

# PRODUCT PORTFOLIO



**DRIVE OBSESSED**

# CONTENTS



<b>ABOUT US</b>	<b>4</b>
<b>AC DRIVES</b>	<b>14</b>
<b>GENERAL PURPOSE DRIVES</b>	<b>14</b>
Commander	
<b>HIGH PERFORMANCE DRIVES</b>	<b>26</b>
Unidrive	
<b>PACKAGED DRIVES</b>	<b>40</b>
WMP	
DFS	
<b>SPECIALIST DRIVES</b>	<b>46</b>
Elevator	
Pump	
HVAC	
<b>SERVO DRIVES AND MOTORS</b>	<b>64</b>
<b>SERVO DRIVES</b>	<b>64</b>
Unimotor	
Digitax	
<b>SERVO MOTORS</b>	<b>70</b>
Unimotor	
<b>DC DRIVES</b>	<b>72</b>
Mentor	
Quantum	
<b>INDUSTRIAL CONTROL</b>	<b>80</b>
Motion Made Easy <sup>®</sup>	
HMI Panels & Software	
Remote I/O	
Machine Controller	
Industrial PC	
Drive Options	
Integrated Safety	
<b>SERVICE &amp; SUPPORT</b>	<b>102</b>

# DRIVE OBSESSED



Control Techniques has been designing and manufacturing the best variable speed drives in the world since 1973.

Our customers reward our commitment to building drives that outperform the market. They trust us to deliver on time every time with our trademark outstanding service.

More than 45 years later, we're still in pursuit of the best motor control, reliability and energy efficiency you can build into a drive. That's what we promise to deliver, today and always.

**1.6K+**

Employees

**5**

Global Manufacturing  
Sites

**23**

Drive  
Centers

**70**

Countries

#1 FOR ADVANCED

# MOTOR AND DRIVE TECHNOLOGY



**Nidec Corporation is a global manufacturer of electric motors and drives.**

Nidec was set up in 1973. The company made small precision AC motors and had four employees. Today, it's a global corporation that develops, builds and installs cutting-edge drives, motors and control systems in over 40 countries with a workforce of more than 114,000.

You'll find its innovations in thousands of industrial plants, IoT products, home appliances, cars, robotics, mobile phones, haptic devices, medical apparatus and IT equipment all over the world.

**114K**

Employees

**\$17.4B**

Group Turnover

**40+**

Countries

**300+**

Companies

# HERE'S WHAT MAKES US DIFFERENT



## Outstanding Performance

The outstanding performance of our drives is the fruit of over 45 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

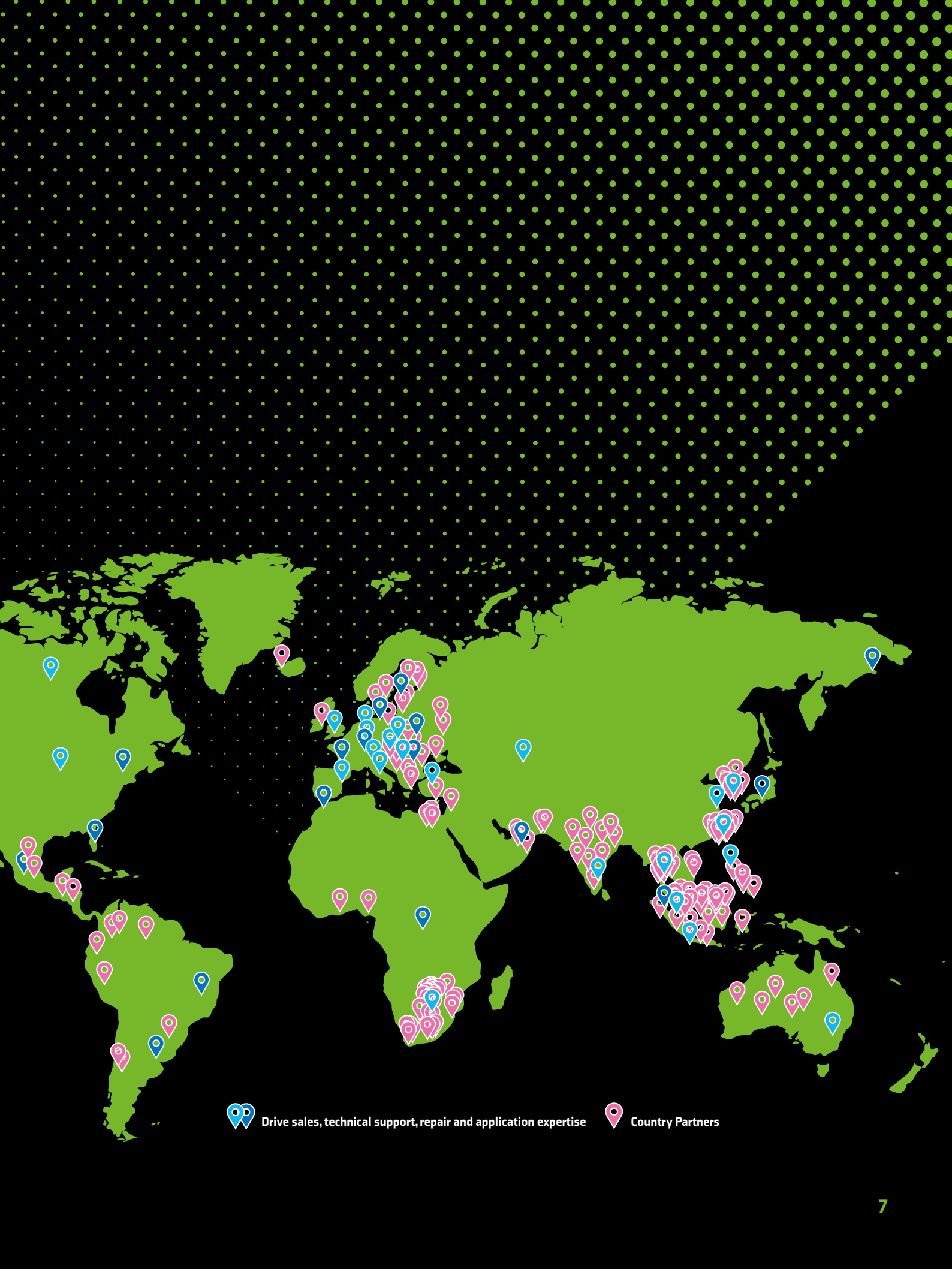
Based on open design architecture, our drives integrate with all primary communication protocols.



## 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:

- NSW, Australia
- Mechelen, Belgium
- Beijing, China
- Brno, Czech Republic
- Chennai, India
- Milan, Italy
- Tokyo, Japan
- Seongnam, Korea
- Selangor, Malaysia
- Sliedrecht, Netherlands
- Poznań, Poland
- Oradea, Romania
- Lok Yang Way, Singapore
- Johannesburg, South Africa
- Barcelona, Spain
- Birmenstorf, Switzerland
- Taipei, Taiwan
- Nonthaburi, Thailand
- Istanbul, Turkey
- Dubai, United Arab Emirates
- Telford, United Kingdom
- Eden Prairie, USA
- Coral Springs, USA
- Markham, Canada
- Monterrey, Mexico



Drive sales, technical support, repair and application expertise



Country Partners

# INDUSTRY 4.0



# WE'RE LOOKING FORWARD FUTURE PROOFING WITH INDUSTRY 4.0

## Manufacturing Automation

**The term Industry 4.0 has been used a lot in the past few years.**

And for some it's almost become a buzz word that doesn't really have any meaning. That's understandable. Allow us to explain what Industry 4.0 means to us.

### Defining what we mean by Industry 4.0

**Industry 4.0 relates to the fourth industrial revolution.** A point where IT and physical equipment converge. It marks the stage where no longer are we making decisions based on gut feeling and experience, instead solid trends of data dictate equipment behavior. It goes beyond just a single machine, & can encompass whole factories, if not companies, on a global scale.

### The growing momentum of Industry 4.0

It's a grand concept, so it's understandable that for many businesses the idea of total system integration is a long way off.

It is for this reason that we developed a piece of research to see **what is really holding businesses back from exploiting the possibilities of Industry 4.0.**

Just take a look at the disruption innovative businesses like Amazon, Google and Apple have created. Each has ran with emerging technology. It's clear that those ahead of the game will greatly benefit.

### Manufacturing automation research background

**We asked a number of people working in automation how they felt about Industry 4.0.**

Our goal was to analyze awareness & attitudes.

Our sample base came from businesses across the globe who operate in a wide range of sectors. We've taken the key points that came from the research and made this document. We hope that it may give some answers and help guide you on your journey towards automation transformation.



**AUTOMOTIVE, COMMERCIAL &  
MANUFACTURING, CRANES & HOISTS,  
ENERGY, ELEVATORS, ENTERTAINMENT  
& LEISURE, FANS & PUMPS, FOOD &  
DRINK, GLASS, MACHINE TOOL,  
MATERIAL HANDLING, MEDICAL,  
METALS, MINING, PACKAGING, PAPER,  
PRINTING, PROCESS, STAGE AND  
THEATRE, STEEL, TEST RIGS, TEXTILES,  
WATER, WIND, WIRE, WOOD  
WORKING. PROGRESSIVE...**

# DRIVING THE WORLD WITH **CLASS-LEADING MOTOR CONTROL PRODUCTS**

Control Techniques is 100% focused on delivering world-class variable speed drives and power conversion technologies that are used in industry, commerce and renewable energy schemes.

Our motor control solutions help businesses to significantly reduce energy costs and improve their operating efficiency.



## General Purpose Drives

### Commander

- S100
- C200
- C300

## High Performance Drives

### Unidrive

- M700
- M600
- M400

## Packaged Drives

### DFS Series WMP Series

## Specialist Drives

- Elevator Drive E300
- Pump Drive F600
- HVAC Drive H300



## Servo Drives & Motors

### Digitax Unimotor

Digitax HD

M750

M751

M753

M754

Unimotor hd



## DC Drives

### Mentor

Mentor MP

Quantum MP



## Industrial Control

Motion Made Easy

PLC Controlled Motion

MCH040, MCH070, MCHMobile

Remote I/O and EtherCAT I/O

MCe Machine Controller

MCz Industrial PC

Integration Modules

# GENERAL PURPOSE DRIVES COMMANDER

# PRODUCTS IN THIS RANGE

C200 | C300 | S100

## Applications:



**Pumping, Ventilating  
& Compressing**



**Moving Applications**  
conveyors, treadmills, automatic  
doors & barriers



**Processing**  
mixers, crushers, agitators, centrifuges,  
kneaders, spinning & braiding machines  
for textile



**Lifting, Hoisting  
& Winching**



## Free 5-year warranty

Our Commander series is built and verified to be robust. In fact, it is so reliable we are confident enough to supply it with a free five-year warranty.

Warranty terms and conditions apply.

# COMMANDER C

# SIMPLE, RELIABLE

# MOTOR CONTROL

0.33 hp to 200hp (0.25kW - 132kW) 115 V | 208 - 230 V | 380 - 460 V | 575 V | 690 V

The new Commander C series has been designed to be a simple and reliable AC motor speed controller that meets advanced requirements in a wide range of applications and provides optimum user experience. Now with a free five-year warranty\*.

## Value Proposition:

- 1 Optimized machine productivity**  
 Commander C offers multiple motor control modes, providing optimum machine productivity for all open-loop applications. Available control modes include energy-efficient dynamic V/f control for fans and pumps, vector control for conveyors, and high-performance Rotor Flux Control (RFC) for the most demanding applications.
- 2 Lower start-up costs**  
 Easy & fast installation, online start-up guides & videos.
- 3 Common control philosophy**  
 For both our general purpose and high-performance drives.
- 4 Lower system costs**  
 Advanced control with extensive on-board feature set, PLC and plug-in option modules.
- 5 Commander brand**  
 A platform that has driven continuous technological advancements since 1983.
- 6 5-year free warranty**  
 Guaranteed quality (Terms and conditions apply).

\*Warranty terms and conditions apply.







### Equipped with the latest energy saving features

The latest energy-saving technology means you get high productivity and low running costs.

### Plug-in options for advanced control

The plug-in communication modules enable integration with a wide range of industrial fieldbuses

### Straightforward installation and commissioning

For a quick motor set-up the key parameters are printed on the front of the drive so you can be up and running within seconds.

### Dual Safe Torque Off (STO)

Commander C300 (only) features a Dual Safe Torque Off input, certified to SIL3/PLe safety rating and compliant with EN/IEC 61800-5-2.

### Set just four parameters to get your drive started

Simply select the motor rated current, RPM, voltage and power factor from parameters 6 to 9.

### Wide availability and outstanding service

Through our local Drive Centers.



# COMMANDER S

# MAKING SIMPLE

# APPLICATIONS, SIMPLE

0.25 to 5 hp (0.18 to 4 kW)  
1 $\Phi$  115V & 208 - 230 V, 3 $\Phi$  208 - 230 V & 380 - 460 V  
Linear V to F, Square V to F, Resistance Compensation

Take charge of motor control and energy savings with the latest addition to the Control Techniques portfolio. With a feature set optimized for simple applications, Commander S provides a cost-effective solution for installations that require plug and play convenience straight from the box.

Commander S is the first drive to include an app interface as a standard feature. The Marshal app is our revolutionary way to interface with the drive covering commissioning, monitoring, diagnostics and support.



## Easy to install

The sleek curved design of Commander S optimizes component layout for a small footprint and easy access to terminals. The click-on/click-off DIN rail mount makes installation remarkably easy.



# YEAR FREE WARRANTY

## Free 5-year warranty\*

Our Commander 5 series is built and verified to be robust. In fact, it is so reliable we are confident enough to supply it with a free five-year warranty.

\*Warranty terms and conditions apply



## Easy to use

Using our Marshal app (Android/iOS) your drive can be configured in under 60 seconds.



## Reliable

Durability is at the core of Commander 5 design, guaranteeing performance throughout its whole lifetime.



## Cost effective

Equipped with unique features designed to save you time, energy and money.

# COMMANDER S





# Cost effective

- Intelligent fan control reduces energy usage
- Easy integration to automation via the onboard ModbusRTU
- Integrated C1 EMC filter variants can operate in EMC-sensitive environments such as residential areas, without requiring additional external filters
- Environmentally friendly – meets ECO design regulations



# Easy to install

- Simple to fit with click on/click off DIN rail mounting
- Angled and offset screw terminal connectors for easy access and fast installation
- The small footprint and side-by-side installation saves cabinet space



# Easy to use

- Marshal App interface enables drive set-up in only 60s
- Simple setup routines tailored to your application
- FastStart commissioning menu – only 4 simple steps to get your motor running
- Full flexibility in choosing your preferred interface; Marshal App, drive keypad, Connect PC Tool
- A PIN can be set on the drive or Marshal to restrict unwanted access



# Reliable

- 100% conformal coating ensures moisture, corrosion and dust protection
- Free 5 Year Warranty gives peace of mind
- Latest generation of components from trusted suppliers, for robust performance and long-term reliability
- Keep running by default allows for continuous run during unusual loadings or operating conditions

# MARSHAL

# REVOLUTIONIZE THE WAY YOU INTERFACE WITH YOUR DRIVE

Control Techniques has a long tradition of challenging the status-quo with innovative ideas and making a profound impact in the drives industry. And we've done it again with Marshal: Control Techniques is the 1st drive supplier to implement NFC technology as standard on a drive and offer the Marshal app interface at no extra cost.

Marshal is your drive expert in the field. This rich content interface means you can commission, clone, diagnose system issues and monitor the drive in just a few screen taps.

**TAP: JUST BRING YOUR PHONE NEAR THE  
NFC LOGO TO CONNECT TO THE DRIVE**





Powered by NFC\* technology, data transfer between the drive and mobile device takes less than 0.5s.



# YOUR DRIVE EXPERT IN THE FIELD

## Commissioning

- Power off or on commissioning (even in the box)
- FastStart – assisted commissioning. Only 4 simple steps to get you up and running
- Advanced features available in parameter setting
- Pre-set application configurations

## Cloning

- Parameters can be easily transferred from one drive to another - just tap to write as many drives as you want
- Back-up and restore drive configuration via the app

## Share

- Share configuration via Outlook, OneDrive, WhatsApp etc.
- Shared configurations are compatible with Marshal & Connect (our PC commissioning tool)
- Export customized wiring diagram and drive configuration to PDF format

## Offline capabilities

- Create new configurations in the app
- Open existing projects to review/change parameters







## Diagnostics

- Guided diagnostics for the system even without drive alarms or errors
- Diagnostics available with power off or on
- Get support for drive alarms within the app
- Error log & active error diagnostics – view active and historic error info
- Differences from default – compare configuration against factory defaults

## Registration

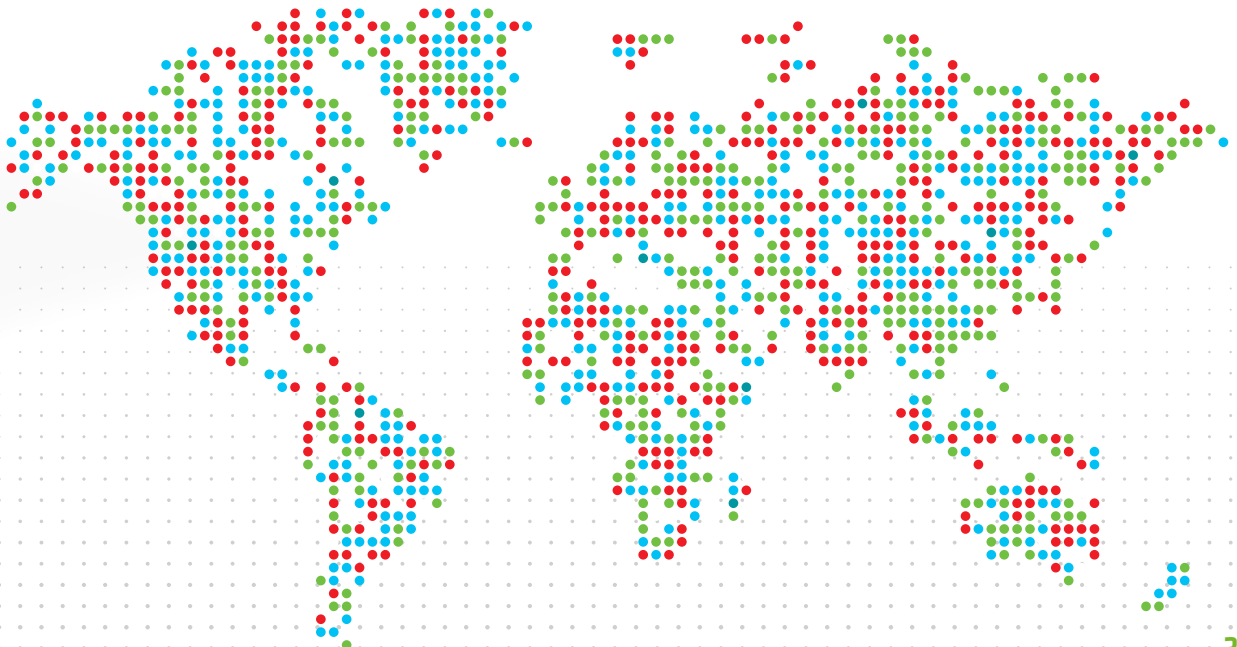
- Activate the 5 Year Warranty via the app
- Access & download support materials via your CT account

## Monitoring and security

- Quick view of parameter settings & drive status
- Restrict access to drive configuration via PIN
- Quick visualization of I/O, motor, and speed settings

## Contact us

Access to worldwide distribution network and local drive centers for sales and technical support



# HIGH PERFORM ANCE DRIVES

UNIDRIVE

# PRODUCTS IN THIS RANGE

M700 | M600 | M400 | DFS SERIES | EXTREME POWER | MODULAR POWER

## UNIDRIVE Applications:



Hoists



Winding



Cutting



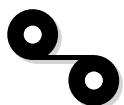
Woodworking



Test Stands



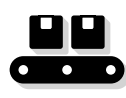
Printing



Web Handling



Textiles



Packaging  
Machines



Tire  
Manufacturing



Speed & Position  
Control

(For Gearing & Ratio Control)



# UNIDRIVE M700

# ADVANCED

# MOTOR CONTROL

1.0 - 4,200 hp (0.75 kW – 2.8 MW) 208 - 230 V | 380 - 460 V | 575 V | 690 V

## Class-leading Induction, Servo and PM Motor Performance.

**Delivers high performance motor control for induction, permanent magnet & servo applications, plus onboard real-time Ethernet.**

Unidrive provides ultimate control flexibility to satisfy the requirements of machine builders and high specification industrial applications.

### Flexible control systems

- Ideal for centralized & decentralized control.
- MCI module advanced system control capability.
- Onboard PLC for logic programs.
- IEC61131-3 programming.
- Onboard real-time Ethernet (IEEE 1588 V2 PTP).





### Optimize system performance

- Onboard Advanced Motion Controller.
- 1.5 axis control.

### Conform to safety standards

- Integrate directly with safety systems.
- Onboard Safe Torque Off (STO).
- Add a safety option for safe motion functions.

### Flexible communications

- Synchronized RTMoE comms.
- Fieldbus communications: PROFINET, Ethernet/IP, Modbus TCP/IP and EtherCAT.
- Onboard web-server for flexible setup and monitoring.

### Maximize throughput

- High bandwidth motor control.
- Flexible speed & position feedback.

### Variants

- M700 - 1 x STO, real time Ethernet & analog and digital I/O
- M701 - RS485 port.
- M702 - 2 x STO, real-time Ethernet & digital I/O.
- HS30, HS70, HS71 and HS72 - High frequency variants for control above 550 Hz

# UNIDRIVE M600 OPEN-LOOP CONTROL DRIVE

1.0 - 4,200 hp (0.75 kW – 2.8 MW) 208 - 230 V | 380 - 460 V | 575 V | 690 V

High performance drive for induction and sensorless control of permanent magnet motors.

The optimum choice for applications that require high performance open-loop control of induction or permanent magnet motors.

SI-Encoder option modules are available for applications that require more precise closed-loop velocity and digital lock/frequency following of induction motors.



## Reduced system costs with direct integration

- Incorporates an onboard PLC which can execute Machine Control Studio (IEC61131-3) programs for logic control, sequencing, speed following and digital lock - removing the need for additional PLCs.
- Fit up to three SI modules to add safe motion, speed feedback and additional I/O.

## Fast and Easy access for Commissioning, Monitoring and Diagnostics



## Enhance throughput with high performance open-loop control of induction and permanent magnet motors

- Advanced Rotor Flux Control (RFC) algorithm provides maximum stability and control of induction and permanent magnet motors.
- Up to 200% motor overload suitable for heavy industrial machinery applications.

## Flexible communications

- Modbus RTU communications onboard.
- Full Ethernet based and traditional fieldbus. Support available through user-fit SI options.

## Energy Efficiency

- Low power standby mode.
- Easy common DC bus configuration enables braking energy to be recycled within the drive system, reducing energy usage and eliminating external supply components.
- Supports sensorless (open loop) control of compact high efficiency permanent magnet motors.
- Active Front End for regenerative AC drive systems.
- Dyneo +: perfectly synergized hybrid permanent magnet motor and Unidrive M solutions - optimized for performance and energy saving.
- Dyneo +, Unidrive M and hybrid permanent magnet motor solutions offer exceptional efficiency levels across all operating speeds, especially at lower speeds where the efficiency is much higher than induction motors.
- Low losses, up to 98% efficiency.

# UNIDRIVE M400

# MINIMIZE DOWNTIME & SYSTEM SETUP

0.33 - 200 hp (0.25 - 132 kW) 115 V | 208 - 230 V | 380 - 460 V |  
575 V | 690 V

**Optimized throughput, open automation systems, maximum ease of use.**

**Unidrive M400 minimizes downtime with an intuitive LCD display for rapid set-up and clear diagnostic help. The integrated PLC will execute a substantial range of sequencing and logic programs.**

Coupled with an impressive I/O count complete with two STO inputs and an SI interface for a fieldbus option or extended I/O, the feature set ensures Unidrive M400's flexible integration with any system.

## Energy Savings

- Low power standby mode for applications where drives can sit idle for significant periods.
- Automatic 3-speed cooling fan keeps energy usage and acoustic noise to a minimum by intelligently responding to load and environmental conditions (from 0.37W).
- Square law V/F mode is optimized for quadratic loads like pumps and fans to keep motor losses to a minimum.
- Dynamic V to F mode keeps energy usage and motor losses to a minimum in low load conditions.
- Unidrive M400 is highly efficient (above 98%).







## Minimize downtime and system set-up time with advanced keypad options

- Informative, multi-language, 3-line display aids set up and provides diagnostic information.
- 4 navigation buttons facilitate intuitive navigation and programming.
- Keypad options available:
  - i. CI Keypad - Drive mounted LCD keypad.
  - ii. Remote IP66 keypad - rapid panel mount (1 x 32mm Ø hole).
  - iii. No Keypad - Control/programming performed by PC or fieldbus.

## Reduced system costs with direct integration

- Incorporates an onboard PLC which can execute Machine Control Studio (IEC61131-3) programs for logic and sequencing with real-time tasks - removing the need for additional PLC's.
- Fit an SI module to add a fieldbus communications option or additional I/O.

## Improve throughput with advanced open-loop motor control algorithms

- Rotor Flux Control (RFC-A) gives maximum stability and control of induction motors at all powers.
- 180% motor overload (suitable for heavy industrial machinery applications).
- Precise frequency following is possible from an encoder or frequency/ direction inputs.

## Conform to safety standards, maximize uptime and reduce costs by direct safety system integration

M400 has integrated dual STO inputs for SIL3 / PLe conformity, eliminating the need for external safety components.

# EXTREME POWER ENGINEERED TO FIT THE WORLD

500 to 700 hp (315 to 500 kW) | Up to 865 A | 380 - 460 V |  
575 V | 690 V

with 110% Overload

You loved the smaller ones. Here's the big one.

While low power accounts for most of the growth for variable speed drives, energy-saving applications are driving growth in high power drives.

Fans, pumps, compressors and extruders are common uses of drives that increasingly need a higher power option.

## Light weight, but no light weight!

Enter the new high-power drive, which not only offers 700 hp (500 kW) of power in a single module, but at 287 lb (130 kg) is up to 132 lb (60 kg) lighter than competitors drives.

Its small footprint and pre-engineered accessories make it easy to install or retrofit in industry-standard enclosures.

## A choice of control module options

This 700 hp (500 kW) drive can be fitted with a Unidrive M600/ M70X or Pump Drive F600 control module and has a wide range of accessories available for easy installation.

Alternatively, the frame can be provided pre-assembled in its own industry-standard enclosure, with user-selectable system components included.

This is the ready to use DFS series free standing version.





## Installation and servicing

- A **single installer can handle wiring and connection** using comprehensive accessories.
- **Under 30 minutes for one engineer** to replace the drive using service accessories.
- During service, factory-tested **sub-assemblies can be exchanged** on site without having to replace the complete drive.
- **Wider front face design & lower center of gravity** provide greater physical stability and safety during installation.
- Always **smaller than an existing drive when retrofitting**, so will always fit space available.
- **Fixed lifting points on the chassis** (no additional brackets required) for safe handling.
- **No additional reactors are required** for the vast majority of applications.
- **Online diagnostic app** aids commissioning & user support.

## Controls, communications & configuration

- **Renowned Unidrive AC motor control** extended up to 700 hp (500 kW) in a single power module.
- Optimized for the key **high-power drive applications** of fans, pumps, compressors and extruders.
- As **powerful as any other drive on the market**, yet very light and easy to handle.
- All leading **industrial communications protocols supported**, on-board as standard or with user fitted options.
- **On-board machine control**, open programming architecture and safety features.
- **User-connectable 12-pulse operation** as standard for supply current harmonic reduction.
- **Enhanced IGBT protection** during short circuit protects against external fault conditions.
- **Novel capacitor bank protection** provides enhanced reliability and increases up-time.

# HIGH POWER MODULAR DRIVES

# HIGHLY RELIABLE

# DRIVE MODULES

M700 | M701 | M702 | M600 | Pump Drive F600 | HVAC Drive H300

The modular offering provides a flexible method of building compact, reliable high-power solutions.

Paralleled together, they can control asynchronous and permanent magnet motors in systems up to 4,200 hp (2.8 MW). The frame 12 is a 700 hp (500 kW) module that allows system builders to create high power solutions with the smallest number of components, keeping both footprint and costs to a minimum.

Unidrive M differentiates itself on performance with extremely fast current control algorithms and high switching frequencies. Active Front End (AFE) solutions deliver unparalleled torque precision & power quality.

The Unidrive M modules can be paralleled into a wide range of flexible solutions to solve all system needs including Active Front End and multi-pulse rectifier configurations. They can be controlled by M700, M701, M702, M600, Pump Drive F600 or HVAC Drive H300 controllers.





**F12 T**



**F12 D**



**RECT..A, RECT..T**



**F9, 10 & 11 A,E,T**



**F9, 10 & 11 D**



**Master Control,  
Standard Control**



**Follower Control**

Format	
A	AC in AC out module with integrated rectifier and line choke. Available in frame size 9 and can be paralleled up to 2,100 hp (1.9 MW)
E	AC in AC out module with integrated rectifier. Available in frame sizes 9, 10 & 11 and can be paralleled up to 4,200 hp (2.8 MW)
T	AC in AC out module with 12 pulse integrated rectifier. Available in frame size 9, 10, 11 & 12 and can be paralleled up to 4,200 hp (2.8 MW)
D	DC in AC out module. Available in frame size 9, 10, 11 & 12 and can be paralleled up to 4,200 hp (2.8 MW)
RECT..A	AC in DC out rectifier 6 pulse module. Available in frame size 9, 10 & 11
RECT..T	AC in DC out rectifier 12 pulse module. Available in frame size 9, 10 & 11
Standard Control	M700, M701, M702, M600, F600, H300 controller for single module systems
Master Control	M700, M701, M702, M600, F600, H300 master controller for systems with more than one power module
Follower Control	Follower controller for all paralleled modules



### Create flexible systems easily

The modular approach to building high power systems provides machine builders with flexibility while keeping complexity low. Modules with integrated rectifiers and / or line reactors can be easily paralleled keeping installation time and component count to a minimum. Separate inverter and rectifier modules (D, RECT..A and RECT..T) can be paralleled into more flexible common DC bus and regenerative configurations where power management and system design efficiency are key.

#### Flexible and easy system design:

- Unidrive M high power modules are designed to fit in standard 600 mm deep x 400 mm wide (23.6 x 15.7 in) enclosures
- 6, 12, 18 and 24 pulse input and Active Front End configurations are easy to achieve
- Integrated cooling fan power supply means no additional power supplies are required
- Output current ratings have been increased for a wider range of global motors
- A common control interface ensures a consistent programming method and feature set across the whole range.



### Minimize downtime for critical operations

We know how important reliability is to our customers and that every second of system downtime can be costly. Control Techniques high power modules have exceptional build quality based on over 45 years of drive knowledge, expertise and development.

Built using world leading manufacturing processes, the modules are packed with features proven to keep the drive running in the most testing of environments. Control Techniques Automation Centers are situated in many global regions to provide local design consultation and rapid specialist technical support wherever your business is located.



### Make compact, easily maintainable systems

- Control Techniques high power modules are incredibly compact given the impressive amount of power they can deliver. For example, the powerful AC in AC out 700 hp (500 kW) module measures only 11.6 x 68.9 x 20.7 in (295 x 1750 x 526 mm) - a power density unrivalled in the marketplace and almost half the size of other leading suppliers.
- Overall system size and footprint is kept to a minimum
- Manageable small and light modules are maintained and replaced rapidly and easily



### Reduce spares inventory

Control Techniques modular approach gives customers the opportunity to standardize their solutions in order to keep spares holding to a minimum as different systems can be serviced using one common spare. Additionally, large volumes of standard product modules are stocked at local distribution hubs in convenient locations around the world meaning that rapid delivery is always available to all customers.



## Reliability assured

- Every power module has been thoroughly tested in environmental chambers that cycle a wide range of load and thermal conditions
- PCBs have conformal coating to further increase resilience to harsh environmental conditions
- Trip avoidance features take intelligent action instead of interrupting critical processes.
- Protection alarms safeguard the wider system (e.g. over current, over temperature, over voltage and short circuit protection)
- Intelligent variable speed fans ensure operating temperature stays within limits. They are easily replaceable as part of routine maintenance
- Wide supply voltage tolerance keeps drive operation smooth in areas where supplies are variable



## Upgrade legacy modular systems painlessly

Migration of Unidrive SP modular systems is fast and easy with many conversion tools available:

- Parameter porting tools such as Connect and Smartcard are available SyptPro can recompile SM-Applications programs for SI-Applications and connect to existing CNet networks
- Identical width and depth dimensions, along with retrofit kits, mean that Unidrive M modules frame sizes 9, 10, 11 can easily fit into SP modular locations using existing fittings



## Environmental safety and electrical conformance

- UL and DNV listed
- Electromagnetic immunity complies with EN 61800-3 and EN 61000-6-2
- Electromagnetic emissions comply with EN 61800-3



## Create high performance solutions

Unidrive M delivers market leading control performance at high powers with extremely fast current control algorithms, advanced thermal monitoring and high switching frequencies. When Control Techniques power modules are configured with an Active Front End, dynamic torque response can be effectively demanded across all power quadrants.

- Switching frequencies of up to 16 kHz in systems up to 250 hp (160 kW) and 8 kHz in systems up to 700 hp (500 kW) allow Unidrive M to provide precision torque. This is effective in demanding applications such as test stands, where our ETPS solution (engine torque pulsation system) can precisely simulate dynamic engine torque profiles.
- Highly accurate thermal model ensures:
  - i. High overload capability – 150% Heavy Duty, (140 % with frame 12)
  - ii. Impressive low derating requirement in applications that demand high torque at low speeds. Power device temperature is intelligently managed meaning smaller lower priced systems can be specified and product life is extended.
- Dynamic Active Front End configurations provide:
  - i. Precision torque linearity across quadrants
  - ii. Corrective power factor operation (lagging, unity or leading) for high quality power
  - iii. Harmonic mitigation

# **PACKAGED DRIVES**

**WMP SERIES  
DFS SERIES**



# PRODUCTS IN THIS RANGE

WMP SERIES

DFS SERIES

## DFS Series Applications:



Fans & Pumps



Compressor



General Automation



# WMP SERIES PLUG & PLAY PACKAGED PUMP DRIVES

5 to 150 hp (3.7 kW to 110 kW) 460 V

## Ready to Run Packaged Pumping

For agriculture, municipal, and irrigation applications, reliability and intuitive configuration saves time and money. Packaged pump drives based on the F600 can provide all of that and more.

WMP is a pre-engineered and assembled NEMA 3R package build around the Pump Drive F600. Incorporating the necessary features to beat the elements for outdoor applications as well as completely integrated drive control to make this pump drive solution truly “Plug and Play.”

### Intuitive Setup and Remote Accessibility

- Options for either a door-mounted multi-language Keypad for parameter setup and commissioning, or a full color, 7-inch HMI with guided pump setup.
- Multiple communication protocol options allow for integration into existing control networks or connection to remotely accessible network hubs with accessible HMI webpages.
- Connect PC tool offers visually guided commission options for a variety of pumping configurations





### Performance in Harsh Environments

- Outdoor UL TYPE 3R rated with surge arrestor installed for transient voltage surge suppression.
- Service entrance rated (UL508A) for safe access during service and startup.
- Circuit breaker disconnect with high SCCR ratings.

### Intelligent Pumping Control

- The Pump Drive F600 inside includes common pump control system features without the need for additional pump controller.
- Pump Control Modes include single pump (Simplex), cascade (duty-assist), and multi-leader (multiplex).
- Dedicated pump keypad for setup and monitoring in real-world pressure and flow units with energy monitoring and recording included on the standard product.

### Simple Service Accessories and Flexible Mounting

- WMP can be wall mounted (back mounted) or supplied with an 18" leg kit for freestanding installation.
- Easy to access filters, fans, and fuses can be supplied with WMP service kits at point of purchase or at regular intervals after installation.
- 24/7 extensive service network support from Control Techniques and select partners.

### Crafted for Power

- WMP available from 5 HP to 150 HP, 460V supply (up to 184 A motor current).
- Stock units available for quick turn-around replacements with industry standard components.
- OEM customization available including custom branding, alternative drive derivatives, and control modifications.

# DFS SERIES HIGH-POWER FREE- STANDING DRIVES

75 to 1,250 hp (55 to 900 kW) 380 - 460 V | 575 V

## Efficient System Build.

For many drive users, designing and building a high-power drive enclosure requires extensive in house engineering expertise that they do not have...

DFS is a pre-assembled, ready to install drive cubicle system designed for use in high power applications where energy saving and high ingress protection are key. With fast, easy installation, plant availability is maximized with virtually zero requirement from your engineering resource.

### Optimum local service support to minimize downtime

- Rapid on-site support, in your language, from highly qualified and experienced service and application engineers
- Efficient service with replacement parts available locally
- Comprehensive online support including:
  - i. Drive set-up, diagnostic tool and
  - ii. online support system with dynamic logic diagrams

### Pre-installed options available include:

EMC filter | Energy metering | 24V back-up supply wiring |  
Empty sections can be integrated for customer equipment & installation cables





**WATER COOLING  
AVAILABLE**

### Includes power disconnect and fuses

### Fast turnaround

- Control Techniques Drive Centers and Partners have all the tools required to generate fast quotations to minimize delays in the ordering process.
- For emergency breakdowns where a replacement drive is needed quickly, DFS can be shipped in as little as one week.
- Standard lead-times are six weeks.

### Easy set-up

- Door-mounted multi-language HMI for easy commissioning.
- Real time clock for enhanced diagnostics.
- Connect PC tool for optimised commissioning:
  - i. Full parameter management features including cloning.
  - ii. Real time visualization and manipulation of drive control system with dynamic logic diagrams.

### Industry standard cubicles which integrate with your existing installation

### Rugged, reliable drive systems

- Highly robust enclosures with ingress protection options to meet the needs of the application – UL Type 12 / NEMA 12 as standard.
  - i. UL Type 3R / NEMA 3R as selectable option
- Enclosure temperature control via intelligent fan system.
- Built with stringent quality controls with full traceability & rigorous testing.
- High quality auxiliary components sourced from leading automation industry vendors.

# SPECIALIST DRIVES

ELEVATOR, PUMP & HVAC

# PRODUCTS IN THIS RANGE

ELEVATOR DRIVE E300 | PUMP DRIVE F600 | HVAC DRIVE H300



# ELEVATOR DRIVE E300

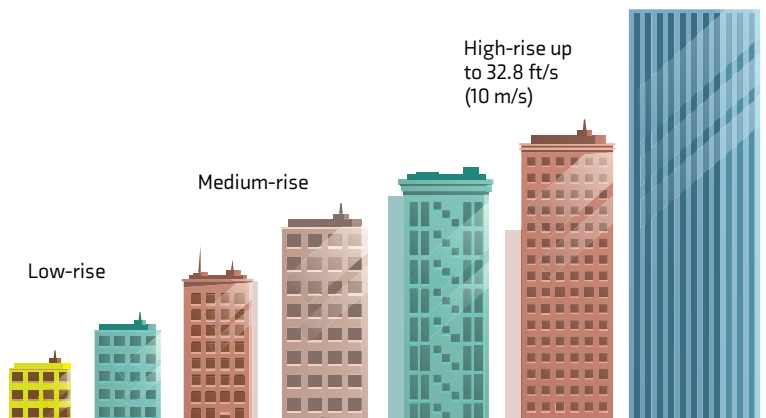
# CLASS-LEADING

# RIDE COMFORT

3 to 400 hp (2.2 to 250 kW) | 208 - 230 V | 380 - 460 V | 575 V | 690 V

## Match all requirements seamlessly

We provide elevator drive solutions for any size of building, from small residential to luxury high-rise, new build or modernization projects. Our mission is to make every step of the process as easy as possible, from product selection to installation, setup & service.



## Building Type

## Unparalleled performance

We design and rate our drives to offer top performance, regardless of traffic requirements or installation preference. Control Techniques' low noise and jerk-free drives are the product of choice in modern elevator systems. Our reputation for industry benchmark ride comfort is second to none.




## Product Range





## Taking elevator drives to another level

Freedom to Design	Quick Setup	Easy Optimization	Class-Leading Performance & Maintenance Support
<p><b>Broad range, compact form factor</b></p> <p>A full range of some of the smallest drives in the industry per hp rating, for all elevator applications, giving flexibility without constraints.</p>	<p><b>Elevator specific menu structure</b></p> <p>Easily make adjustments to drive settings, even without having the manual at hand.</p> 	<p><b>Keypad with backlit LCD display</b></p> <p>The Remote Keypad RTC provides clear parameter descriptions and units. All laid out in a logical sequence to support a rapid and effortless system start up.</p>	<p><b>Brake contact monitoring</b></p> <p>The TÜV certified Brake Contact Monitoring allows monitoring of up to four motor brakes. This can help even old elevator systems to comply with Unintended Car Movement, and EN81-20 and EN81-50.</p>
<p><b>Match any control interface</b></p> <p>Analog speed reference, digital I/O control, comms control, digital communications control.</p> <p>(CANopen, DCP &amp; Ethernet).</p>	<p><b>Stationary autotune</b></p> <p>Encoder offset detection &amp; optimum current loop configuration without the need to lift the brake or de-rope the system.</p>	<p><b>PC tools</b></p> <p>The advanced graphic interface lets you fine-tune your elevator system with just a few clicks.</p>	<p><b>Enhanced data logger</b></p> <p>All drives have a built-in data logger that can monitor any parameter, recording events such as drive trips. This can be written onto an SD Card or retrieved by the elevator controller via the communications link.</p>
<p><b>Encoder range</b></p> <p>Flexible encoder interface supporting resolvers and 16 different encoder types as standard. Ranging from incremental encoders to EnDat, Hiperface and BiSS. All without the need for additional encoder cards.</p>	<p><b>Simple UPS connection</b></p> <p>The easy connectivity ensures optimum backup &amp; rescue operation.</p>	<p><b>Parameter storage &amp; cloning</b></p> <p>Quickly back up drive configurations to an SD Card or Smartcard, or use the Elevator Connect PC tool.</p>	<p><b>Travel counter</b></p> <p>The built in travel counter helps keep track of rope lifetime when plastic ropes are used in the elevator system. The drive warns when critical thresholds have been reached, and maintenance is necessary.</p>
<p><b>Safe Torque Off</b></p> <p>Our TÜV certified STO function provides a highly dependable method for preventing the motor from being driven, removing the need for both output motor contactors.</p>	<p><b>Pluggable drive terminals</b></p> <p>Control terminal connections are pluggable across the full range and biased to ensure correct connection. Supply and motor power terminal connections are pluggable up to 30 hp (22 kW).</p>	<p><b>Diagnostics</b></p> <p>Simple trip code system makes it easy to diagnose drive errors.</p> <p>Records the last 10 trip codes within the drive to aid troubleshooting.</p> <p>Time and date stamp option with the Remote Keypad RTC.</p>	<p><b>Blocked cabin release function</b></p> <p>The release blocked cabin control will release the elevator's safety gear when it has been deployed, and helps return the blocked cabin to normal operation. This removes the need to climb into the elevator shaft to release the safety gear.</p>

### Easy click-in keypad connection

### Dedicated elevator keypad, providing:

- Easy-to-use menu and parameter structure.
- Local and remote mounting.
- Real-time clock.



### Power on / Drive status LED

### Single screw removable cover

### 3 x System Integration (SI) module slots for communications, I/O, additional feedback devices

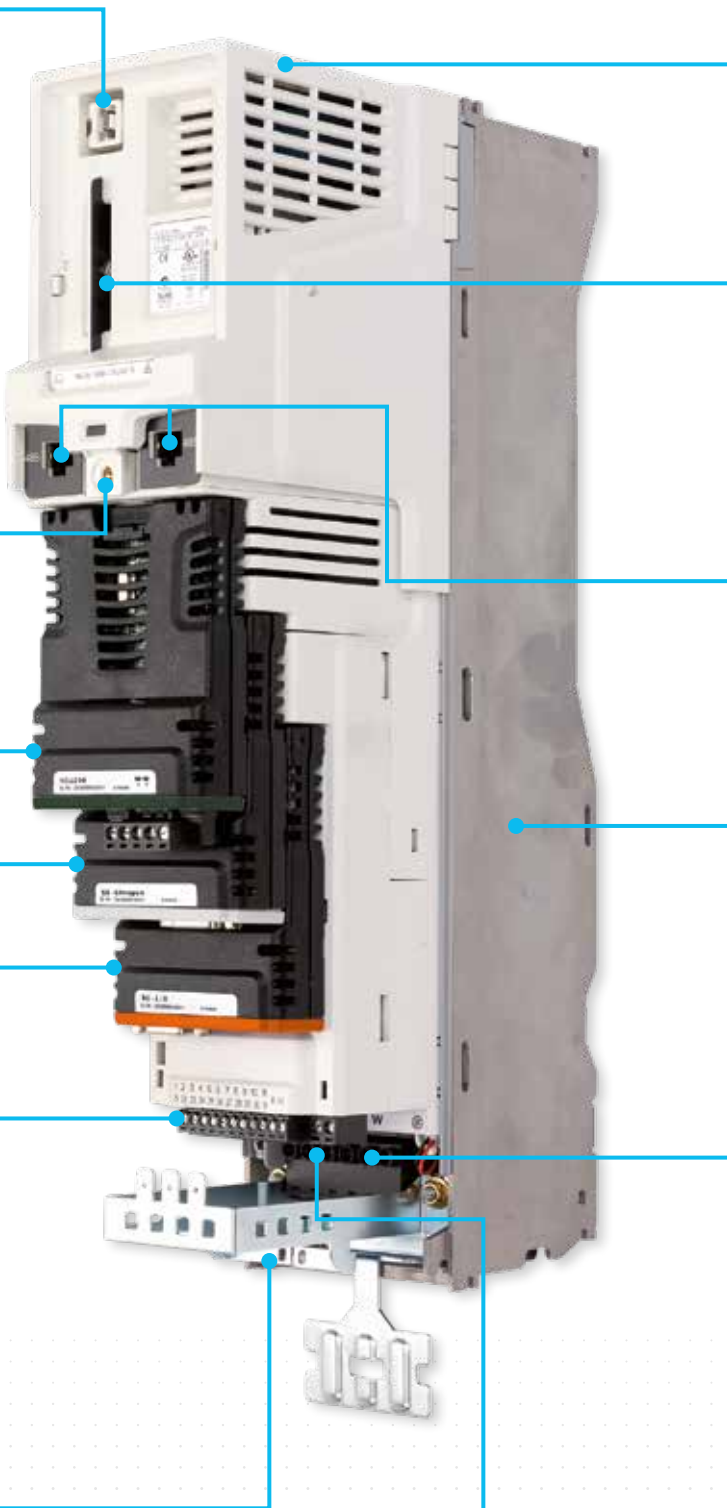
### Pluggable control connections

### Robust cable management system

Grounding point for shielded control and power cables



\*Features and their locations vary between drive sizes.



**Terminal cover for DC bus, braking terminal and onboard EMC filter\***

**Slot for Smartcard / SD Card Adaptor**  
 For parameter storage, backup of drive configuration and cloning of parameters.

**RS485 communications port Modbus RTU**

**Aluminum chassis**  
 Allows flexible mounting, with high performance extruded heatsink.

**Flexible dual port universal encoder interface**  
 Supporting a wide range of incremental encoders (e.g. AB and SC), absolute encoders (e.g. SC.SSI, SC.EnDat, SC.Hiperface, SC.SC and SC.BiSS) and absolute comms encoders (EnDat and BiSS).

**User-friendly power connections**  
 With removable terminals\*.

## PUMP DRIVE F600

# SIMPLE, RELIABLE FLOW CONTROL

The specialist pump drive from the drive specialists.

Available in NEMA 1 (IP20) and NEMA 4 (IP65) variants

**F600 has energy-saving features and simple guided setup for your pump, no matter the requirements.**

Applications involving the flow of air or water demand extreme reliability and low energy consumption. Control Techniques' F600, part of its Specialist category of industry-specific drive technologies, meets these needs. It builds on five decades of specialist drives expertise from Control Techniques, delivering fast, dependable control in the areas it's needed most.

Everything you need is baked into the drive itself. We've thought of all the details, from the features you'll need the most to the terminology you'll understand. This isn't a general-purpose drive with pump features added on; it's a dedicated, specialist pump drive, designed from the ground up to deliver the performance, reliability and efficiency you need.



### Free 5-year warranty

To share our confidence in the reliability of Control Techniques, drives in the F600 range are eligible for Control Techniques' extended warranty, at no extra cost.

With 5 years guarantee, rest assured your application will continue to run uninterrupted, giving an unbeatable total cost

**Warranty terms and conditions apply.**



## Speaks your language

Built-in pump functionality to suit your every need, optimized for minimal setup time yet sacrificing none of the flexibility. Pump control made simpler than ever via specialist, dedicated approach to a clear parameter naming and structure.

## Energy efficiency as standard

F600 is designed from the ground up to save energy, via drive efficiency, optimized motor control, low load savings and more.

## Drive accessibility, refined

F600's back-lit hand-off-auto keypad enables quick and easy setup of the drive, with intuitive menu design, clear display and diagnostic information right at your fingertips.

## Total control

Control induction, or permanent-magnet motors for greater efficiencies. For maximum efficiency, F600 is suitably designed to be packaged with the brand-new Leroy Somer Dyneo+ range of ultra-high efficiency motors, which achieve the highest efficiency class, IE5.

## Enhanced reliability

Conformal coating designed for 3C2 environments is provided as standard, to protect your drive under harsh conditions. A safe torque off (STO) input is also built-in as standard for maximum safety.

## PC connectivity

Setup your F600 using Control Techniques' Connect tool, featuring a dedicated pump and fan guide to walk you through each stage of setup, from selecting motor type to configuring pump-specific function: cleaning or pipe-fill.

## Communications

Modbus RTU is provided as standard onboard the drive, with option modules available for additional fieldbus connectivity.



# OPTIMIZED CONTROL FOR YOUR PUMP SOLUTIONS

## Free 5 Year Warranty

**Guarantees confidence in Control Techniques drives' reliability.**

All F600s up to 75 hp (55 kW) can register to extend the warranty from the standard two years to five at no extra cost.

For the past 45 years we have brought new technology and innovations to the world of automation. You can buy a F600 with confidence, safe in the knowledge that your purchase comes with the security a 5 year warranty offers.

Control Techniques' free 5 year warranty is another testament of our exceptional track record for reliability and durability. With 5 years guarantee, rest assured your application will continue to run uninterrupted, giving an unbeatable total cost of ownership.

Warranty terms and conditions apply.

### Pipe Fill

Mitigate spikes in pressure using a controlled ramp, protect your piping system and preserve equipment lifetime.

### Over-cycling

Ensure uniform wear in multi-pump systems and limit pumping sequences, with flexible configurations to dynamically alter cycling reference limits, set an alarm or trip the drive.

### Cleaning

Live continuous measurement of torque producing current and pump speed is monitored, which is used to trigger an automatic drive-based cleansing cycle to clear the pump impeller and reduce maintenance costs on cleaning pump blockages.

### Dry-run

Prevent the pump running dry by checking the load against a threshold; with flexible configurations to dynamically adjust output, set an alarm or trip the drive.

### Switch Control

Level switches provide critical protection for tanks in the event of the level reaching a “high” switch, whereby the pump is stopped, or a “low” switch, whereby the pump is started, to ensure pumping within tank levels.

# DUST AND WATER RESISTANT PUMP DRIVE F600 HIGH IP VARIANT

**The Pump Drive F600 offers a full INEMA 4 - IP65 solution with exactly the same dedicated pump features & capabilities as the standard models.**

IP65 provides protection from total dust ingress and low-pressure water jets from any direction, making it a simple choice for harsh indoor environments. The Pump Drive F600 is now one of the most protected drives on the market, maximizing pump uptime and productivity, while cutting maintenance costs.

## Standard and High IP drives

The High IP drive will already be familiar to users of the F600, with all the same features that make commissioning effortless. The Hand-Off-Auto keypad with the built-in real-time clock is still available, sealed, and the protective casing has been designed with easy servicing and usability in mind.

This new variant enables customers to use both standard and high IP drives for the same project, so there is no longer any headache with mixing-and-matching vendors or product feature sets, making project qualification straightforward.

## Save on installation

The F600 High IP drive is enclosed in a sturdy, protective yet light casing, providing a compact solution. This not only allows easy integration in harsh environments but wall mounting close to the pump reduces installation costs, through:

- No enclosure required
- Shorter cable lengths
- Less labor time/cost to install drive

## Free 5-year warranty

To share our confidence in the reliability of Control Techniques, the Pump Drive F600 High IP product is also eligible for Control Techniques' extended warranty, at no extra cost.



Warranty terms and conditions apply.





# HVAC DRIVE H300

# EFFICIENCY AND RELIABILITY IN HVAC

Control Techniques' HVAC Drive H300 variable frequency AC drive (VFD) is the result of extensive research and builds on our vast experience of the HVAC market.

The HVAC Drive H300, part of the newly introduced Specialist series of industry-specific drive technologies, builds on our company's five decades of drives expertise, delivering precise, dependable flow control.

The HVAC Drive H300 dimensions are among the smallest in its class at every power rating. This saves valuable building real estate, makes the drives easy to handle, and maximizes mounting flexibility.



## Free 5-year warranty

To share our confidence in the reliability of Control Techniques, drives in the F600 range are eligible for Control Techniques' extended warranty, at no extra cost.

With 5 years guarantee, rest assured your application will continue to run uninterrupted, giving an unbeatable total cost

Warranty terms and conditions apply.





## The drive for building HVAC

The HVAC Drive H300 has been designed to meet the needs of:

### Consultants and design engineers


- All the necessary features to meet your building HVAC project specification.
- A highly reliable product and support service: Simply specify, install and forget.

### Contractors

- Fast, easy and secure installation, commissioning and maintenance.

### Owners of commercial buildings

- Achieves maximum building occupant comfort.
- Optimum energy saving and value with rapid ROI.



**A COMPLETE HVAC  
BUILDING  
AUTOMATION  
SOLUTION**

**The HVAC Drive H300 is optimized for fan / pump / compressor control in HVAC applications and has all the features you would expect from a dedicated HVAC drive and more:**



### Building automation systems

- Seamless integration with Building Automation Systems with the following onboard communications supported:
  - i. BACnet, conformance tested to guarantee reliable operation
  - ii. Modbus RTU communications

### Custom software

- Flexibility without a Building Management System with optional modules for running custom application software.

### Fire mode

- The HVAC Drive H300 has onboard Fire mode which allows the drive to continue running uninterrupted in the event of a fire. It can allow the safe extraction of smoke while the drive's other functions are maintained.

### Energy efficiency as standard

- Exponential energy savings through fitting a Control Techniques Variable Frequency Drive into the application.
- HVAC Drive H300 provides high energy efficiency, up to 98% where very little energy is lost in the conversion.
- Motor control of super high efficiency sensor-less permanent magnet motors.
- Dynamic Volts/Hertz energy optimization minimizes power loss under low load conditions.

### High efficiency operating modes

- Quiet operation with Rotor Flux Control modes, high switching frequencies (up to 16 kHz).
- Intelligent 10 speed drive cooling fan with minimum noise operation.

### Conformal coated PCB

- High product reliability with conformally coated PCBs as standard.

### Compact dimensions

- Among the most compact VFD in its class at every frame size, maximizing mounting flexibility.

### Dual PID

- Built-in dual process PID loops that can operate independently or be combined to provide more complex functionality.

### Energy savings

- Energy savings features promise a low total cost ownership:
  - i. Sleep, Wake & VFD standby modes ensure minimal wasted energy
  - ii. Onboard power metering includes a cost per kWh function to track operating costs
  - iii. Energy savings verified with CT Energy Efficiency Calculator tool

### Thermistor monitoring

- A temperature sensor input is available which can directly provide an analog input without a transducer for control of fans, pumps and compressors.

# DUST AND WATER RESISTANT HVAC DRIVE H300 HIGH IP VARIANT

**The HVAC Drive H300 offers a full NEMA 4 - IP65 solution with exactly the same dedicated HVAC features & capabilities as the standard models.**

IP65 provides protection from total dust ingress and low-pressure water jets from any direction, making it a simple choice for harsh indoor environments. The HVAC Drive H300 is now one of the most protected drives on the market, maximizing uptime and productivity, while cutting maintenance costs.

## Standard and High IP drives

The High IP drive will already be familiar to users of the HVAC Drive H300, with all the same features that make commissioning effortless. The Hand-Off-Auto keypad with the built-in real-time clock is still available, sealed, and the protective casing has been designed with easy servicing and usability in mind.

This new variant enables customers to use both standard and high IP drives for the same project, so there is no longer any headache with mixing-and-matching vendors or product feature sets, making project qualification straightforward.

## Save on installation

The HVAC Drive H300 High IP drive is enclosed in a sturdy, protective yet light casing, providing a compact solution. This not only allows easy integration in harsh environments but wall mounting close to the motor reduces installation costs, through:

- No enclosure required
- Shorter cable lengths
- Less labor time/cost to install drive

## Free 5-year warranty

To share our confidence in the reliability of Control Techniques, the HVAC Drive H300 High IP product is also eligible for Control Techniques' extended warranty, at no extra cost.



Warranty terms and conditions apply.



# SERVO DRIVES AND MOTORS

**DIGITAX  
UNIMOTOR**



# PRODUCTS IN THIS RANGE

DIGITAX HD SERIES | UNIMOTOR HD

**Applications:**



Printing



Packaging  
Machines



Textiles



Robotics



Extruders



## DIGITAX HD

# MINIMUM SIZE, MAXIMUM PERFORMANCE

0.5 - 37.6 lb-ft (0.7 - 51 Nm) with 113 lb-ft (153 Nm) peak 1.5 A – 16 A  
with 48 A peak

208 - 230 V | 380 - 460 V | 0.33 - 10 hp (0.25 - 7.5 kW)

### Servo Drive Series

**Digitax HD brings ultimate performance to high dynamic applications, where high peak torque is required for fast acceleration.**

Optimized for high-dynamic applications, Digitax HD provides the flexibility of both standalone and modular configurations. The drive offers full servo control plus open loop permanent magnet motor and induction motor control across three functionality levels: EtherCAT, Ethernet and the flexible Base servo drive.

### DIGITAX HD: Application Flexibility

**Three functional variants** and support for all common industrial field-buses guarantee flexible adaptation to any automation architecture.



#### Digital printing:

Label and packaging print machines



#### Textile:

Knitting machines



**DIGITAX HD**  
M750 Ethernet



**DIGITAX HD**  
M751 Base



**DIGITAX HD**  
M753 EtherCAT



**DIGITAX HD**  
M754 MCI

EtherNet/IP 

 Modbus

EtherCAT 



**DIGITAX HD**

# **RAPID INSTALLATION, DYNAMIC MOTION**





### Rapid installation and commissioning from standalone to a modular servo system

- Single AC input, 24 V and communication links, and common DC bus.
- DIN rail alignment, single cable technology and easy access pluggable connectors.
- Fast programming and commissioning PC tools.

### Boost throughput with high dynamic motion control

Digitax HD brings maximum throughput and production quality to your machines.

- i. 300% peak current performance pulse-duty overload.
- ii. Optimized control loops for high dynamic performance.
- iii. Up to 16 kHz switching frequency.
- iv. Advanced bi-quad filters for suppression of mechanical resonances.

### Reduce cost by maximizing cabinet space

- Drive width of only 1.6 in (40 mm) for increased packing density within the cabinet.
- Reduce cabinet height with UltraFlow™ technology which dissipates heat directly outside of the enclosure.
- Install Digitax HD in an enclosure just 8 in (200 mm) deep.



## UNIMOTOR HD

# HIGH DYNAMIC PERFORMANCE



The Ultimate Motor and Drive Combination

**Control Techniques offer drive and motor combinations that provide an optimized system in terms of ratings, performance, cost and ease of use.**

Unimotor hd motors fitted with high resolution Sin Cos or Absolute encoders are pre-loaded with the motor “electronic nameplate” data during the manufacturing process. This data can be read by any of our servo drives and used to automatically optimize the drive settings. This feature simplifies commissioning and maintenance, ensures consistent performance and saves time.

### Unimotor hd

#### High Dynamic AC Brushless Servo Motor

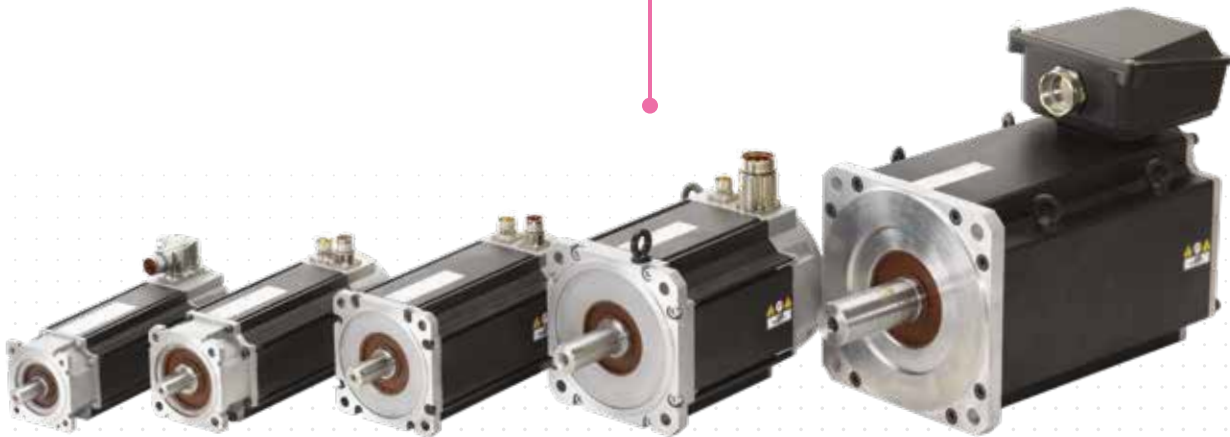
060 to 190 Frames | 0.53 to 62.7 lb-ft (0.72 to 85 Nm) 188 lb-ft (255 Nm)

Unimotor hd is Control Techniques' high dynamic brushless AC servo motor range, designed for operation with Unidrive M, Digitax HD servo drives. Designed for high dynamic applications requiring hard accelerations and decelerations.

## Features:

Unimotor hd are suitable for a wide range of industrial applications, due to their extensive range of features:

- Torque range: from 0.53 to 62.7 lb-ft (0.72 to 85 Nm)
- High torque to inertia ratio for high dynamic performance.
- Compact but powerful.
- High energy dissipation parking brakes.
- IP65 conformance; sealed against water spray and dust when mounted & connected.
- Segmented stator design.
- World class performance.
- Supported by rigorous testing for performance and reliability.
- Winding voltages for inverter supply of 400 V & 220 V.
- Rated speeds from 1,000 to 6,000 rpm.
- Larger shafts to increase torsional rigidity.
- Thermal protection by PTC thermistor/optional KTY84.130 sensor.



# DC DRIVES

MENTOR  
QUANTUM



# PRODUCTS IN THIS RANGE

MENTOR MP | QUANTUM MP

## Key Benefits:

- Designed for easy set-up and commissioning
- Drive intelligence and system integration
- Machine communications flexibility
- Comprehensive motor field control
- Enhanced system design control
- Fast set-up, configuration and monitoring



# MENTOR MP

# LEADING DIGITAL

# DRIVE TECHNOLOGY

25A to 7400A Two or four quadrant operation (regenerative)

24V - 480V | 500V - 575V | 500V - 690V

## The ultimate DC drive; Mentor MP is Control Techniques' fifth generation DC drive

This makes Mentor MP the most advanced DC drive available, giving optimum performance and flexible system interfacing capability. This drive allows you to maximize motor performance, enhance system reliability and interface digitally with modern control equipment using Ethernet and fieldbus networks. The drive is designed for easy retrofitting from Mentor II and for high power configuration.

Output power connections to motor with removable covers

Armature voltage feedback for use with DC contactor and inverter common DC bus systems

Fuses for field protection (removable cartridge)

Communications port for external field controller





# QUANTUM MP

# PACKAGED MENTOR MP

# DC DRIVE SYSTEM

## The packaged Mentor MP drive

The Quantum MP is a packaged Mentor MP that integrates the control functionality of the Mentor MP with a design that incorporates a DC loop contactor, high-speed input fuses, 120 Vac control logic and DC output fuses (on all regenerative models). A dynamic braking contactor is also included in drives up to and including 350 A models. The Quantum MP saves engineering time and panel space.

Existing Mentor II and Quantum III customers can easily migrate to the new MP platform. All Mentor MP power terminal locations and mounting points are the same as those of the Mentor II. Similarly, all Quantum MP control terminals are the same format as the Quantum III. Both drives include complimentary software tools to assist in transferring drive parameters and programs from older products to new ones.





# ADDITIONAL QUANTUM MP

# KEY FEATURES

Motor armature connections

Control power supply





**AC supply fuses**

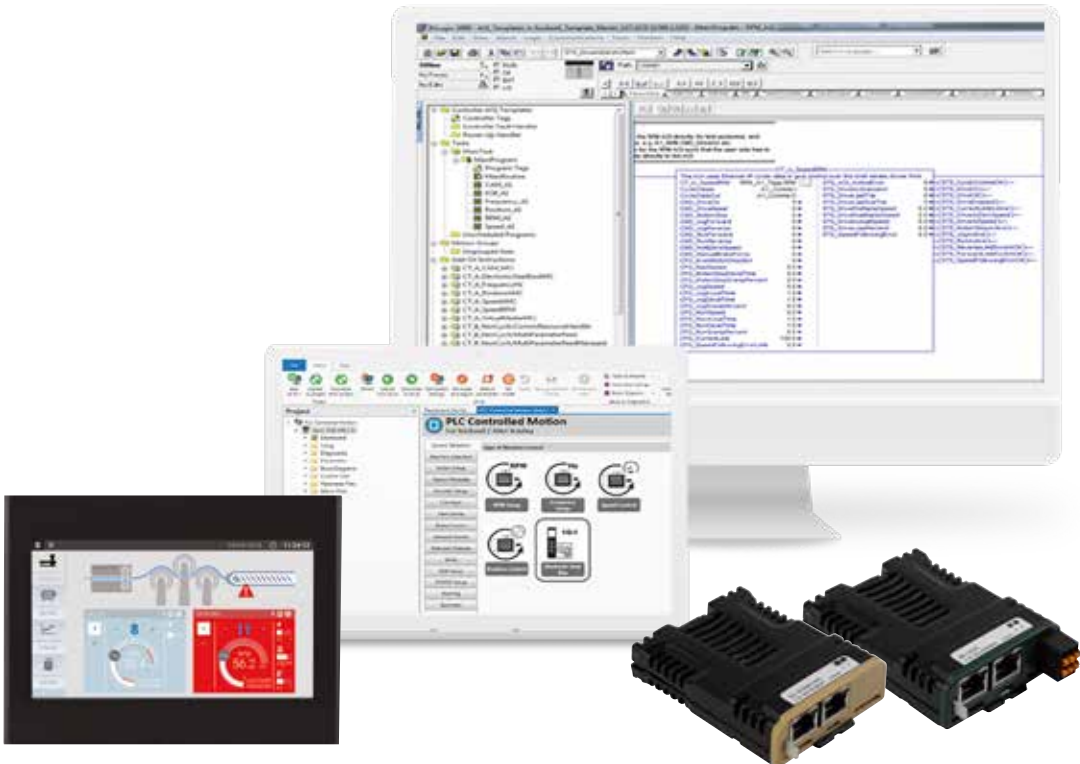
**Customer 120 Vac  
control connections**

# INDUSTRIAL CONTROL



# PRODUCTS IN THIS RANGE

MOTION MADE EASY | PLC CONTROLLED MOTION | MCH040, MCH070,  
MCHMOBILE | REMOTE I/O | MCe MACHINE CONTROLLER | MCz INDUSTRIAL PC |  
INTEGRATION MODULES



MOTION MADE EASY<sup>®</sup>

# CONFIGURE MOTION CONTROL IN MINUTES

## PowerTools Studio software

PowerTools Studio provides an unparalleled setup and commissioning experience suitable for all skill levels. Professional motion control software engineers, infrequent users, or someone with no servo experience can equally use this interface to program drives.

- Easily program the Digitax HD or Unidrive M using a Modbus RTU serial port or on-board Ethernet depending on your model
- Simple configuration and programming visual interface
  - i. Fill-in-the-blank
  - ii. Point-and-Click
  - iii. Drop down menu selection
  - iv. Drag-and-Drop parameters and I/O assignments
- Instant access to all parameters through the project tree view
- As always with Control Techniques, the software is freely available for download.



## PTi210 PowerTools Integration Module

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

- Precise reliable motion controller
- 5 high speed digital I/O points (3 inputs & 2 outputs) in addition to the on-board drive I/O
- 1.5 axis synchronized encoder following with an optional encoder system integration module
- Rapid integration for applications such as:
  - i. Conveyor Synchronization
  - ii. Parts Alignment
  - iii. Rotary Knife
  - iv. Electronic Gearing
  - v. Phase Synchronization
  - vi. Slip Compensation
  - vii. Feed to Sensor/Torque
  - viii. Point-To-Point Positioning
  - ix. Thermoforming
  - x. Flying Cutoff
  - xi. Product Spacing
  - xii. Traverse Winding
  - xiii. Labelling and Printing
  - xiv. Random Infeed Control
  - xv. Web Control
  - xvi. Multi-Lane Merge Control
  - xvii. Registration Control

**and many more!**

# PowerTools Studio and the five steps to Motion Control

## 1 Hardware

Enter the drive, motor and feedback data through an easy to understand visual interface.

## 2 Setup

Establish the units used for setting up distance, velocity and acceleration and other key optional drive settings such as tuning and system limits.

## 3 I/O Setup

Assignments setup works like virtual wires to define how the system operates. Drag and drop drive input (source) functions with drive output (destination) functions. The assignment functions include both physical hardware I/O and virtual internal I/O.

## 4 Motion Setup

Motion setup provides a visual interface to setup a home reference move, point-to-point indexing moves, jog moves, electronic gearing and camming, and a profiling feature that allows a user to simultaneously execute any two motion types together for a summed profile which is important for phasing applications such as random infeed, rotary knife or smart conveyor systems.

## 5 Programs (if required)

Combine program flow and motion instructions to create fully customized user programs of up to 1,000 lines of code. Conditional branching, wait for, program calls, formulas, user variables and numerous motion instructions are available to facilitate a variety of applications, from simple to complex.



# PLC CONTROLLED MOTION INTEGRATION MADE EASY

FOR MAJOR PLC's

**PLC Controlled Motion greatly simplifies the integration of Control Techniques drives into major systems.**

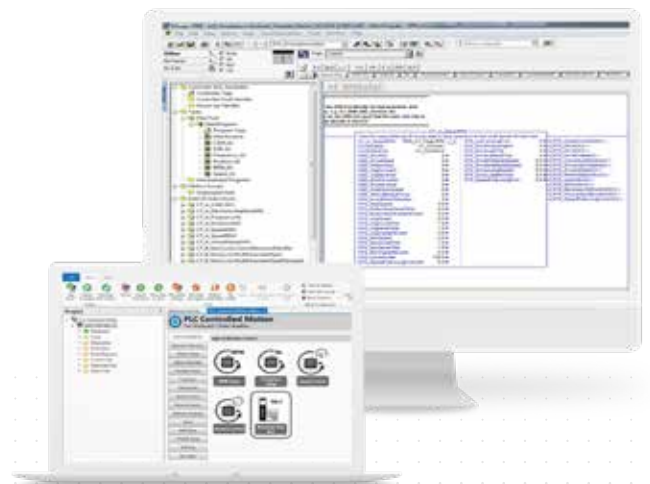
Composed of two parts, a function block for the PLC and a guided setup within the Connect PC tool, the process of creating the PLC control logic and configuring the powerful onboard motion capabilities of the drive is greatly simplified.

## Application Benefits

**Utilizing the high-performance Advanced Motion Controller (AMC) inside the drive not only yields significant performance benefits but gives the possibility to create complex and high-performance motion without the need to use very powerful PLCs.**

All common control & commissioning parameters can be adjusted from the PLC reducing the need to leave the programming environment.

Ladder logic is used extensively in the implementation to ease understanding and facilitate debugging of the application logic. A level of customization is also possible by the application developer should the function blocks provided not quite meet the needs of the application.



### Installation and Configuration

A single installation will load all the function blocks and documentation required, as well as example projects to get the application up and running as quickly as possible.

Also included, is a library of utility function blocks that may be used to further reduce application development time.

PLC Controlled Motion fully configures the Ethernet/IP links thus reducing setup time and leaving more time to focus on the application development.



### Motion Configuration

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

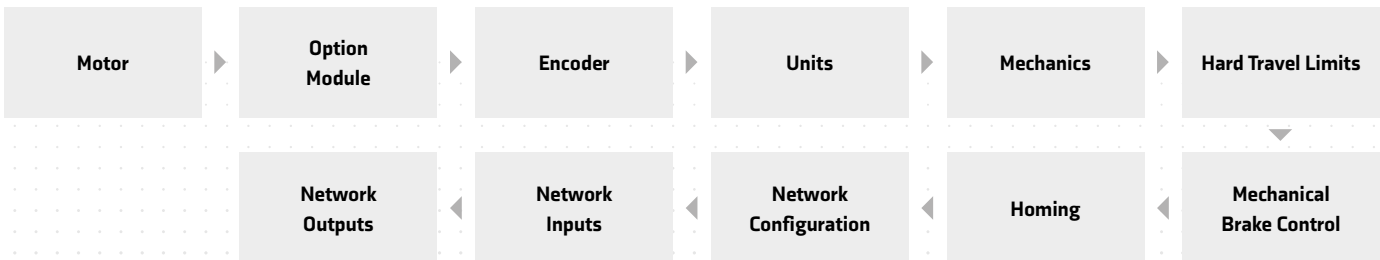
- 1** Frequency Setup
- 2** RPM Setup
- 3** Speed Control
- 4** Position Control
- 5** Electronic Gear Box

### Motion Configuration

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

- 1** Standard Gearbox Ratio
- 2** Belt and Pulley
- 3** Ball Screw Linear Slide
- 4** Rack and Pinion
- 5** Conveyor
- 6** Worm Drive
- 7** User Defined Rotary Ratio

### Guided steps for easy application configuration:



# MCh040, MCh070, MChMOBILE

# POWERFUL, FLEXIBLE

# AND EASY TO USE

## HMI PANELS & SOFTWARE

The MCh040 & MCh070 panels and MChMobile Software have been designed for the easy development of HMI applications including factory and building automation.

MCh040 features a bright 4.3" TFT widescreen (16:9) display and MCh070 features a bright 7" TFT widescreen (16:9) display with a fully dimmable LED backlight.

	MCh040	MCh070
<b>System Resources</b>		
Display - Colors	4.3" TFT 16:9 - 64K	7" TFT 16:9 - 64K
Resolution	480x272	800x480, WVGA
Brightness	200 Cd/m <sup>2</sup> typ.	200 Cd/m <sup>2</sup> typ.
Dimming	Yes	Yes
Touchscreen	Resistive	Resistive
CPU	ARM Cortex-A8 - 300 MHz	ARM Cortex-A8 - 1 GHz
Operating System	Linux 3.12	Linux 3.12
Flash	2 GB	4 GB
RAM	256 MB	512 MB
Real Time Clock, RTC Back-up, Buzzer	Yes	Yes
<b>Interface</b>		
Ethernet port	1 (port 0 - 10/100)	1 (port 0 - 10/100)
USB port	1 (Host v. 2.0, max. 500 mA)	1 (Host v. 2.0, max. 500 mA)
Serial port 1	1 (RS-232, RS-485, RS-422, software configurable)	1 (RS-232, RS-485, RS-422, software configurable)



- 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 state-of-the-art HMI features: data acquisition and logging, trend presentation, alarm handling, scheduler and timed actions (daily and weekly schedulers, exception dates), 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: control visibility and transparency, move, resize and rotate any object on screen. Change properties of basic and complex objects.
- Off-line and on-line simulation.
- Wide selection of communication drivers available to communicate with our drives with multiple-driver communication capability.
- Data display in numerical, text, bargraph, analogue gauges and image formats.

**Standard Modbus**

- Modbus RTU
- Modbus RTU server
- Modbus TCP
- Modbus TCP server

**Others**

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

**CT Modbus**

- CT Modbus TCP

- Rich gallery of objects and symbols.



# REMOTE I/O & ETHERCAT I/O

# PROCESS CONTROL

# APPLICATIONS

## I/O Modules enable process control without PLC

Process control applications often use a PLC system to manage the process, using I/O to communicate with sensors attached to the machines involved.

Now, a series of I/O modules is available for Control Techniques' drives. They are designed to enable applications of moderate complexity to be managed without the need for a PLC system, but directly using the drive itself. The first two products are an EtherCAT Remote I/O module, and a RTMoE or Modbus TCP Remote I/O module. Additional products may be added to the series in due course, according to demand.



RTMoE or Modbus TCP Remote I/Os



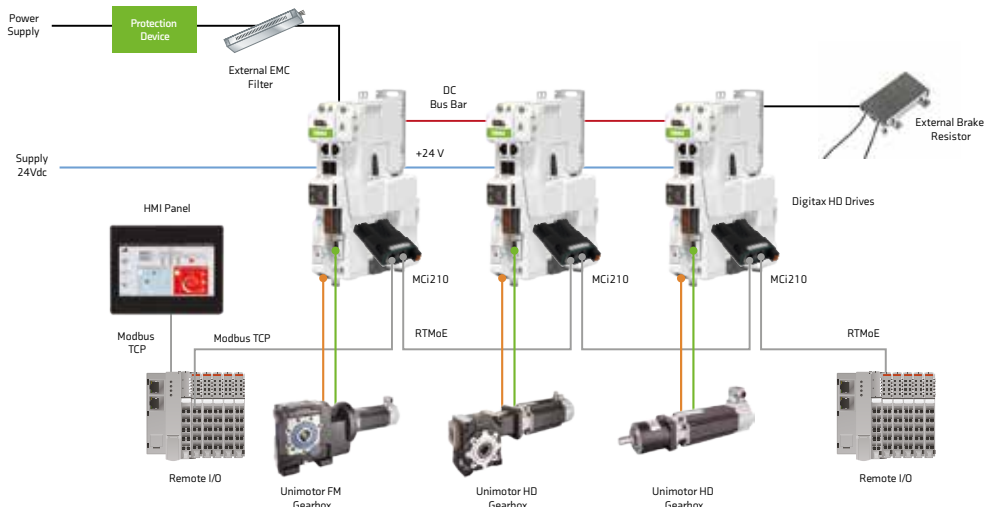
EtherCAT Remote I/Os



### RTMoE or Modbus TCP Remote I/Os - Most widely used network protocol

In this configuration, add-on RTMoE or Modbus TCP Remote I/O modules connect directly via the on-board Ethernet port of the M7XX series drives, or via the onboard Ethernet port of the MCi210 Machine Control option modules.

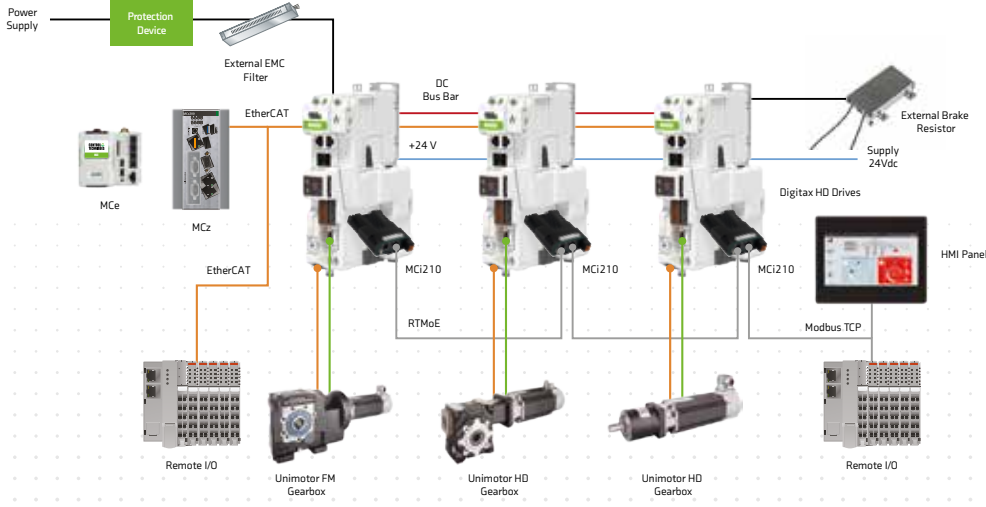
A typical configuration would include MCi2XX Machine Control option modules, Machine Control Studio software and the MCh040/MCh070 HMI Panels. All sensor inputs and outputs can be controlled, including LEDs, pushbuttons, temperature controls, machine status indicators and fluid flow sensors.



### EtherCAT Remote I/Os - Easy connection of analogue and digital input & output signals

In this configuration, 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, MCi2XX Machine Control option modules, Machine Control Studio software and the MCh040/MCh070 HMI Panels. All sensor inputs and outputs can be controlled, including LEDs, pushbuttons, temperature controls, machine status indicators and fluid flow sensors.



Mce200

# MACHINE CONTROLLER WITH HIGH PERFORMANCE MOTION FEATURES

## Benefits

Fast machine development due to integration of logic, motion and visualization

The Control Techniques solution provides an environment for programming controllers in all key programming languages with seamless support for the generation of visualizations.

Ease of use open standards

The use of standard Codesys provides ease-of-use. This package is supported by the majority of automation vendors, and most automation engineers are trained to use it.

Maximum choice for component integration due to PC based architecture

PC based architecture, including the Windows 10™ operating system, allows for the easy integration of third-party components. This provides machine builders flexibility to choose best-in-class components for all applications.

Simple application integration due to standard onboard interfaces

Standard onboard interfaces including four Ethernet ports and two USB ports, mean that the Embedded Controller can be easily integrated with any application or machine.

Robustness due to rugged design

The Embedded Controller does not contain rotating fans or internal cabling, and is designed to operate in elevated temperatures. This increases reliability and reduces the need for maintenance, even in dusty environments.

# MCE200



Our Embedded Controllers are stand-alone Machine Controllers with high performance Motion features that can manage every aspect of any industrial solution.

Our Embedded Controllers run on the Windows 10™ operating system and use standard Codesys V3.5 SP16 or newer, and so are fully compatible with third party software or hardware.

## Hardware Specifications

- Latest generation processor  
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
- Fanless
- Operating temp: -20°C to 60°C

### Support for multiple communication protocols:

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

Programmed via standard CODESYS V3.5 SP16 with these licenses included

- Softmotion
- Web Visu

# MCZ201 & MCZ601

Our Industrial PC Machine Controllers are general purpose computers that can manage every aspect of any industrial process, as well as a variety of wider tasks within your factory or business such as big data analysis. Our IPCs run on the Windows operating system and use standard Codesys V3.5 SP16 or newer, and so are fully compatible with third party software and hardware but have been optimized to work with other Control Techniques' products as a complete solution. The result is increased throughput for all machines.

There is increasing pressure on machine builders to develop new and more flexible products fast. That is why the MCz601 and MCz201 Industrial PC Machine Controllers have been designed to be quick and easy to install and commission. They have a robust, flexible and reliable design that allows for easy development and use, as well as for easy component and application integration.



### Benefits

Fast machine development due to integration of logic, motion and visualization

The Control Techniques solution provides an environment for programming controllers in all key programming languages with seamless support for the generation of visualizations.

Ease of use open standards

The use of standard Codesys provides ease-of-use. This package is supported by the majority of automation vendors, and most automation engineers are trained to use it.

Maximum choice for component integration due to PC based architecture

PC based architecture, including the Windows 10™ operating system, allows for the easy integration of third-party components. This provides machine builders flexibility to choose best-in-class components for all applications.

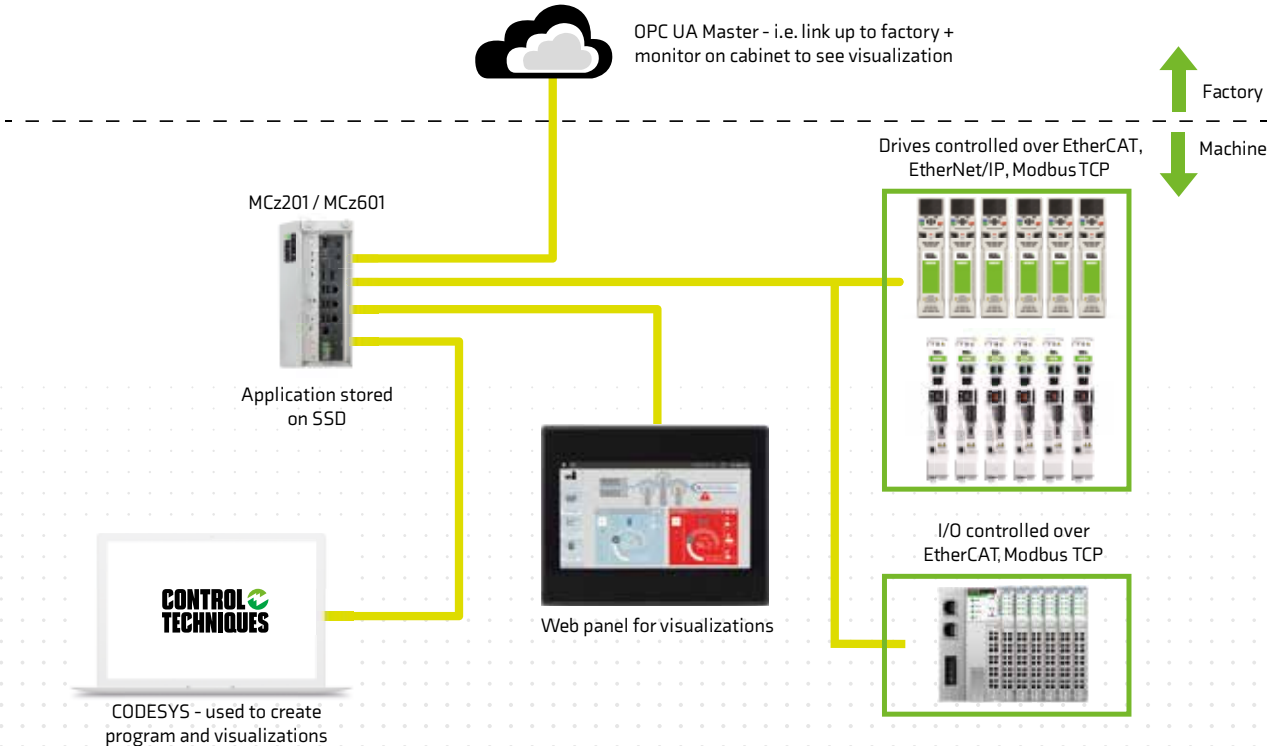
Simple application integration due to standard onboard interfaces

Standard onboard interfaces including four Ethernet ports and up to six USB ports, mean that the Industrial PC Machine Controller can be easily integrated with any application or machine.

Robustness due to rugged design

The Industrial PC Machine Controller does not contain rotating fans and is designed to operate in elevated temperatures. This increases reliability and reduces the need for maintenance, even in dusty environments.

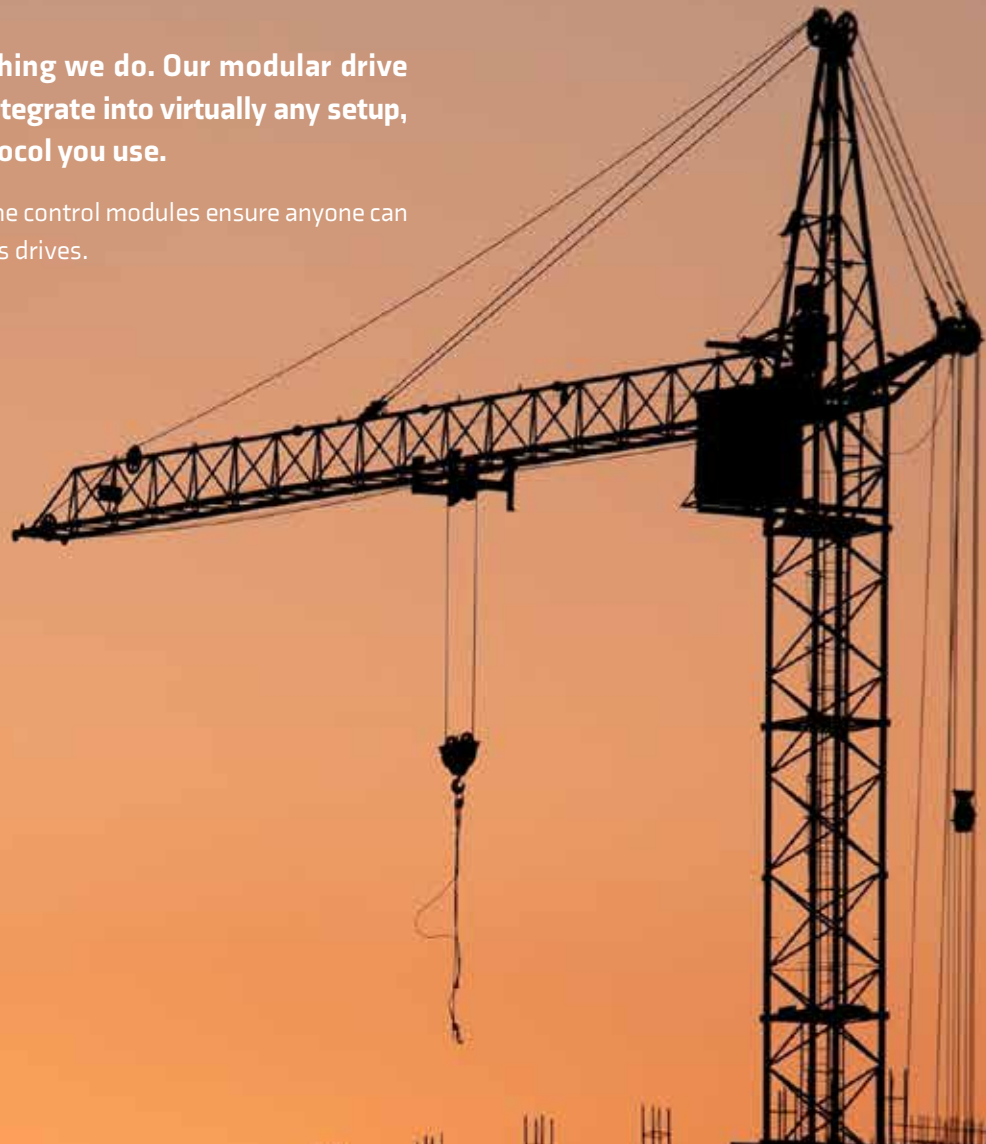
### Application example:



# INTEGRATE, AUTOMATE, COMMUNICATE

**Integration is at the heart of everything we do. Our modular drive expansion systems are designed to integrate into virtually any setup, no matter which communication protocol you use.**

Our communication, I/O, feedback and machine control modules ensure anyone can experience the benefits of Control Techniques drives.



Communication



SI-Ethernet



SI-EtherCAT



SI-PROFINET V2



SI-CANopen



SI-PROFIBUS



SI-Encoder



SI-INTERBUS



SI-POWERLINK

Machine Control



SI-Applications Compact



MCi200



MCi210



PTi210 PowerTools

Feedback



SI-Encoder



SI-Universal Encoder

I/O



SI-I/O

Safety



MiS210



MiS250

# OUR EXPERTISE





# COUNT ON OUR EXPERTISE

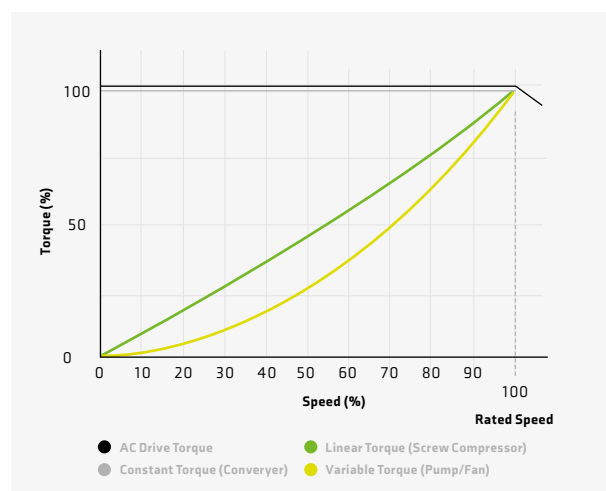
## Energy Savings

### How Variable Speed Drives Save Energy?

**Control Techniques** Variable speed drives provide effective speed control of AC motors by manipulating voltage and frequency. Controlling the speed of a motor provides users with improved process control, reduced wear on machines, increased power factor and large energy savings.

### Most applications can be grouped into the following torque categories:

- Constant torque load applications such as conveyors often require a starting torque close to the rated torque of the motor, and show only small changes as they approach rated speed.
- Linear torque load applications such as screw compressors have a torque requirement that increases proportionately with speed.
- Variable torque load applications like fans and pumps have torque requirements that increase in proportion to the square of the speed and reach 100% torque just below rated speed.



The most significant energy savings can be achieved in applications with a variable torque load. The cube law relationship between speed and power means that reducing a fan's speed in a variable torque load application by 20% can achieve energy savings of 50%. Therefore, for most motor control applications, reducing motor speed is often the easiest way to get large energy savings.

## Diagnostics to turn-key solutions & maintenance

### Energy Audits

- Pre-diagnostics (identifying main sources).
- Energy audit (gathering information & measuring electricity consumption).
- Report (measuring, suggesting and calculating achievable yield and ROI).
- Provide turnkey, high-yield solutions.
- The Energy Savings Advisor app performs a customized analysis of motor and drive energy consumption.

### Complete Offering

- US Motors high premium efficiency induction motors.
- Dyneo® best-in-class efficiency (>IE4) permanent magnet motors.
- Geared motor execution for low speed, high torque applications.
- Unidrive M standard and customized drives. Scalable automation solutions – from small machine automation projects up to complete automation & electrical turnkey solutions. High performance range.

### Installation & Commissioning

- Accredited personnel ensure reliability and safety of equipment.
- Installation in compliance with local technical regulations and safety standards.
- Onsite commissioning.
- Extended system guarantee.
- Installation and maintenance.

### After Sales

- Emergency services: 24/7 telephone and web support, onsite technical assistance, express round-the-clock delivery of products or spare parts and urgent repairs.
- Assembly centers for ongoing maintenance work (replacement, retrofit and upgrades).
- Maintenance contracts. Services are optimized on a country-to-country basis, so please refer to your local sales contact for full details. Advisor app with your smartphone or tablet, simply scan the QR-code.



# INTEGRATED SAFETY

# THE NEW

# PARADIGM OF

# SYSTEM DESIGN



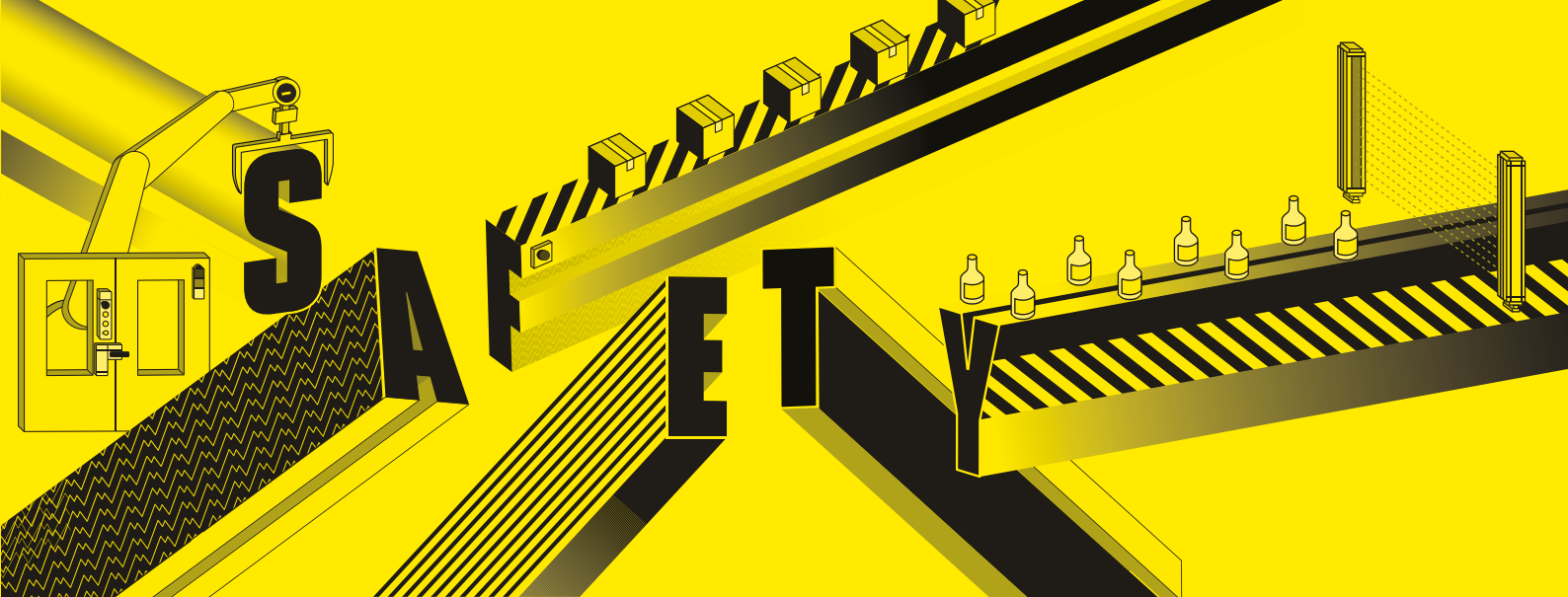
Modern industrial processes face a three-fold challenge: the constant demand for increased machine throughput, matched by a parallel need to reduce complexity and points of failure, all the while ensuring the health and safety of human operators and allowing them interaction with the running process.

Modernizing system design, replacing traditional electro-mechanical safety components with the capabilities of the latest generation of variable speed drives, is the new standard across industries to increase efficiency and availability.

Unidrive and Digitax offer integrated dual Safe Torque Off (STO) inputs, certified to SIL3 / PLe, providing an elegant and more reliable solution over traditional motor contactors.

The MiS210 and MiS250 safety options extend the built-in STO with the ability to safely monitor and/or restrict the scope of motion. Supporting both wired and safety fieldbus connections, they offer maximum flexibility in the safety system architecture.





### Simple, cost-effective & functional

The conventional approach to functional safety relies on an external safety controller, electromechanical components to disconnect the drive from the motor and often additional sensors to monitor speed or position.

Integrated safety can **dramatically reduce the cost and design time.**

Onboard STO safely switches off torque to the motor negating the need for external contactors.

The addition of an MiS210 or MiS250 Safety option enables complex safe motion monitoring directly on the drive using the existing motor encoder.

While many applications can be completely solved with a drive-based distributed architecture, when an external safety PLC is required, drive integration is easily achieved using network safety protocols.



### Performance without compromises

When protecting people and equipment from hazards, timeliness is of the essence.

Integrated safety offers **faster reaction times**, thanks to the close-coupling of safety function and drive.

Support of the SafeEnDat protocol enables the use of functional safety certified encoders, with the ability to reach SIL3 / PLe with a single motor-mounted encoder.

All of our integrated safety functions are externally certified to control category SIL 3 or PLe (Performance Level e).



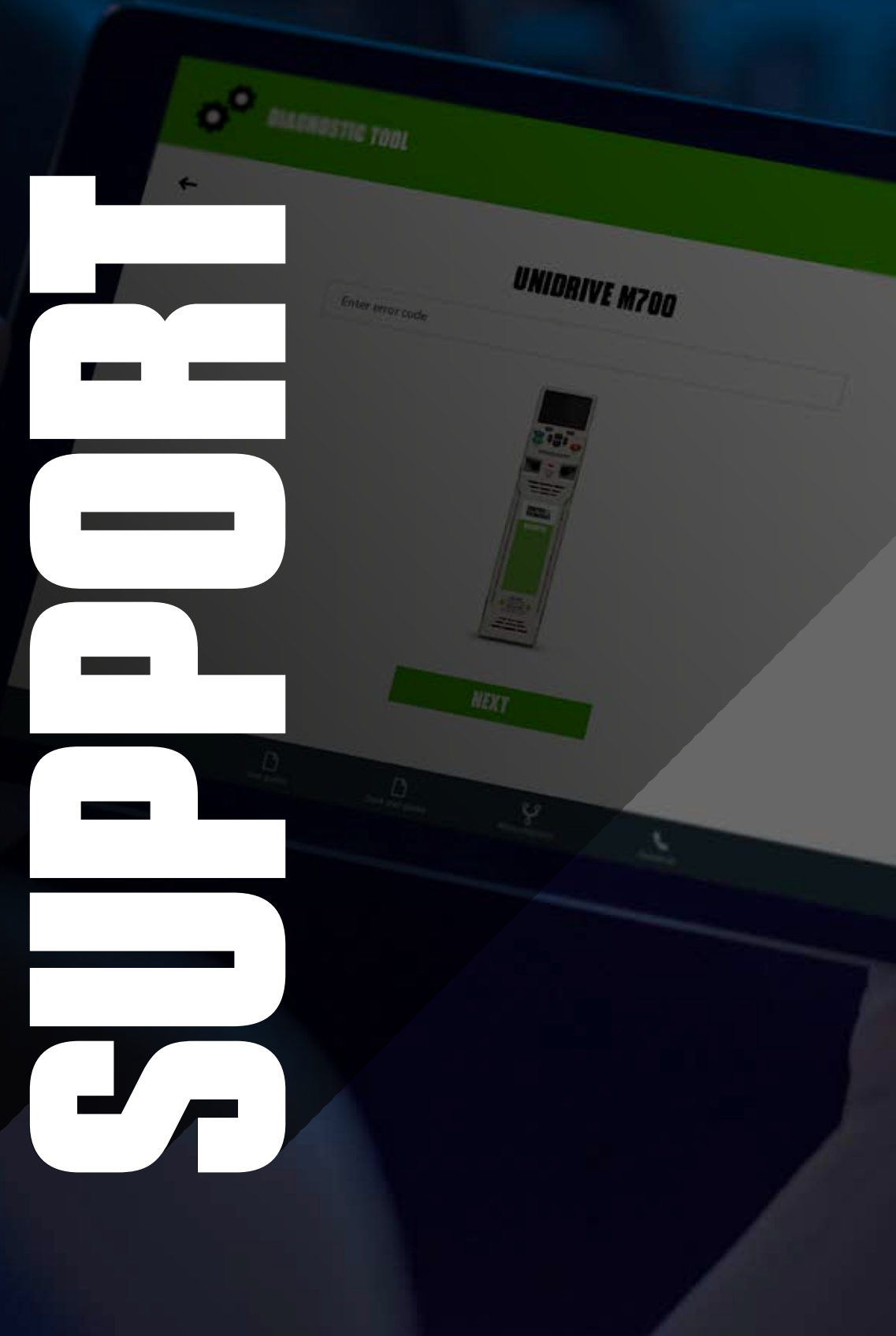
### Flexible safety solution

With an integrated safety solution from Control Techniques you always enjoy **maximum flexibility**, be it in the functional design or the choice of components and protocols to integrate.

The MiS210 and MiS250 options support several encoder protocols on up to 4 different channels wired to the drive or directly to the module. Onboard Motion Safety Functions support multiple instances and safe logic blocks are also available to allow implementation of complex safety chains.

Control and monitoring of the functions, as well as transfer of safe position and speed values are available over the main safety fieldbuses: CIP Safety over EtherNet/IP and FSoE over EtherCAT.

# SERVICE & SUPPORT



Control Techniques' 94 subsidiary Drive Centers and Resellers offer customers **local technical sales, service and design expertise; many also offer a comprehensive system design and build service including local and bespoke training courses.**



### Technical Support

Our global Drive Centre and Distributor network offers local technical support. Find your local support location.



### 5 Year Warranty

To share our confidence in the reliability of Control Techniques the Commander C, Commander S, Pump drive F600 and HVAC drive H300 product is also eligible for Control Techniques' extended warranty, at no extra cost.

*Warranty terms and conditions apply.*



### Diagnostic Tool

Quickly solve any error codes that the drive may show. Download: [controltechniques.com/mobile-applications](http://controltechniques.com/mobile-applications)



### Services & Repairs

Our certified Service and Repair Centers have extensive product knowledge and provide a prompt, professional, guaranteed repair service.



### Documentation

Product marketing literature, brochures and flyers as well as support downloads including user guides, software, firmware etc.



### Training

Control Techniques Global Training Centers offer a unique program of drive, servo and software training solutions.



### Packaged Drives

Fully designed, built & tested packages for your drive applications.



### Contact us

For any other needs please contact your local Drive Center, Country Partner or Distributor.



### Drive Set-up

Everything you need for quick and easy installation in our free-to-access online guides: [www.drive-setup.com](http://www.drive-setup.com)



CONTROL TECHNIQUES.  
NO ONE KNOWS DRIVES LIKE WE DO.

Our drive obsessive representatives will drive you in the right direction and give you first class support whenever you need it.

For more information, or to find your local drive center, visit:

[www.controltechniques.com](http://www.controltechniques.com)  
[www.driveobsessed.com](http://www.driveobsessed.com)

Connect with us



©2023 Nidec Control Techniques Limited. The information contained in this brochure is for guidance only and does not form part of any contract. The accuracy cannot be guaranteed as Nidec Control Techniques Ltd have an ongoing process of development and reserve the right to change the specification of their products without notice.

Nidec Control Techniques Limited. Registered Office: The Gro, Newtown, Powys SY16 3BE.

Registered in England and Wales. Company Reg. No. 01236886.

0781-0482-04 06/23

