAT.

EtherCAT® Modbus



RTMoE or Modbus TCP Remote I/O

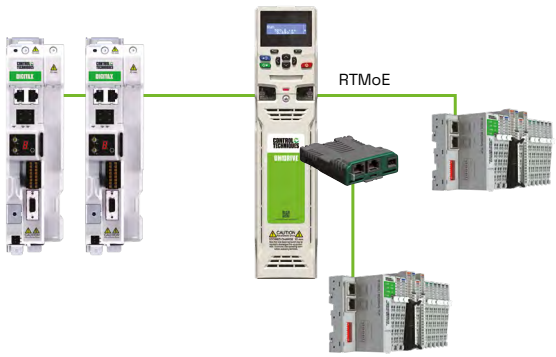
Add-on RTMoE or Modbus TCP Remote I/O modules connect directly to the on-board Ethernet port of either Unidrive or Digitax, or a fitted MCi Machine Control option module.

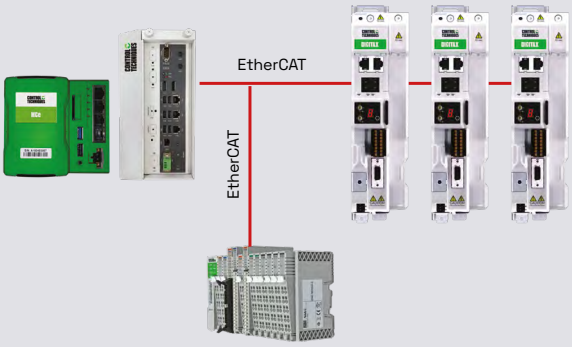
A typical configuration would include MCi Machine Control option modules, Machine Control Studio software, and the MCh HMI panels. Most types of sensors and actuators can be connected, including LEDs, pushbuttons, temperature controls, machine status indicators, and fluid flow sensors.

EtherCAT Remote I/O

Add-on EtherCAT Remote I/O modules connect via the on-board EtherCAT port of the MCe or MCz controllers, or through any EtherCAT port on any PLC or controller.

A typical scalable configuration would feature the EtherCAT Remote I/O module, used together with MCe or MCz controllers, MCi Machine Control option modules, Machine Control Studio software, and the MCh HMI Panels. Most types of sensors and actuators can be connected, including LEDs, pushbuttons, temperature controls, machine status indicators, and fluid flow sensors.





For more details about these products please visit www.controltechniques.com.

MCh HMI panels and MCh Mobile software

Streamlining machine operation

The MCh panels, along with the MChMobile Software, offer a user-friendly platform for developing HMI (Human-Machine Interface) applications, particularly in factory and building automation settings.

The MCh040 panel boasts a vibrant 4.3-inch TFT widescreen display with a 16:9 aspect ratio, while the MCh070 panel features a larger 7-inch TFT widescreen display with the same 16:9 aspect ratio. Both panels come equipped with fully dimmable LED backlighting, providing flexibility in adjusting brightness levels according to environmental conditions and user preferences.

These features make the MCh panels suitable for a range of industrial and commercial applications where clear and intuitive interfaces are essential for effective control and monitoring. The accompanying MChMobile Software further enhances the ease of development, allowing users to create customised HMI applications tailored to their specific needs.

For more details about these products please visit www.controltechniques.com.

Key Benefits

Full vector graphic support.
Native support of SVG graphic objects, transparency and alpha blending.

Multi-language applications with TrueType fonts. Easily create, install and maintain applications in multiple languages to meet global requirements.

Rich set of HMI features includes:

- Data acquisition and logging
- Trend presentation
- Scheduler and timed actions (daily and weekly schedulers, exception dates)
- Alarm handling
- Recipes
- Security and user management
- E-mail and RSS feeds

Remote monitoring and control with client-server functionality.

Powerful scripting language for automating HMI applications. Efficient script debugger improves productivity in application development.

Screen object dynamics include:

- Control visibility and transparency
- Move, resize and rotate any object on screen
- Change properties of basic and complex objects

Data can be displayed in the following formats:

- Numerical
- Bar graph
- Analogue gauges
- Text
- Image

A wide selection of communication drivers is available to seamlessly integrate Control Techniques drives with various industrial communication protocols, enhancing connectivity and interoperability across different systems.

Standard Modbus

- Modbus RTU
- Modbus RTU server
- Modbus TCP

CT Modbus

- CT Modbus TCP

Others

- A-B DF1
- A-B DH485
- A-B ENET
- OPC UA Client
- Ethernet/IP CIP

Off-line and on-line simulation.

Comprehensive gallery of objects and symbols.

Nidec Drives

Creating the world's motion with AC and Servo drives and motors

Nidec Drives is renowned for its expertise in motion control and offers a diverse range of drives and motors designed to deliver reliable and high-performance solutions across various industries.

AC and Servo drives for industrial applications

Unidrive

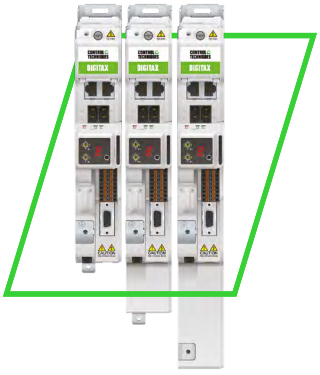
0.25 kW – 2.8 MW
(0.33 hp – 4,200 hp)

100 V, 200 V, 400 V, 575 V, 690 V

The Unidrive range offers defined feature sets aimed at optimising productivity across a wide array of automation applications. Here's an overview of some of its key features:

1. Incorporating industry-standard Ethernet communication protocols, including IEEE 1588 V2, which ensures precise time synchronisation for distributed control systems. This feature is crucial for applications where coordination between multiple devices is essential for optimal performance.
2. Supporting the IEC 61131-3 programming standard that provides a unified platform for motion control and automation programming. This standard offers a range of programming languages, including ladder logic, function block diagrams, structured text, and sequential function charts, enabling efficient development and maintenance of control logic.
3. Unidrive is equipped with high-speed I/O capabilities, allowing for fast and precise interfacing with external devices such as sensors, actuators, and other control peripherals. High-speed I/O is essential for applications requiring rapid response times and tight synchronisation between input and output signals.

AC and Servo drives for industrial applications



Digitax

0.25 kW - 7.5 kW
(0.6 hp - 9.8 hp)

200 V | 400 V

The Digitax series is engineered to deliver exceptional performance in high dynamic and pulse duty applications, particularly where rapid acceleration with high peak torque is crucial. Here's how Digitax achieves superior performance in such demanding scenarios:

1. Providing high peak torque output, enabling rapid acceleration of motors in applications requiring quick changes in speed or direction. This capability is essential for achieving fast response times and maintaining precise control over motion in dynamic environments.
2. Utilising advanced motor control algorithms to optimise torque output and performance. These algorithms ensure smooth acceleration and deceleration profiles while minimising overshoot and settling time, resulting in improved system responsiveness and accuracy.
3. Offering fast and precise dynamic response, allowing them to quickly adjust motor speed and torque in real-time to meet changing load conditions or external commands.
4. Specifically tailored for pulse duty applications, where motors are subjected to intermittent, high-load conditions. These drives can deliver the necessary torque and power output during peak demand periods while efficiently managing thermal performance to prevent overheating and ensure long-term reliability.

Servo motors for manufacturing automation

Unimotor HD series

200 & 400V compact servo motor

The Unimotor HD series offers compact servo motors designed to meet the diverse needs of industrial applications, with variants tailored for different operational requirements. Here are some key features of the Unimotor HD series:

1. 200 & 400V operation offers flexibility to accommodate different power supply configurations commonly found in industrial settings.
2. The high inertia variant of Unimotor HD is optimised for continuous duty applications where high inertia loads are present. It is designed to provide reliable performance and robust operation under sustained operation.
3. The low inertia variant of Unimotor HD is engineered for high dynamic applications that demand rapid acceleration and deceleration. It is ideal for applications where quick changes in speed and direction are required to maintain process efficiency.
4. Unimotor HD is available in various frame sizes (55, 67, 89, 115, 142, & 190 mm) based on the IEC mounting standard. This range of sizes allows for flexibility in selecting the appropriate motor size based on the specific requirements of the application.
5. Unimotor HD offers a wide torque range, from 6.4 lb.in to 750 lb.ft (0.72 Nm to 85.0 Nm), enabling it to address a broad spectrum of applications with varying torque demands.
6. Unimotor HD delivers three times its rated peak torque, providing the extra power needed to overcome transient loads or acceleration requirements during operation.

For more details about these products please visit www.controltechniques.com

Nidec Drives

Machine Control Studio

Flexible and intuitive programming

Machine Control Studio offers a flexible and user-friendly environment for programming automation and motion control features.

The software provides programming for:

- On-board PLCs
- MCi integrated machine control modules
- Ethernet network data configurations

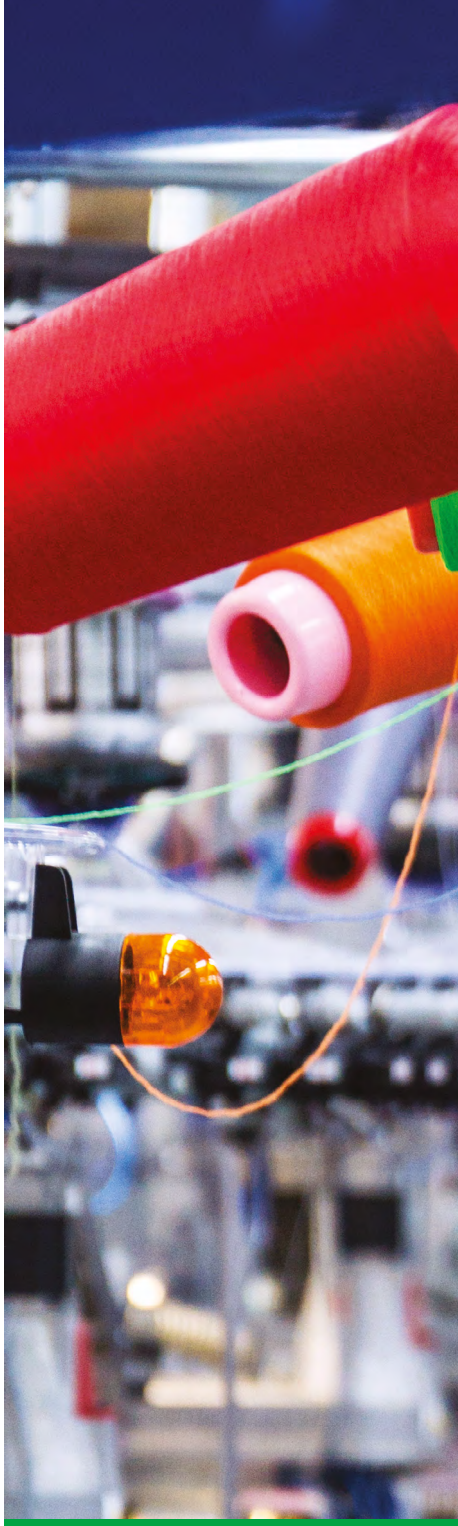
Productivity features also supported include:

- Intuitive IntelliSense functionality, which helps to write consistent and robust programs, speeding up software development.
- Access to a vibrant open-source community for function blocks.
- Support for customers' own function block libraries.

Familiar automation programming languages

The programming environment is fully IEC 61131-3 compliant, making it familiar, fast, and easy to use for control engineers worldwide. It supports the following programming languages:

- Structured Text (ST)
- Function Block Diagram (FBD)
- Structured Function Chart (SFC)
- Ladder Diagram (LD)
- Instruction List (IL)
- Continuous Function Chart (CFC)



CODESYS

Open and versatile CODESYS programming

The adoption of standard CODESYS for our Machine Controller programming environment gives you the ability to use extra features available such as CNC or Safety Licence. It also enables the use of software packages and features fully compatible with CODESYS, opening up a world of motion expansion possibilities.

The software provides programming for our most powerful MCe200, MCz201 and MCz601 Machine Controllers.

For more information about CODESYS please visit their website; www.codesys.com

For more details about these products please visit www.controltechniques.com

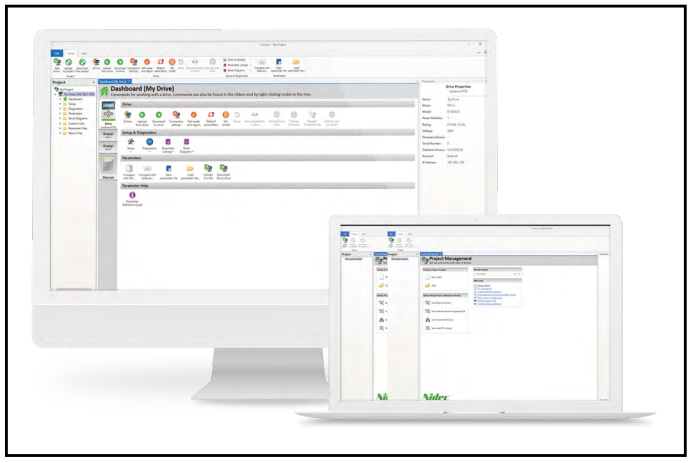
Connect
Quick and easy commissioning

Nidec Drives portfolio of keypads, memory devices, and software tools make it easy to access the full feature set of our drives. They allow users to optimise drive tuning, back up the configuration set, and troubleshoot quickly and painlessly.

Designed for commissioning, optimising, and monitoring drive and system performance, our Connect PC tool is the result of extensive user research and human-centered design principles, ensuring a superior user experience.

Features include:

- Designed for commissioning, optimising, and monitoring drive and system performance, our Connect PC tool is the result of extensive user research and human-centered design principles, ensuring a superior user experience.
- Task-based drive operations are simplified using intuitive graphical tools in a familiar Windows environment.
- Dynamic drive logic diagrams and enhanced searchable listings provide clarity during commissioning and fault-finding processes.
- Drive and motor performance can be optimised with minimal knowledge of drives.
- Multiple communication channels offer a comprehensive system overview.
- Automatic drive discovery enables quick setup, getting you up and running in the shortest possible time.

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Our Expertise

Engineering solutions

The Nidec Drives Solutions Group provides comprehensive automation solutions, accompanied by full engineering services. Projects range from individual machines to comprehensive factory automation solutions.

Dedicated local teams offer:

- Industry-specific solutions optimised for maximum reliability and productivity.
- Expert engineers capable of designing innovative, energy saving solutions.
- Comprehensive software development services.
- Ongoing maintenance to ensure trouble-free operation.
- Flexibility for future expansion.

Additionally, our global team collaborates on:

- Creating specific drive firmware in conjunction with the R&D team to gain optimal performance from the application.
- Developing libraries containing market-specific functionality for industries such as packaging, material handling, and printing.
- Designing software packages to support specific application functionalities, including pump, solar pump, elevator and laundry solutions.

Adding value to your business

1. Future equipment or machine retrofitting management to meet ever-changing business needs.
2. Hardware and software upgrades in-keeping with technological advancements.
3. On-site software development for fine-tuning automation.
4. Provision of add-on functionality supports your expanding needs.
5. Comprehensive support for staff training.
6. Regional expertise to aid collaboration with local supply chains and ensure compliance with industry standards.

Nidec Drives

Integrated motion solutions for special looms

The Trinca technology experience

From silk to metal

With Nidec Drives integrated solutions, Trinca Technology manufactures some of the world's most advanced looms, guaranteeing exceptional productivity and top quality even in the toughest applications.

The Italian textile machine industry is a global benchmark for technology and quality. Trinca Technology is one of the very few companies in the world today, producing fully digital controlled looms with exceptional performance. With its operations in the province of Como, Trinca have moved from conventional cotton and silk to technical materials, particularly metal fabrics used for applications that include the production of packaging materials, geotextiles, meshes and fabrics for other industrial uses.

Trinca have been innovators in textile machinery as electronics revolutionised the industry. Working in partnership with Nidec Drives since the late 1980s they have utilised servo and automation technology to achieve greater precision and speed and eradicate mechanical changeovers.

The challenge

Most recently, Trinca's goal was to develop an open, high-performing, fully digital platform that could produce their highest levels of output and quality while being easy to reconfigure for flexible production. Initially they decided to set up an in-house department for building operator panels and developing the related software, however, it was not long before they realised that it was too complicated to produce all components alone.

The solution

From the extensive catalogue of Nidec Drives solutions, Trinca took advantage of the high-dynamic Unimotor HD servo motors and high-performance Digitax servo drives, controlled by MCe and MCz motion controllers.

Unimotor HD is a range of brushless servo motors designed for applications demanding rapid acceleration and deceleration, obtained by the overall low inertia.

Digitax servo drives guarantee top performance in a minimum size package. Optimised for high-dynamic applications, they maximise loom performance by exploiting some of the most common protocols (EtherCAT, machine control with MCi, Ethernet and Base) to interface with other devices required by the customer or to integrate additional machine functions.

The MCe embedded controller, with all-in-one PLC, and the MCz controller, an authentic industrial PC with motion control functions, have the task of managing the whole system. Standard and open tools are used for operations and programming, such as the Windows operating platform and CODESYS development environment. A high-performance EtherCAT network is used to connect the controller, the drives and the remote I/Os to each other.

Also, MiS safety modules integrate motion safety functions (STO, SBC, SSx) in the drive, offering a decentralised approach that simplifies the design, reducing wiring and costs while speeding up commissioning.

“The clearest advantage of using Nidec Drives solutions is the availability of a complete, high-performing package, based on the Windows operating standard and CODESYS development software, which guarantees full interaction and interoperability. Also it provides an integrated platform offering an optimised, high performance system”

The benefits

Trinca’s know-how is complemented by the performance offered by Nidec Drives systems. Their latest generation looming machines are easy to configure and produce record performance levels, with gripper speeds up to 15 m/s, beating frequencies up to 250 bpm at a power equivalent of 80 tonnes.

Key to overall textile production quality is the software controlling the finely tuned movements, where the digital cam is refreshed every machine turn to ensure best operating conditions. Continuous adjustments based on dynamic needs mean no revolution is ever the same as the previous one, with the software ensuring optimum motion profiles are translated into commands for the motor, which in turn ensure the motion performance and quality required by the operator.

This is one of the strengths that make Trinca looms unique and high performing. “While our competitors offer machines for a single product or specific production, this solution means that we can supply our customers with flexible machines that can be quickly and easily reconfigured,” Luca Trinca states proudly. “These results come not only from our specific know-how and the precious support of the Nidec Drives engineers, but also from the support of a local partner we have been synergically working with for some time, especially in the motion control field.”

Here's what makes us different

Outstanding performance

The outstanding performance of our drives is the fruit of over 50 years of engineering experience in drive design.

Embedded intelligence

Precision motor control is combined with the highest embedded intelligence, ensuring maximum productivity and efficiency of your machinery.

Technology you can rely on

Robust design and the highest build quality ensure the enduring reliability of millions of our drives installed around the world.

Open design architecture

Based on open design architecture, our drives integrate with all primary communication protocols.

Global reach, local support

Highly experienced, locally based application engineers design and support drive technology to provide maximum value, wherever you are in the world. Our extensive sales and service networks include an enhanced global presence that benefits all our customers.

Through our integrated Drives & Motors organisation, we have an extensive global presence that provides comprehensive local support and services. Our extensive sales and service networks in Europe, Asia Pacific and the Americas are backed-up by hundreds of carefully selected distributors and service partners, often in remote locations, all over the world.


Manufacturing Facilities
Drive sales, technical support, repair and application expertise
Drive sales
Country Partners

Nidec

The world's leading global manufacturer of electric motors and controls

Nidec, the world's largest motor brand.

Nidec is in everything, everywhere. If you drive a car, wash your clothes, watch movies or talk on a smartphone, you're using Nidec technology. Almost anything that spins and moves, no matter how big or small, does so thanks to a Nidec product.

Our shared values of passion, enthusiasm and tenacity guide us on our collective journey to be the best.

Autom

Innovati
environm
comfort

Appliance, commercial & industrial motors

Energy efficient motor and drive technology for commercial, industrial, and home appliances

notive

ng to help improve safety,
mental protection and
required for automobiles

Small precision motors

DC motors for all industries
and applications

Motion & Energy

High-performance motors, drives, generators & energy management solutions for renewables, automation, infrastructure, and electric vehicles

Machinery

Machines, factory automation equipment, measuring, and testing devices

Nidec

All for dreams

Connect with us

www.controltechniques.com

www.kbelectronics.com

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CONTROL TECHNIQUES

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