



# PRODUCT PORTFOLIO



DRIVE OBSESSED

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# 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.

**1.4K+**

**Employees**

**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 70 countries with a workforce of more than 110,000.

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.

**109K**

**Employees**

**\$14.6B**

**Group Turnover**

**70+**

**Countries**

**330+**

**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

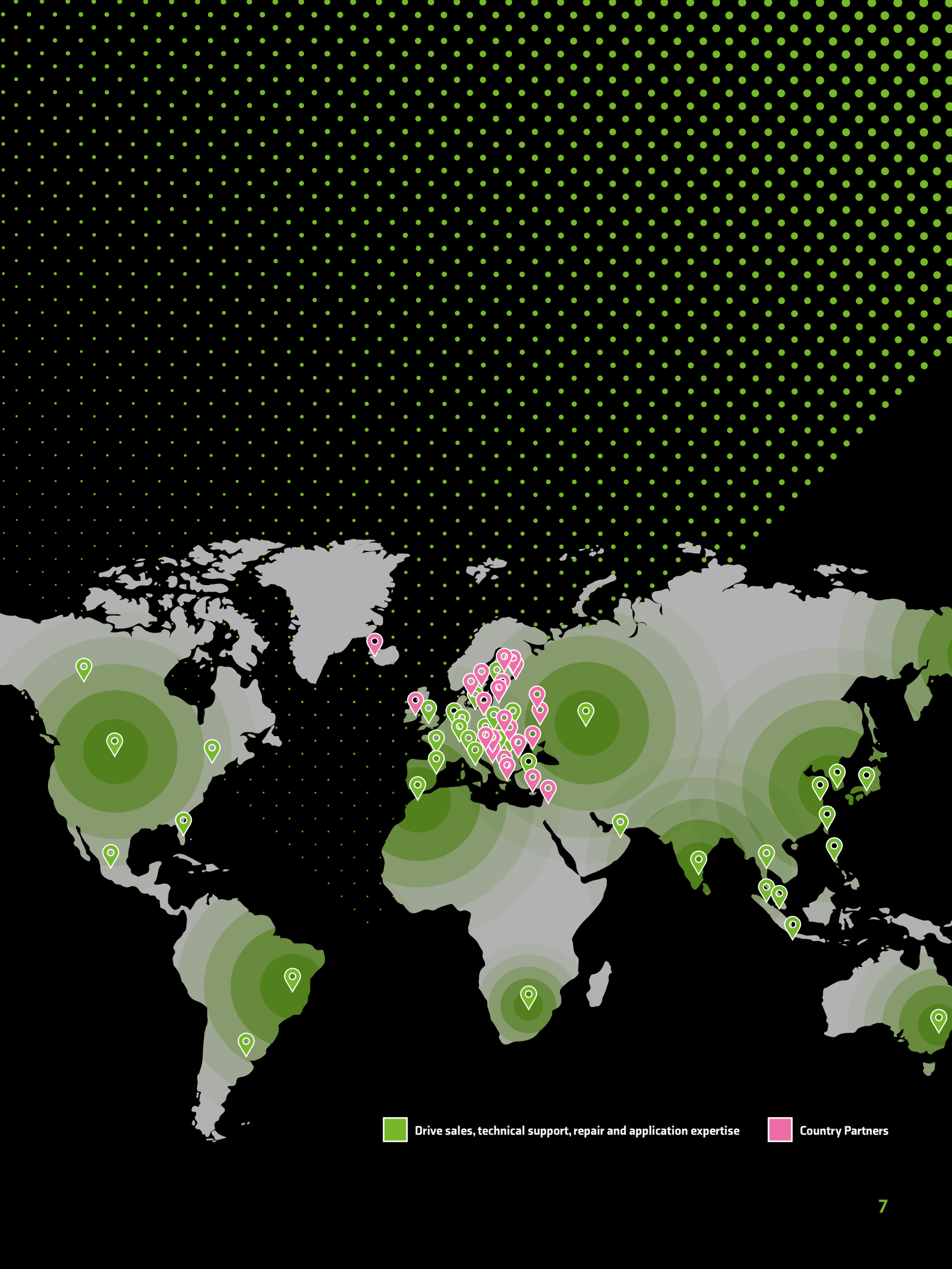
Based on open design architecture, our drives integrate with all primary communication protocols.



## 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



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 behaviour. 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.

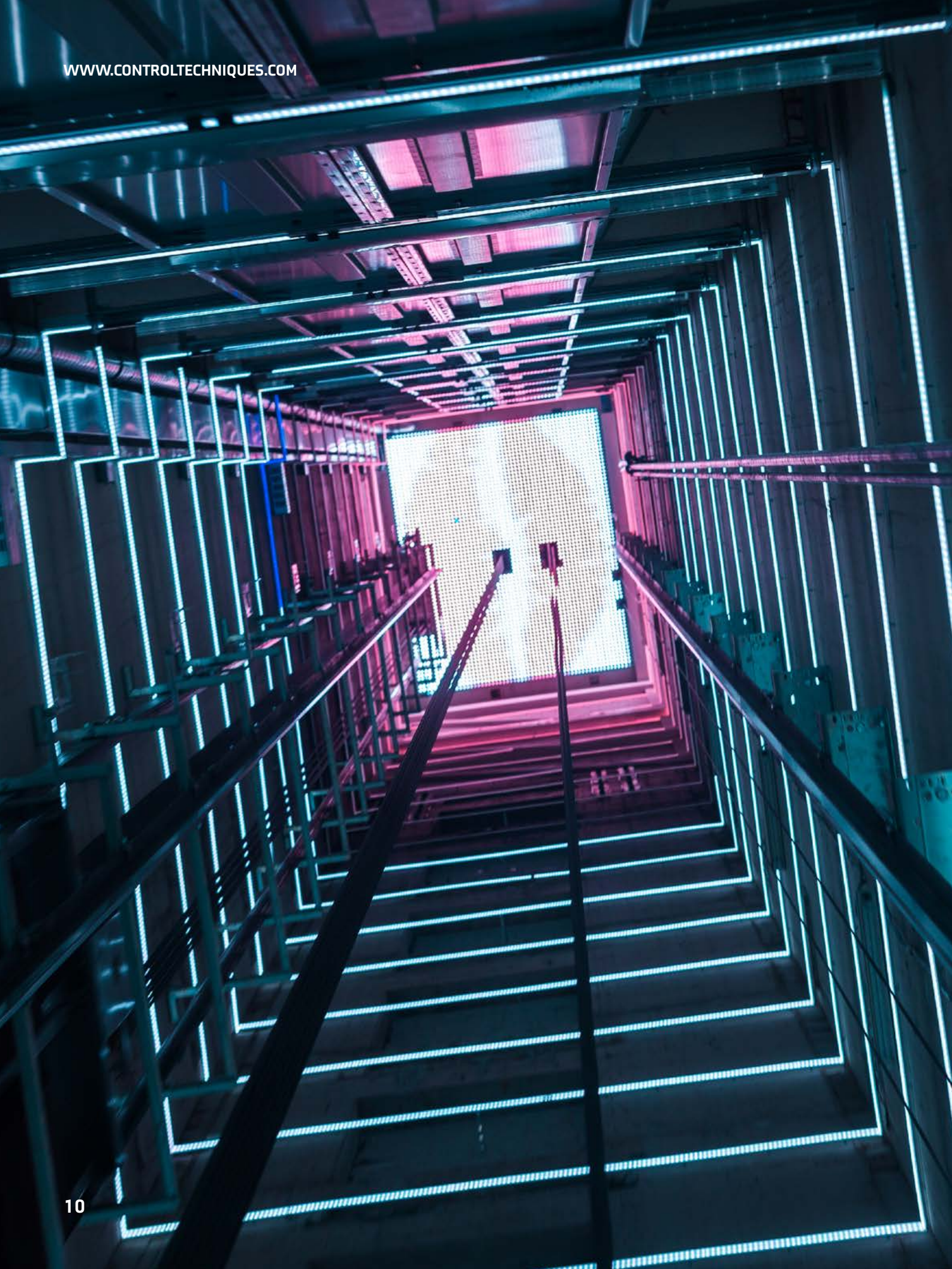
### Manufacturing automation research background

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

Our goal was to analyse 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

C200  
C300

## High Performance Drives

### Unidrive

M700  
M600  
M400  
Extreme Power

## Freestanding Drives

### DFS Series

DFS Series

## Specialist Drives

Elevator Drive E300  
Pump Drive F600





## Servo Drives & Motors

### Digitax

Digitax HD Series  
Digitax SF  
Unimotor hd



## DC Drives

### Mentor MP

Mentor MP



## Industrial Control

PLC Controlled Motion  
MCH040, MCH070, MCHMobile  
Remote I/O and EtherCAT I/O  
Integration Modules

# GENERAL PURPOSE DRIVES COMMANDER

# PRODUCTS IN THIS RANGE

C200 | C300

### Applications:



**Pumping, Ventilating & Compressing**



**Conveying**



**Lifting, Hoisting & Winching**



**Access Control**



**Processing**  
(Mixers, Crushers, Agitators, Centrifuges, Extruders)



### Free 5 year warranty

The Commander C series has a highly robust design to cope with harsh environments. It has proven exceptionally reliable and we feel so assured about this that we have given it a free 5 year warranty.

Now you can buy with the same confidence.

Warranty terms and conditions apply.



# COMMANDER C

# SIMPLE, RELIABLE MOTOR CONTROL

0.25kW - 132kW (0.33 hp to 200hp) 100 V | 200 V | 400 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 Improved machine productivity**  
Commander C provides superior motor control for a broad range of general 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

Commander C helps you maximise productivity while keeping operating costs down.

### Plug-in options for advanced control

Commander C helps you maximise productivity while keeping operating costs down.

### 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 Centres.

# HIGH PERFORM ANCE DRIVES

**UNIDRIVE**

# PRODUCTS IN THIS RANGE

M700 | M600 | M400 | DFS SERIES | EXTREME POWER

## UNIDRIVE Applications:



Hoists



Winding



Cutting



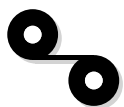
Woodworking



Test Stands



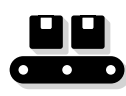
Printing



Web Handling



Textiles



Packaging  
Machines



Tyre  
Manufacturing



Speed & Position  
Control

(For Gearing & Ratio Control)



# UNIDRIVE M700

# ADVANCED

# MOTOR CONTROL

0.75 kW – 2.8 MW (1.0 - 4,200 hp) 200 V | 400 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. Unidrive M700 offers an enhanced upgrade for existing Unidrive SP users.

## Flexible control systems

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







### Optimise system performance

- Onboard Advanced Motion Controller.
- 1.5 axes control.

### Conform to safety standards

- Integrate directly with safety systems.
- Onboard STO.
- Add a safety option for safe motion functions.

### Flexible communications

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

### Maximise throughput

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

### Variants

- M701 – Unidrive SP replacement with RS485 port.
- M702 – 2 x STO, real-time Ethernet & digital I/O.

# UNIDRIVE M600 OPEN-LOOP CONTROL DRIVE

0.75 kW – 2.8 MW (1.0 - 4,200 hp) 200 V | 400 V | 575 V | 690 V

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

The perfect 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 gives 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 synergised permanent magnet motor and Unidrive M solutions - optimised for performance and energy saving.
- Dyneo®, Unidrive M and 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

# MINIMISE DOWNTIME

# & SYSTEM SETUP

0.25 - 132 kW (0.33 - 200 hp) 100 V | 200 V | 400 V | 575 V | 690 V

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

**Unidrive M400 minimises 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. Unidrive M400 provides an upgrade path for existing Commander SK users who use LogicStick.

## 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 optimised 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%).





## Minimise 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, maximise 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

315 kW to 500 kW | Up to 865 A | 380 to 480 VAC ( $\pm 10\%$ )  
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 500 kW of power in a single module, but at 130kg is up to 60kg lighter than competitors drives.

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

## A choice of control module options

This 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 cabinet, 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 centre 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 chokes 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 500 kW in a single power module.
- Optimised 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 userfitted 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.

# FREE STANDING DRIVES

**DFS SERIES**



# PRODUCTS IN THIS RANGE

**DFS SERIES**



**DFS Series Applications:**



Fans & Pumps



Compressor



General Automation

# DFS SERIES

# HIGH POWER FREE

# STANDING DRIVES

55 kW to 540 kW 400 V | 690 V

## Efficient System Build.

For many drive users, designing and building a high power drive cubicle 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 maximised with virtually zero requirement from your engineering resource.

### Optimum local service support to minimise 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 monitoring | 24V back-up supply wiring |  
Empty sections can be integrated for customer equipment & installation cables





### Includes power disconnect and fuses

### Fast turnaround

- Control Techniques Drive Centres and Partners have all the tools required to generate fast quotations to minimise 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 visualisation 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 cabinets with ingress protection options to meet the needs of the application – IP23 as standard.
  - i. IP54 as selectable option – IP55 water-cooled on request.
- Cabinet temperature control via intelligent fan system.
- Built with stringent quality controls with full traceability & rigorous testing gives our plant ISO-9001 accreditation.
- High quality auxiliary components sourced from leading automation industry vendors.

# **SPECIALIST DRIVES**

**ELEVATOR & PUMP**

# PRODUCTS IN THIS RANGE

ELEVATOR DRIVE E300 | PUMP DRIVE F600



# ELEVATOR DRIVE E300

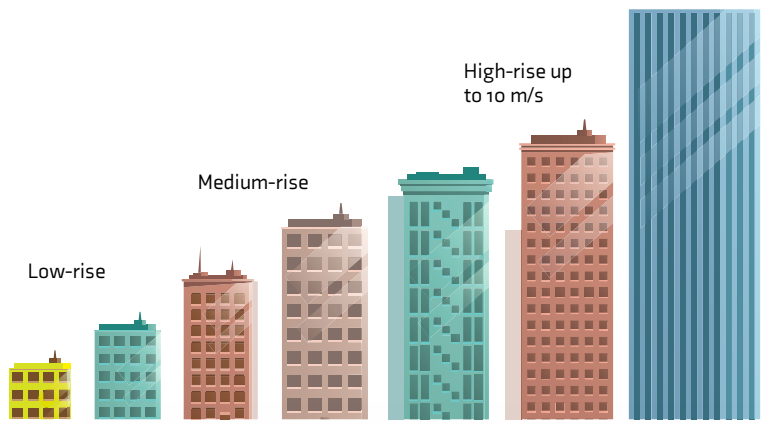
# CLASS-LEADING

# RIDE COMFORT

2.2 – 250 kW (3 – 400 hp) | 200 V | 400 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 modernisation 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 Optimisation	Quick Setup 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 kW 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 lift 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. (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 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

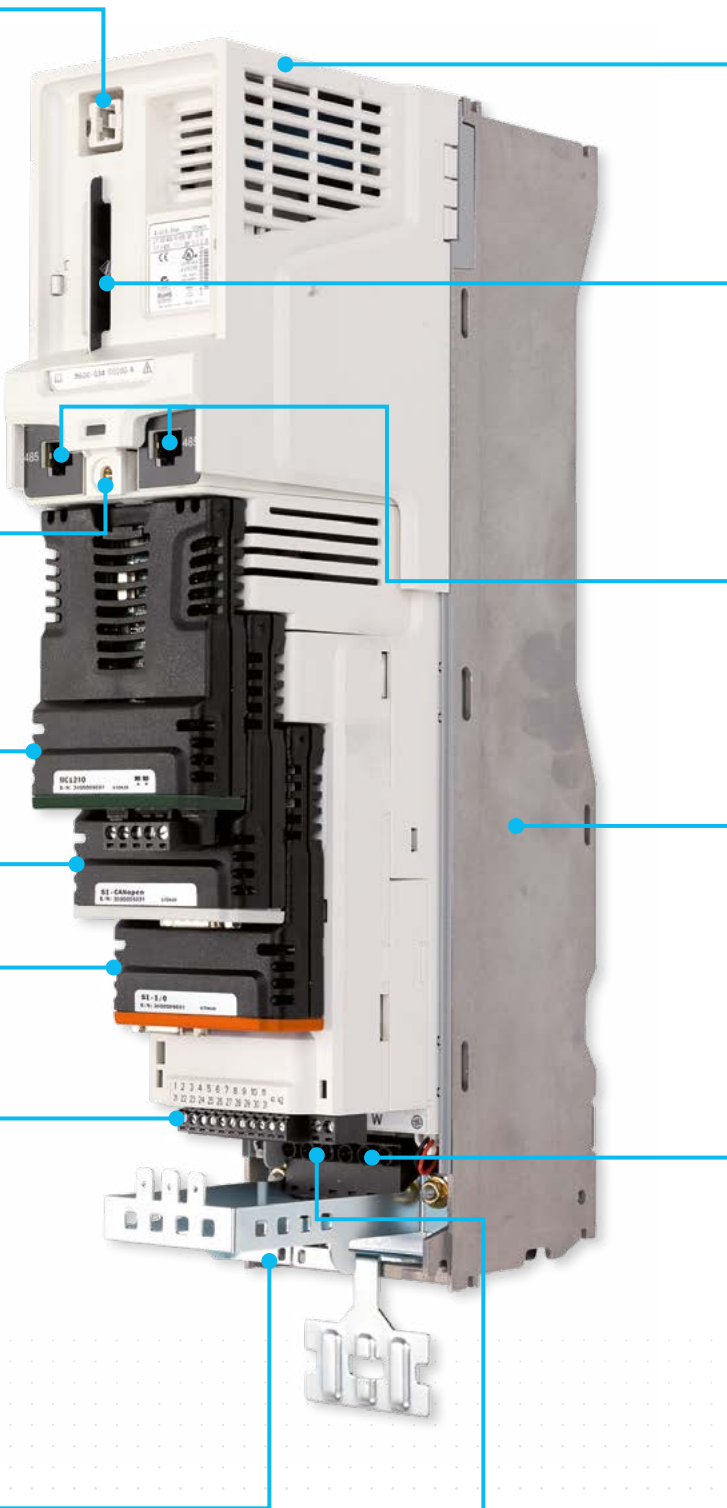
### Robust cable management system

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**

**Aluminium 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.

**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 new 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

All F600s up to 55kW will be able to register to extend the warranty from the standard two years to five 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, optimised 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, optimised 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.



# OPTIMISED CONTROL FOR YOUR PUMP SOLUTIONS

## Free 5 Year Warranty

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

All F600s up to 55kW 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.



# SERVO DRIVES AND MOTORS

**DIGITAX**

# PRODUCTS IN THIS RANGE

DIGITAX HD SERIES | DIGITAX SF | UNIMOTOR HD

Applications:



Printing



Packaging  
Machines



Textiles



Robotics



Extruders



## DIGITAX HD

# MINIMUM SIZE, MAXIMUM PERFORMANCE

0.7 Nm - 51 Nm with 153 Nm peak 1.5 A – 16 A with 48 A peak

200 V | 400 V | 0.25 kW - 7.5 kW

### Servo Drive Series

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

Optimised 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.



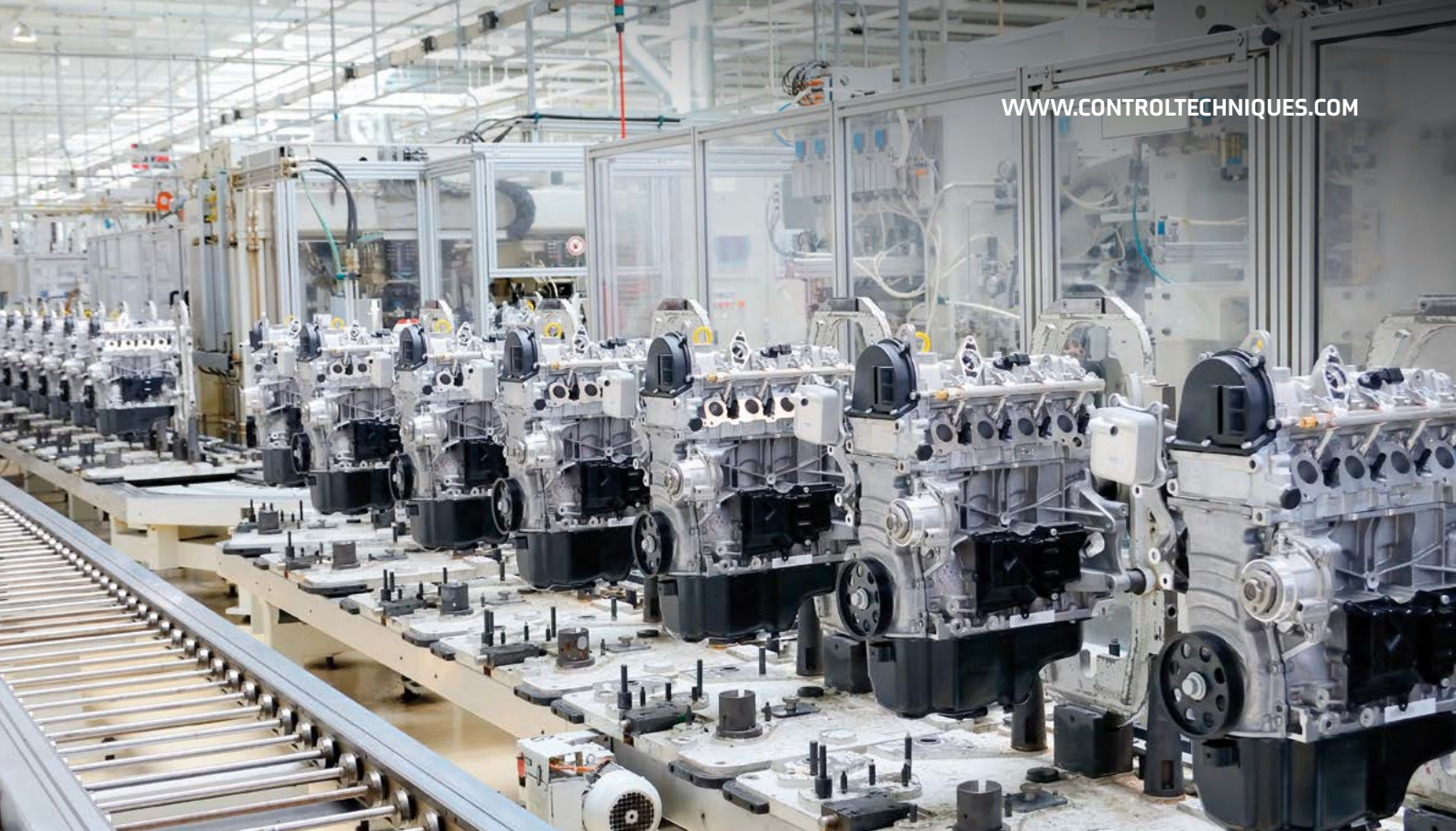
#### Digital printing:

Label and packaging print machines



#### Textile:

Knitting machines



**DIGITAX HD**  
M750 EtherNet

EtherNet/IP 

**PROFI**  
**NET**



**DIGITAX HD**  
M751 Base





**DIGITAX HD**  
M753 EtherCAT

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. Optimised 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 maximising cabinet space

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

# DIGITAX SF

# LOW POWERED

# PRECISION SOLUTION

0.05 kW - 2 kW | 200 V

**Servo solutions for continuous and pulse duty applications.**

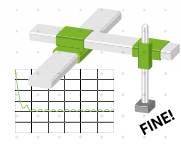
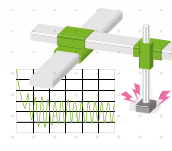
**Digitax SF responds to the needs of customers requiring low powered precision servo solutions, with a dedicated servo range from 50W to 2 kW. With 17-bit resolution, robust magnetic encoder technology and pulse train or analog control interface, Digitax SF offers a cost effective servo solution, without compromising on performance.**

Multiple motor inertia levels are available, covering a wide range of applications, from semiconductor manufacturing to textile, packaging machines, robotics, extruders, metering and other applications requiring speed, precision and accuracy.

## Digitax SF Connect

**Digitax SF Connect is a user-friendly PC tool with a familiar Windows interface and intuitive graphical tools for easy parameter setting, tuning and diagnostics. Ease of machine start-up is further facilitated through a positioning table and test run features.**

Straightforward to setup and tune, Digitax SF offers high servo performance at the click of a button. For demanding applications, a rich selection of filters to dampen mechanical resonances and suppress tip vibration can be easily configured within Digitax SF Connect with the aid of FFT frequency analysis.



- Versatile analog or pulse train interface, offering easy integration with any PLC or motion controller.
- Digitax SF can also operate standalone using the on-board 16-point positioning table.
- Built-in keypad with 6 digit 7-segment status display for easy startup, parameter setting, and tuning.
- PC-USB interface for parameter settings, tuning, and status display in the dedicated software Digitax SF Connect.

- Magnetic encoder technology.
  - i. Robust in harsh environments.
  - ii. Ultra-low energy consumption for reduced maintenance.
  - iii. Standardised flange sizes.
  - iv. IP 65 or 67 motors.



### Drive Set-up

Quickly find everything you need for quick and easy installation of your drives.

Visit: [www.drive-setup.com](http://www.drive-setup.com)



### Diagnostic Tool

Quickly solve any error codes that the drive may show. Download:

[controltechniques.com/mobile-applications](http://controltechniques.com/mobile-applications)



\*For Microsoft users, please note that this mobile app operates with Windows 10 only.



## UNIMOTOR HD

# HIGH DYNAMIC PERFORMANCE



The Ultimate Motor and Drive Combination

**Control Techniques offer drive and motor combinations that provide an optimised 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 optimise the drive settings. This feature simplifies commissioning and maintenance, ensures consistent performance and saves time.

### Unimotor hd

#### High Dynamic AC Brushless Servo Motor

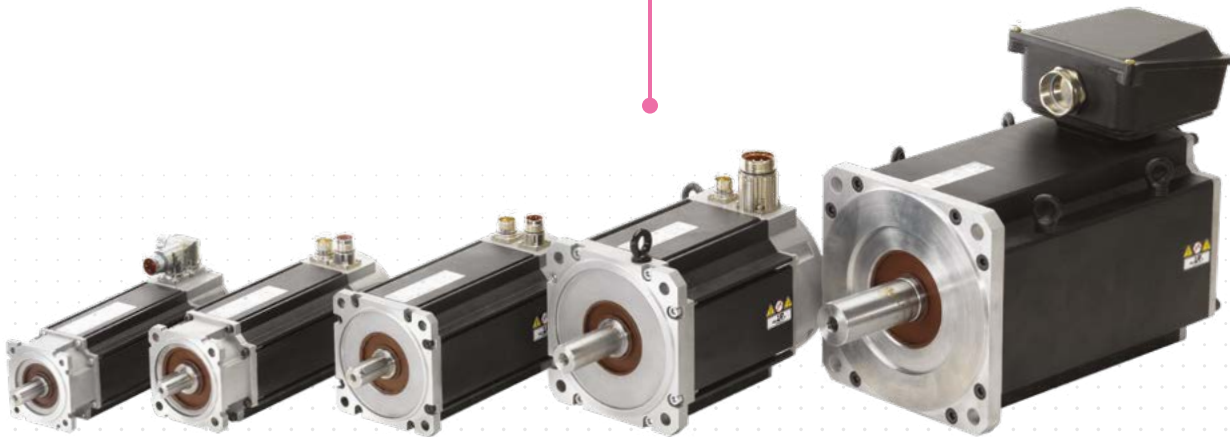
055 to 190 Frames | 0.72 Nm to 85 Nm (255 Nm Peak)

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 0.72 Nm to 85 Nm.
- High torque to inertia ration 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 MP

# PRODUCTS IN THIS RANGE

## MENTOR MP

### Key Benefits:

- Designed for easy set-up and commissioning
- Drive intelligence and system integration
- Machine communications flexibility
- Greater motor field
- 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 and integrates the control platform from the world's leading intelligent AC drive technology.**

This makes Mentor MP the most advanced DC drive available, giving optimum performance and flexible system interfacing capability. This drive allows you to maximise 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.

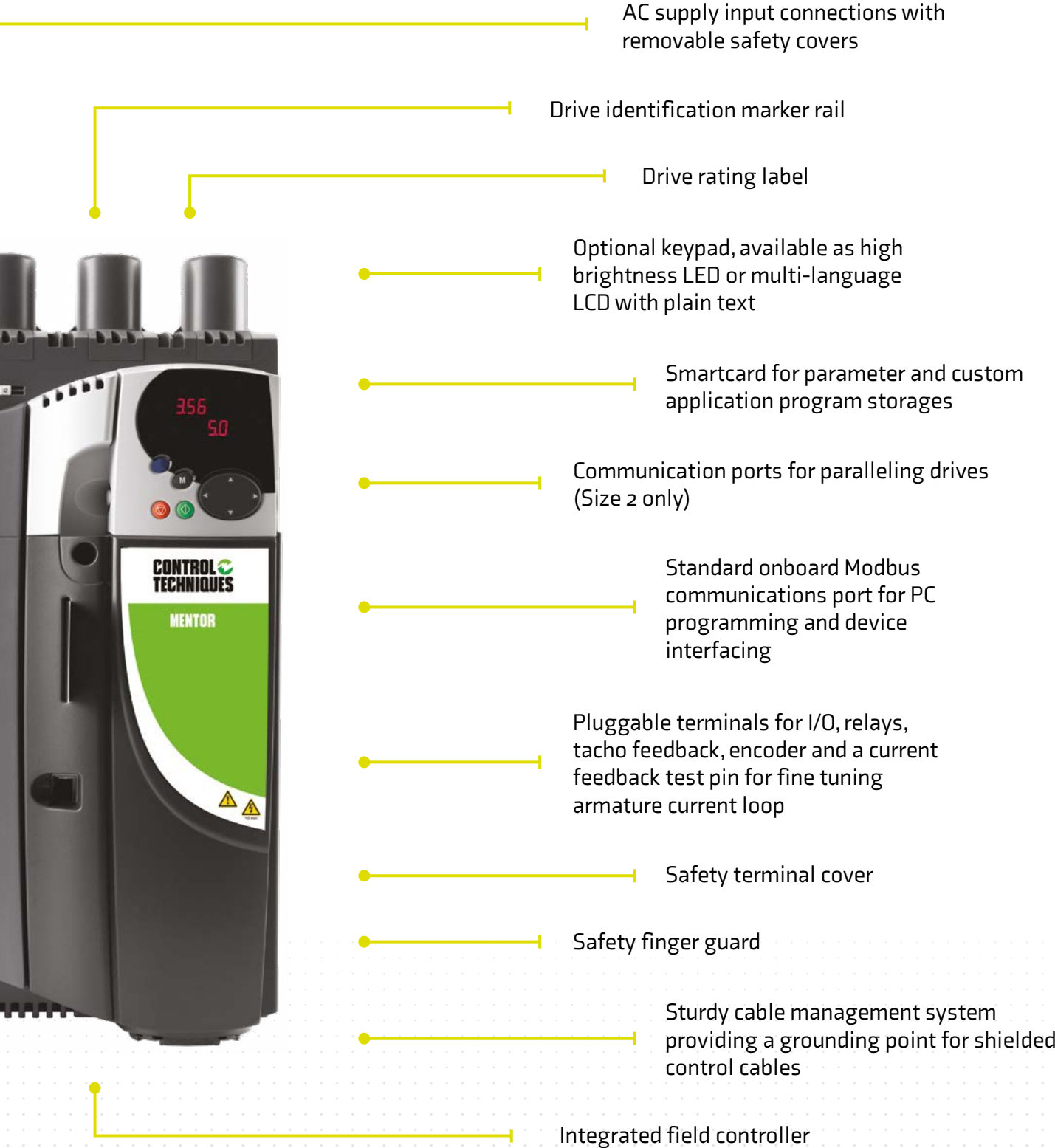
Output power connections to motor with removable covers

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



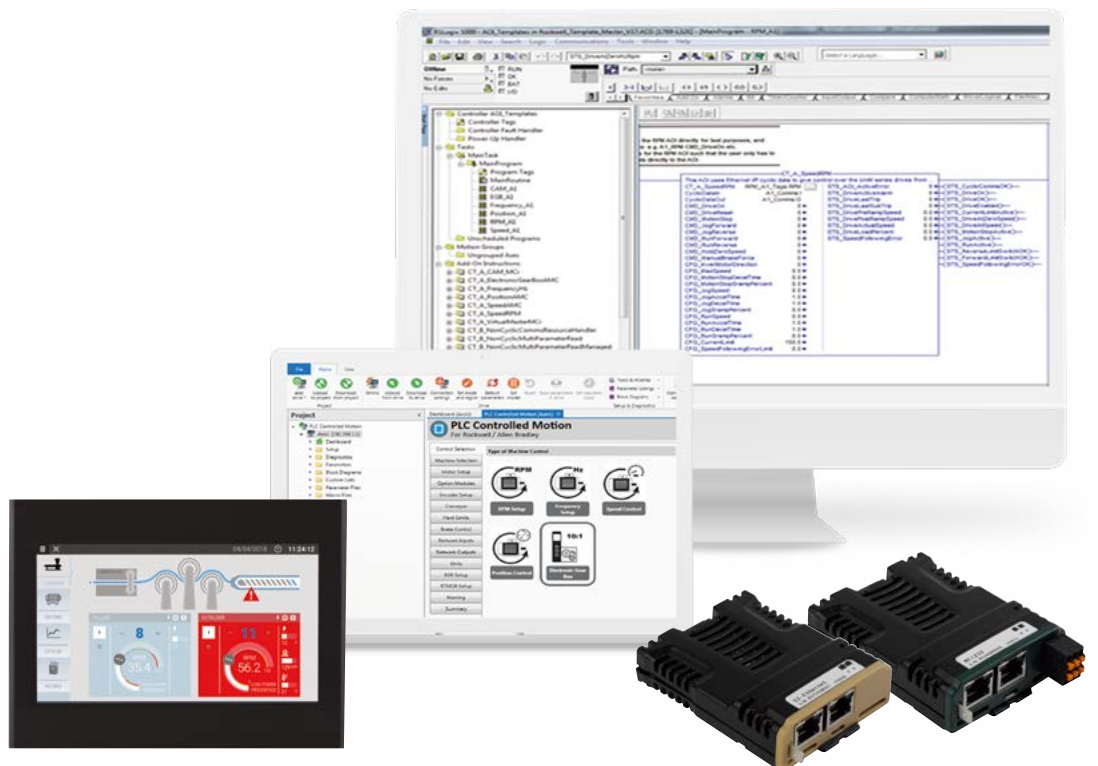


# INDUSTRIAL CONTROL



# PRODUCTS IN THIS RANGE

PLC CONTROLLED MOTION | MCH040, MCH070, MCHMOBILE |  
REMOTE I/O & ETHERCAT I/O | INTEGRATION MODULES



# PLC CONTROLLED MOTION INTEGRATION MADE EASY

FOR MAJOR PLC's

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

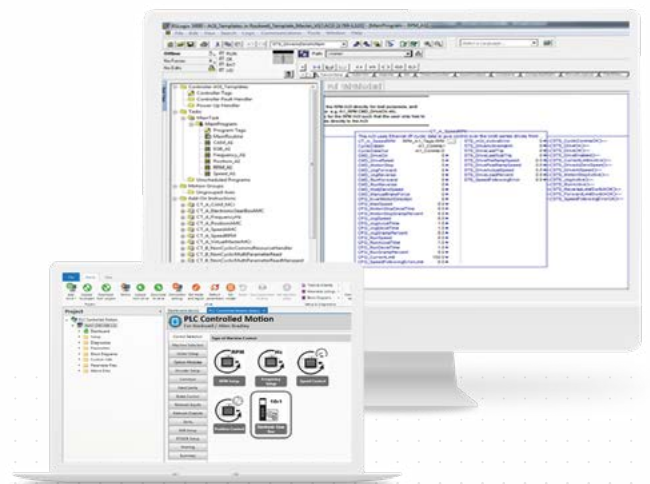
Composed of two parts, a function block for the PLC and a guided setup within the Connect PC tool, the process of creating the PLC control logic and configuring the powerful onboard motion capabilities of the drive is greatly simplified.

## Application Benefits

**Utilising 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 customisation 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.

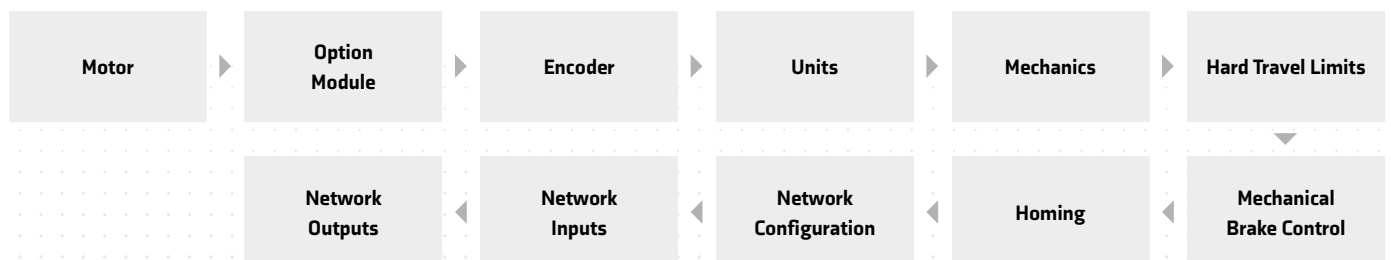
- 1** Frequency Setup
- 2** RPM Setup
- 3** Speed Control
- 4** Position Control
- 5** Electronic Gear Box

## 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

**CT Modbus**

- CT Modbus TCP

**Others**

- OPC UA Client

- 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

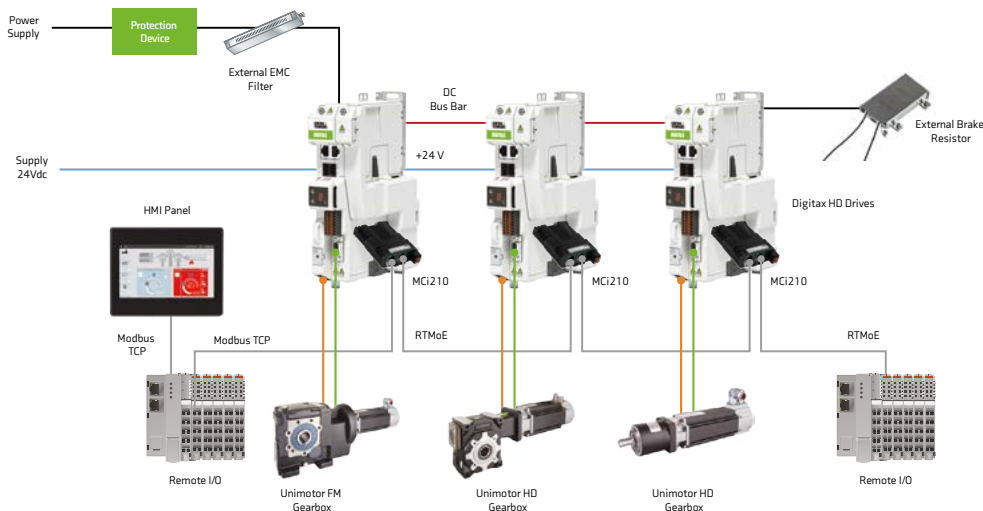


EtherCAT Remote I/Os

## 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.

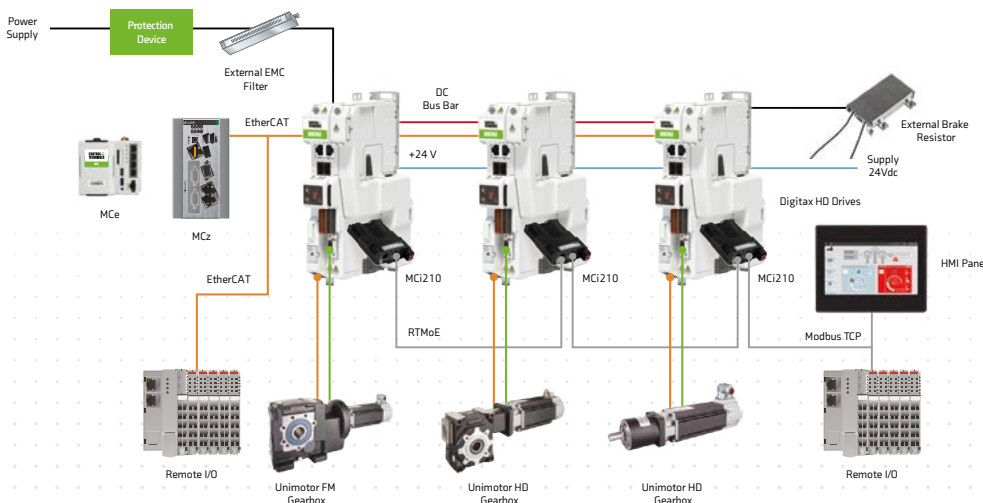
A typical configuration would include MCi2XX Machine Control option modules, Machine Control Studio software and the MCh040/MCh070 HMI Panels. All sensor inputs and outputs can be controlled, including LEDs, pushbuttons, temperature controls, machine status indicators and fluid flow sensors.



## 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.

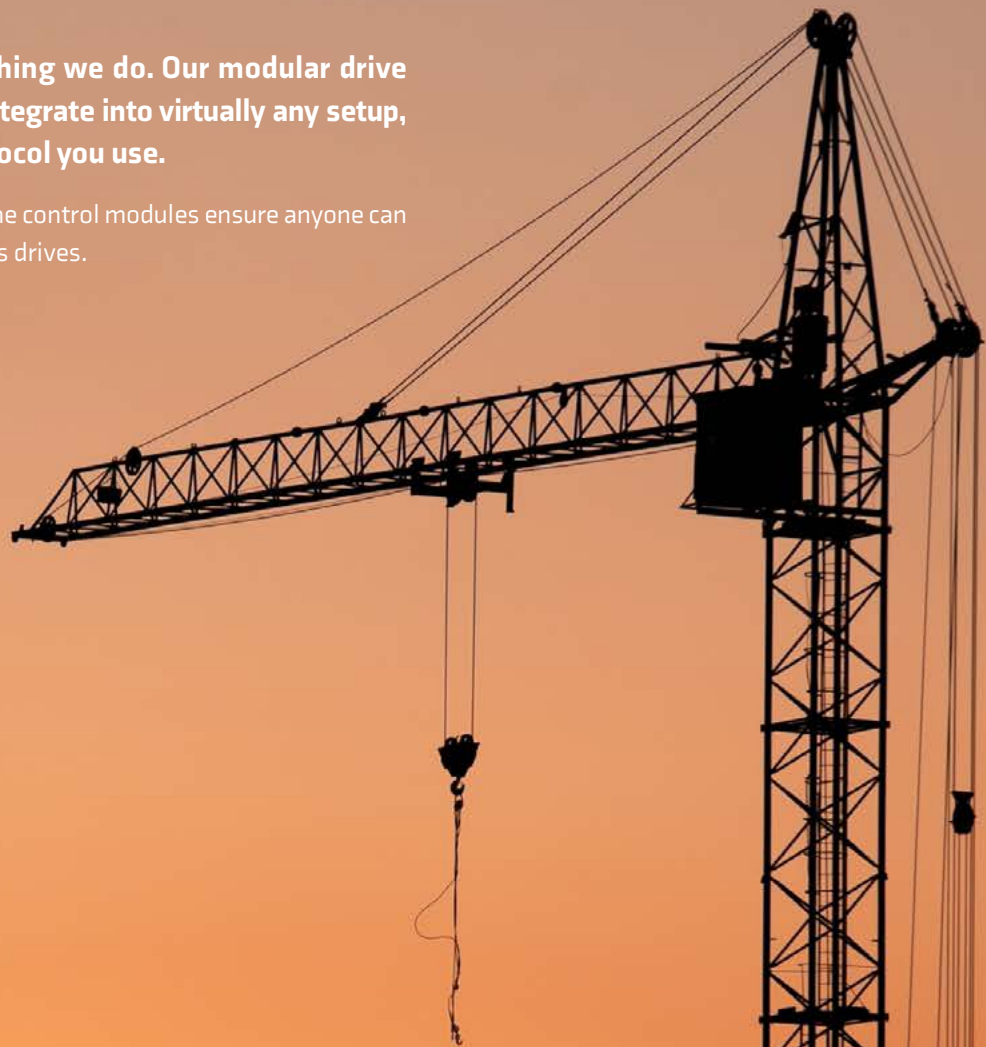
A typical scalable configuration would feature the EtherCAT Remote I/O module, used together with MCE or MCz controllers, MCi2XX Machine Control option modules, Machine Control Studio software and the MCh040/MCh070 HMI Panels. All sensor inputs and outputs can be controlled, including LEDs, pushbuttons, temperature controls, machine status indicators and fluid flow sensors.



# 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



SI-Safety



# OUR EXPERTISE





# COUNT ON OUR EXPERTISE

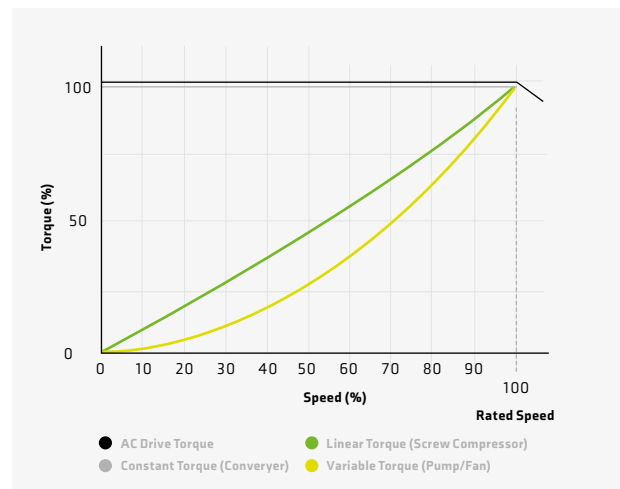
## Energy Savings

### 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 more linear 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 motion 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 customised analysis of motor and drive energy consumption.

### Complete Offering

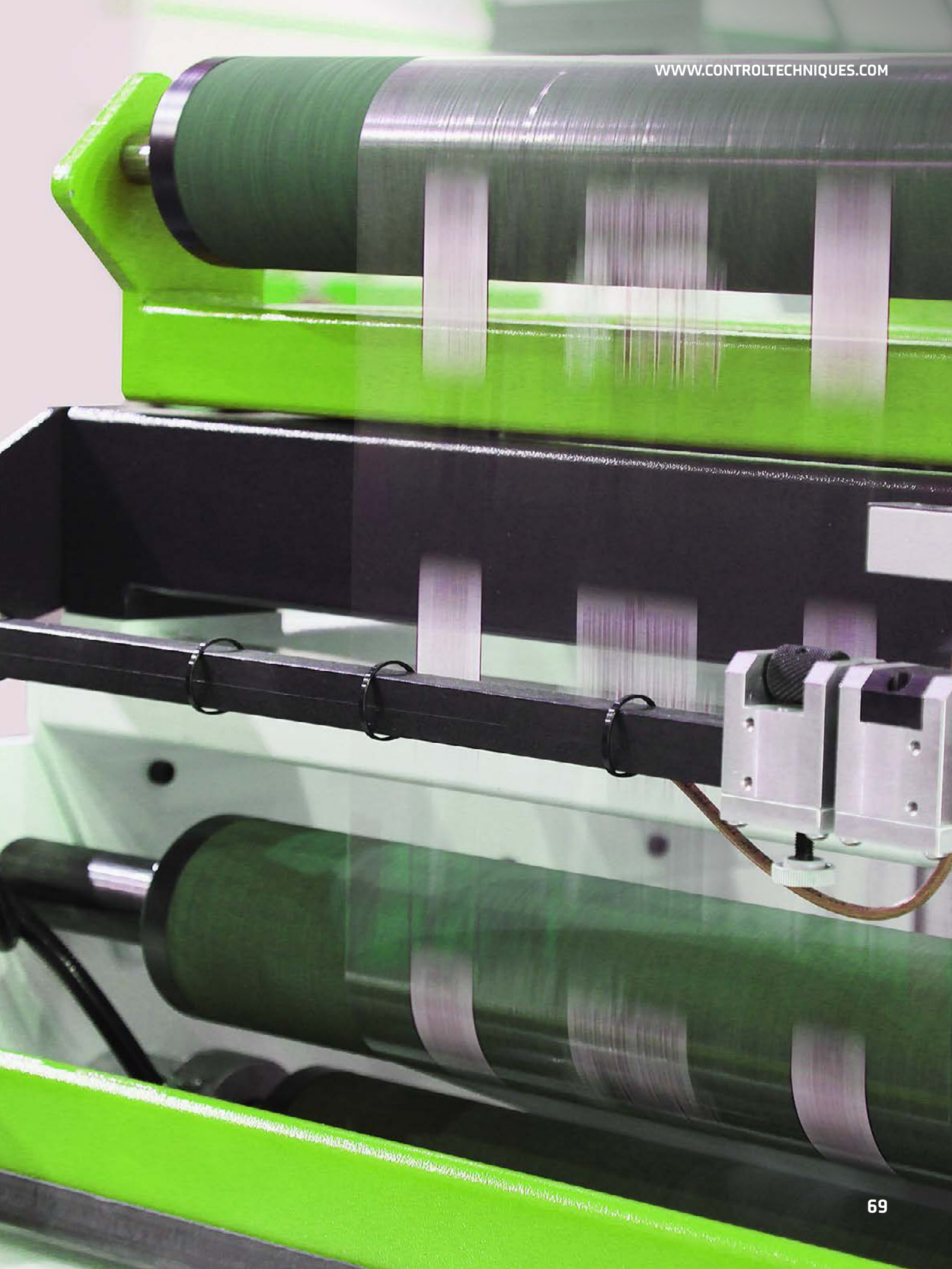
- IMfinity® high premium and super premium efficiency induction motors IE3, IE4.
- Dyneo® best-in-class efficiency (>IE4) permanent magnet motors.
- Geared motor execution for low speed, high torque applications.
- Unidrive M and Powerdrive standard and customised drives. Scalable automation solutions – from small machine automation projects up to complete automation & electrical turnkey solutions. High performance soft starter range.
- Express availability: an offer to deliver products with a guaranteed short lead time.

### Installation & Commissioning

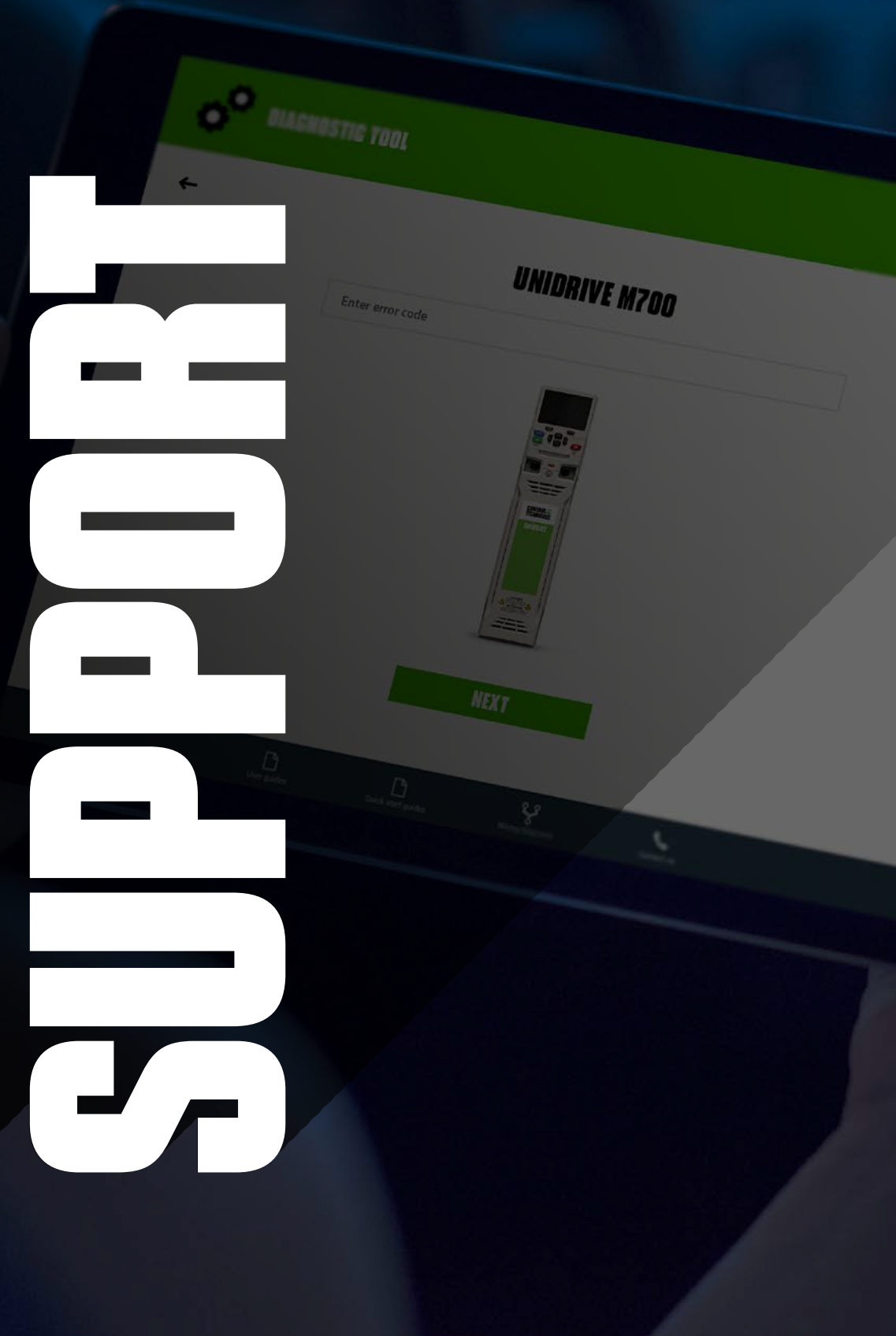
- Accredited personnel ensure reliability and safety of equipment.
- Installation in compliance with local technical regulations and safety standards.
- Onsite commissioning.
- Extended system guarantee.
- Installation and maintenance.

### 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 optimised 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.



# 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.



### 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)



### Diagnostic Tool

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



### Commander C - 5 Year Warranty

The Commander C series has a highly robust design to cope with harsh environments. It has proven exceptionally reliable and we feel so assured about this that we have given it a free 5 year warranty.

Warranty terms and conditions apply.



\*For Microsoft users, please note that this mobile app operates with Windows 10 only.



### Technical Documentation

Product support downloads including user guides, software, firmware etc.



### Services & Repairs

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



### Drive Systems

Fully designed, built & commissioned automation systems for your drive applications.



### Training

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



### Virtual Reality Tour

This mobile application brings Control Techniques operation directly to you, wherever you are in the world. Use the provided Cardboard viewer to see our hightech manufacturing facility, our new technology lab, and experience breath taking 360 degree aerial photography.



### Contact us

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







## CONTROL TECHNIQUES IS YOUR GLOBAL DRIVES SPECIALIST.

With operations in over 70 countries, we're open for business wherever you are in the world.

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

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

Connect with us



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