

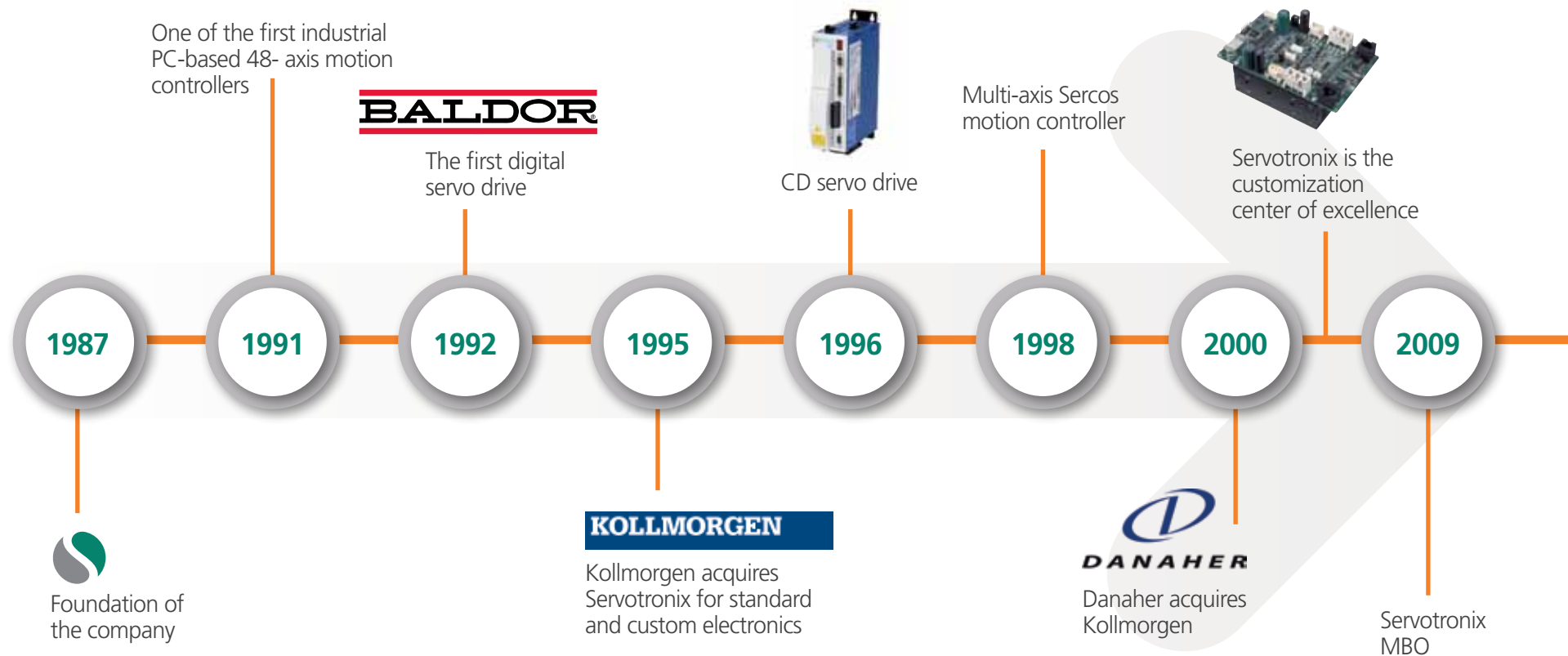


**SERVOTRONIX**  
always in motion™

# Experience

Servotronix develops and manufactures standard and customised automation solutions with a focus on motion control.

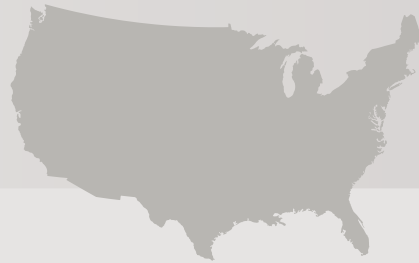
With over three decades of experience, the company has developed five generations of high performance servo drive families and motion control solutions tailored to customer needs and designed to meet the form, fit, functionality, and cost specifications of a wide range of applications and industries.



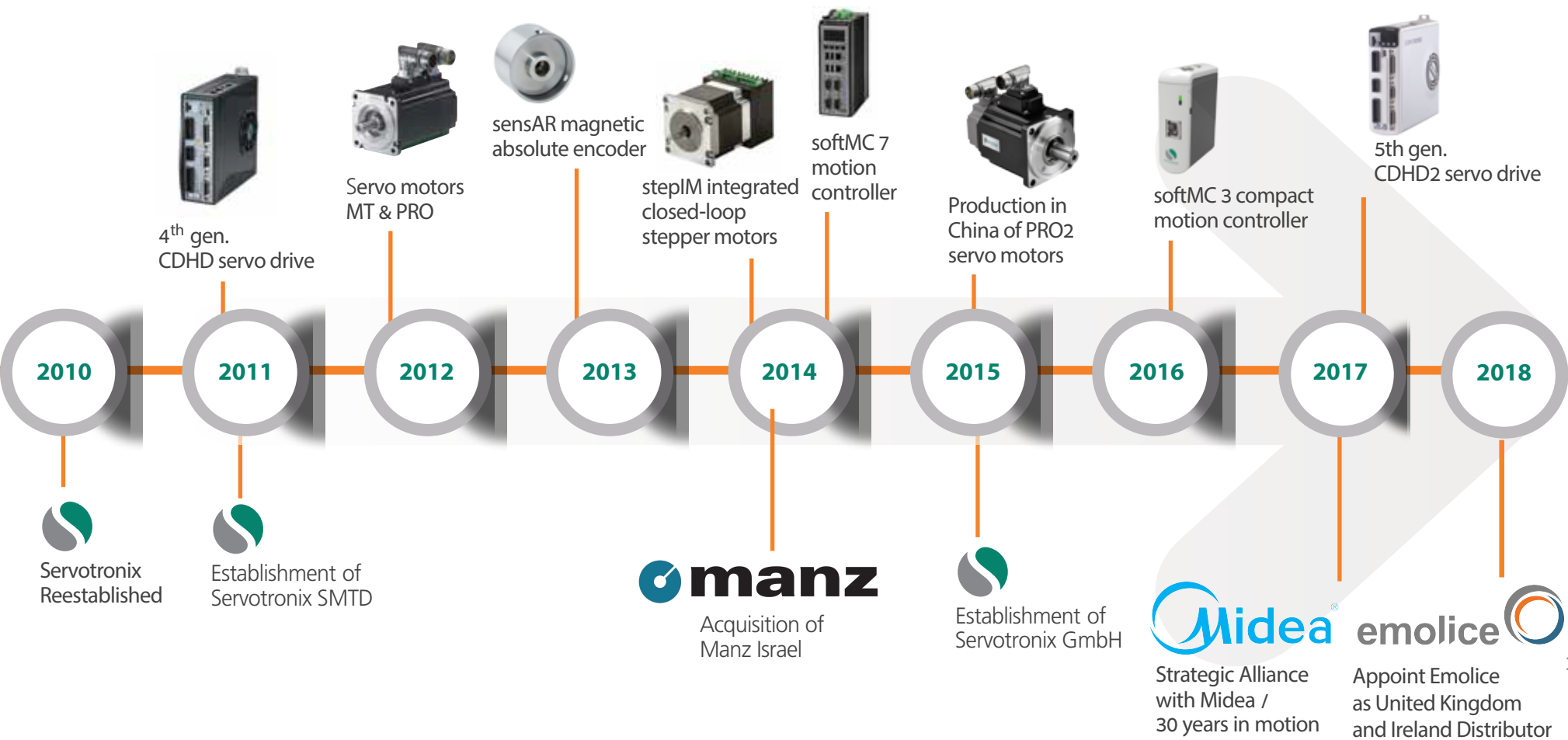
Expansion Asia/China  
(Servotronic Motion Technology)



Expansion America/USA  
HS Motion



Expansion Europe  
Servotronic GmbH



# Performance

## Complete Motion Systems - from Encoder to Controller

Servotronix prides itself in a range of off-the-shelf motion products that are optimally matched to offer a complete motion solution. With over three decades of know-how, our highly featured motion controllers, servo drives, motors and encoders provide machine builders with optimal performance, simple commissioning, and extensive versatility in a cost-effective package.

## Performance at its Best

Servotronix hardware and software design innovations deliver high performance motion solutions to answer emerging machine control and electromechanical challenges.

High current loop bandwidth, zero settling time and position error, non-linear control and vibration suppression algorithms, combined with sophisticated autotuning - result in maximum machine accuracy and throughput, at a lower system cost.



Electronics Assembly



Industrial Robotics



Machine Tools



Woodworking



Printing



Renewable Energy



Food & Beverage



Material Handling

# Value

## Customization as a Key to Machine Optimization

Servotronics extensive experience is translated into a wide range of ready-to-use software and hardware elements that form the building blocks for the development of your motion solution. This building blocks approach, combined with our advanced control capabilities, allow us to provide higher performance, reduce risk, space and cost savings, and faster time to market.

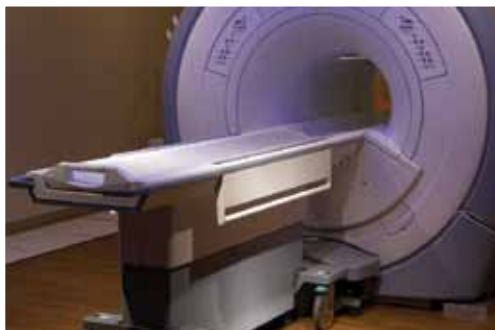
## Field Support and Integration Services

An experienced and dedicated team of software, hardware and control engineers comprise the pillars of Servotronics success.

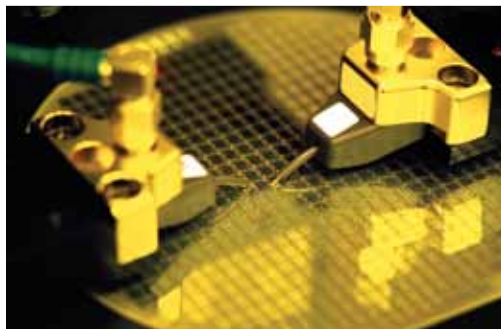
Servotronics local application support teams are stationed throughout Europe, North America and Asia. This allows our international customers to enjoy an effortless integration and commissioning process as well as ongoing support whenever and wherever needed.



Textile



Medical Equipment



Semiconductors



Display and Solar

# Over three decades of know-how



Global presence  
with local  
support teams

Complete  
motion  
solutions



Over 1,000,000 installed axes worldwide



Customer-tailored  
motion solutions

Patented  
control  
algorithms



## Software Tools



## Motion Controllers



softMC3



softMC7



## Servo Drives

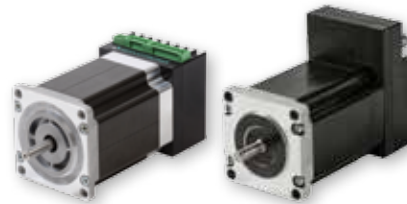


CDHD/CDHD2 Servo Drives



DDHD Dual Axis Servo Drives

## Motors



stepIM Integrated Stepper Motors



PRO/PRO2 Servo Motors

## Encoders



sensAR Single-Turn Absolute Magnetic Encoder



sensAR Multi-Turn Absolute Magnetic Encoder



## **Multi Axis Motion Controller**

Multi-axis motion control software and hardware package, offering extensive programming capabilities for a variety of automation and robotics applications.

### **Key benefits**

- Open, modular, and modern machine control environment
- Ethernet machine interface
- Support for EtherCAT® and CANopen® motion buses
- Controls up to 64 interpolated axes
- Extensive capabilities for both standard and non-standard robotic kinematics
- Software core has been implemented in motion and robotic applications for over 15 years
- Customized software solution can be embedded into the customer's hardware

### **Communication**

Machine: Ethernet, serial, Modbus

Fieldbus: EtherCAT®, CANopen®

## **Compact 6-Axis Motion Controller**

The softMC 3 is an extremely compact multi-axis motion controller that supports up to 6 axes of synchronized, coordinated motion.

### **Key benefits**

- Ideal solution for controlling mechanical stages, gantry tables, PUMA, DELTA and SCARA Robots
- Extremely compact package
- Ethernet machine interface
- Extensive capabilities for both standard and non-standard robot kinematics
- Same software core as in other products in the softMC motion controller family
- Powered from industry-standard 24VDC

### **Communication**

Machine interface: Ethernet TCP/IP, Modbus TCP

Fieldbus: EtherCAT®, CANopen®



## High-Performance Servo Drives

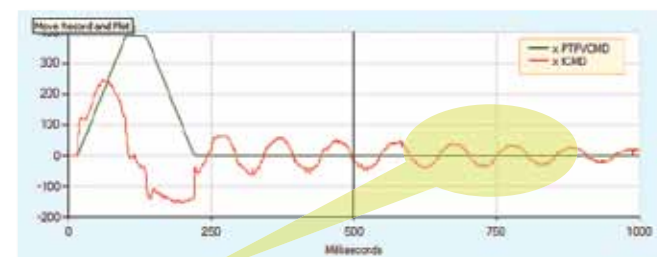
Hardware and software design innovations deliver superior servo performance, high power density, simple commissioning, and extensive versatility in a cost-effective package.

### Key benefits

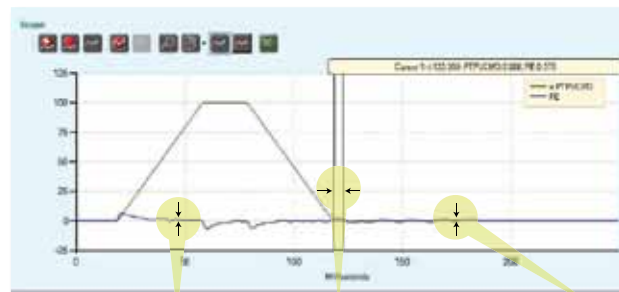
- High performance control of all synchronous servo motors
- Interfaces multiple feedback devices
- I/O programming for any drive functionality
- Advanced control algorithms achieve maximum machine accuracy and throughput
- High power density in a small footprint
- Safe Torque Off (STO)
- Simple commissioning using ServoStudio™ GUI along with comprehensive parameterization options for optimal configuration
- Fast firmware modifications to meet particular application needs
- CE and UL compliance
- Competitive price
- 30-month warranty

### Communication

CANopen®  
EtherCAT®  
USB / RS232  
Daisy Chain / PWM



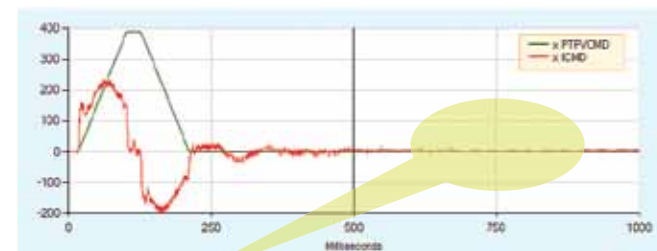
Without Vibration suppression



Minimum position error

Settling time of almost zero

No oscillations at stand-still



With Vibration suppression





## High Performance Dual Axis Servo Drives

Superior servo performance and compact footprint make the DDHD dual axis drive the ideal cost-saving solution for low and medium voltage applications.

### Key benefits

- 20% lower cost per axis due to shared components and less wiring
- High performance control of synchronous servo motors
- I/O programming
- Interfaces multiple feedback devices
- Share AC input and regeneration, for energy efficiency
- Simple commissioning using ServoStudio™ GUI
- Exclusive 30-month warranty

### Communication

CANopen®  
EtherCAT®  
USB / RS232  
Daisy Chain





## *Integrated Closed-Loop Stepper Motors*

With a superior closed loop control and a cost-effective design, the integrated stepper motors provide an efficient and economical solution for applications that require the performance of a servo at the price level of a stepper.

### **Key benefits**

- Sophisticated closed loop control enhances motor performance with no step loss
- Operates in torque, velocity, and position modes
- Efficient torque utilization optimizes motor sizing
- Integrated design minimizes component and wiring requirements
- Reduced space, installation efforts and system cost
- Synchronized control of coordinated motion profiles
- Reduced machine complexity, as stepIM can function as distributed I/O points
- Up to IP65 protection class
- Maintenance free
- CE compliance

### **Communication**

CANopen®



### **Input voltage**

14-70 VAC

### **Holding torque**

1.2-5.4 Nm

# PRO



## Highly Dynamic Servo Motors

With a wide range of torque ratings and motor options, PRO servo motors are particularly suitable for highly dynamic applications with strict requirements for high accuracy and stability.

### Key benefits

- Excellent dynamics and high torque accuracy
- High overload capacity
- Low noise and vibration-free operation
- Low cogging
- Compact design with high power density
- Large selection of feedback, shaft, flange, and brake options
- Up to IP65 protection class
- Maintenance-free
- CE and UL compliance

### Rated output power range / torque range

100 W - 8.3 kW / 0.3 Nm - 40 Nm

# PRO2



## Highly Dynamic Servo Motors

Featuring the latest engineering and manufacturing technology, PRO2 servo motors feature an innovative and patented 20 bit absolute encoder. A careful selection of components, uncompromised quality, international certifications, and a wide range of power ratings assure that these servo motors are optimal for dynamic, reliable and efficient automation.

### Key benefits

- Excellent dynamics and high torque accuracy
- Innovative and robust 20 bit absolute magnetic encoder
- High overload capacity
- High torque-to-inertia ratio
- Low noise and vibration-free operation
- Low cogging
- Compact design with high power density
- Variety of connector options
- Selection of feedback, shaft, flange, and brake options
- Up to IP65 protection class
- Maintenance-free
- CE and UL compliance

### Rated output power range / torque range

50 W - 7.5 kW / 0.16 – 44.6 Nm

# Customization is in our DNA

- Short time to market
- Cost savings
- Space savings
- Seamless integration
- Embedded peripheral elements & customer algorithms
- Field-proven, ready-to-use SW and HW elements
- Limited risk

*PERFORMANCE perfectly suited to application requirements*

Embedded  
Control

Communication

Algorithms

Mechanics

Feedback

Power  
Stage

## Desktop Milling Machine



**Input voltage**  
48 VDC

**Current**  
7/4 A rms per axis (cont./peak)

### *Complete Control Solution for a Complex 5-Axis Application*

Combined programmable multi-axis controller and closed loop servo stepper drives in one compact footprint. This solution is embedded in a desktop 5-axis CNC and features special interpolation of non-Cartesian axes.

#### **Solution benefits**

- Combining CNC capabilities and a PLC in one product
- Compact to fit a desktop package
- Customer's algorithms are embedded
- Reduced wiring
- Closed loop control of stepper motors
- High accuracy
- G-code capabilities for CAD/CAM milling

## Rehabilitation Equipment



**Input voltage**  
24 VDC

**Current**  
7/12 A rms (cont./peak)

### *Customized Motion Controller and Dual Axis Drives*

Customized motion control hardware and customized interface drives, with dedicated algorithms, housed inside a 4-axis rehabilitation robot.

#### **Solution benefits**

- Application specific code to implement special operation modes and control algorithms
- Flexible, modular motion control
- Cost sensitive hardware design
- Synchronized CAN communication
- Complete robot programming: rehabilitation exercise, general robot application, and force control algorithms



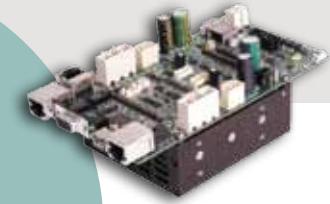
## Assembly Line Robot



**Input voltage**  
48 VDC

**Current**  
Axis 1: 8/22.5 A rms (cont./peak)  
Axis 2: 4/9 A rms (cont./peak)

## Wafer Pick & Place Robot



**Input voltage**  
48 VDC

**Current**  
10/20 A rms (cont./peak)

## Starc - Dual Axis Servo Drive

Since 1995, Servotronics has developed and designed complete electronic solutions to support multiple robots including low voltage 4-axis SCARA robot arms and medium to high power heavy load 6-axis PUMA robot arms. The Starc servo drive was one of the solutions designed to meet customer's requirements, eliminating the customer's constraints of implementing standard products.

### Solution benefits

- High performance servo loop to manage high-inertia torques
- Digital communication between the sensors and the cabinet
- Implementation of customer-specific algorithms in the drive
- Dual-axis drives with optimal resource sharing
- Special cabinet and drive design to support external-cooling

## DAFA - Dual-Axis Firewire Amplifier

DAFA was developed according to the requirements of a specific customer in the Semiconductor industry. It is a compact, dual-axis, low-voltage drive, supporting Firewire communications. The product features a flexible architecture that allows the upper PCBA to be modified for different applications, while keeping the lower power and control PCBAs common for all applications.

### Solution benefits

- Compact footprint
- Application-specific connectors and communication board
- High precision servo performance
- Customer-specific algorithms embedded in the product

Customer  
Specific  
Board



DSP  
Control  
Board



Dual-Axis  
Power  
Stage



## Medical Imaging & Diagnostic Equipment



**Input voltage**  
160 VDC

**Current**  
5/10 (cont./peak) A rms

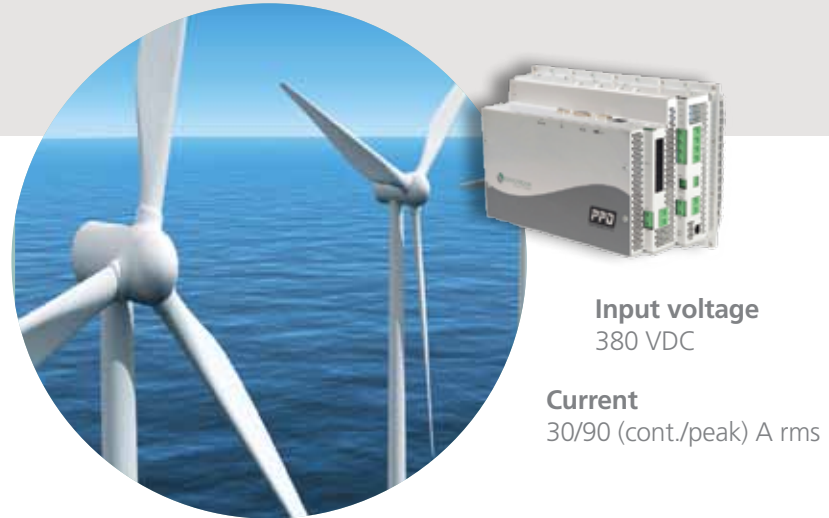
### MCM - Motion Control Module

The MCM is a brushless digital servo drive supporting CANopen®. Originally designed for a specific application in the medical industry, this product complies with the medical EMI standard IEC 60601-1-Rev 3.

#### Solution benefits

- Combining six separate requirements into a single motion control module
- Reduction of system components
- Durable brushless DC technology
- Compatible with all different axes of the system
- CANopen® communication protocols: DS301 and DSP402
- Dual loop feedback
- Conformity to EMC/EMI standard IEC 60601-1-Rev 3
- Continuous scan capabilities due to high performance and low ripple

## Wind Turbine Pitch Control



**Input voltage**  
380 VDC

**Current**  
30/90 (cont./peak) A rms

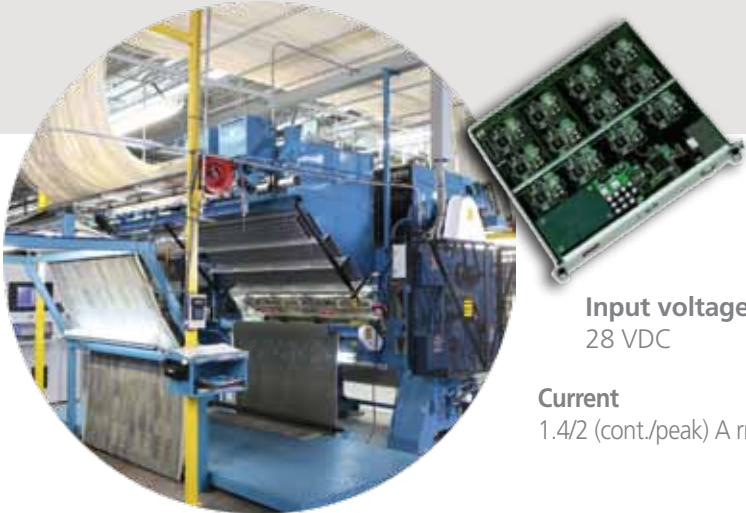
### PPD - Pitch Perfect Drive

The Pitch Perfect Drive is designed to be installed in sets of three, within a wind turbine hub in order to control the pitch of the blades. During its normal operation the drive monitors and charges the external capacitor's bank which is used during shut-down scenarios to perform a controlled move of the blade to its neutral position.

#### Solution benefits

- High performance, fully featured ruggedized servo drive
- Designed to comply with CE and UL
- IEC61800-2 chapter 4.3 vibration/ shock/ free fall compliance
- Operates from -20° to 55°C, 90% humidity
- Operates at its rated current at altitudes of up to 1000 m and at harsh air pressure conditions
- Protection class of IP54

## Carpet Tufting Machine



**Input voltage**  
28 VDC

**Current**  
1.4/2 (cont./peak) A rms

## MDU - 12-Axis Multi Drive Unit

Designed for a custom application in the carpet tufting industry, this Multi-Drive Unit consists of 12 independent servo drives assembled on a 9U PCB. Depending on the end-user's requirements, anywhere from 100 to 200 of these MDUs may be in use in a single machine. A central CPU provides a dual CAN bus interface for the MDU, and this CPU communicates information over an SSI bus between the CAN bus and the servo drives.

### Solution benefits

- Multiple pile-height capability at every needle
- Individual yarn control to create free-flowing patterns and textures
- Enables simple creation of multi-color patterns
- Compact arrangement of 12 axes per module and 8 modules in a rack
- Centralized CAN processor for each module

## CNC Indexer



**Input voltage**  
230 VDC

**Current**  
4.5/18 (cont./peak) A rms

## Indexer Controller

The Indexer Controller features fast 360° per second indexed moves. Moves are executed in programs. The controller allows for storing up to 50 programs with up to 1000 steps in each program. It features a multiple-line LCD display, step number, loop and preparatory code - all on one screen.

### Solution benefits

- Supports brushed and brushless servo motors
- Fast indexing moves
- Stores up to 50 programs
- Front-panel keypad for easy data entry and motion control
- Extended I/O for machine-level support and integration



**SERVOTRONIX**  
always in motion™

## 6 reasons why Servotronix



### **SYSTEMS SOLUTIONS:**

Controller to encoder, hardware & software



### **GLOBAL PRESENCE:**

Manufacturing, sales and customer support



### **EXPERIENCE:**

3 decades with generations of technology and expertise



### **CUSTOMIZATION:**

Solutions that perfectly match customer needs



### **PERFORMANCE:**

Best machine productivity and maximum throughput



### **VISION:**

Committed to technological leadership



# Contact Information

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## **United Kingdom**

### **Emolice Distribution Ltd.**

Ocean House, The Ring,  
Bracknell, RG12 1AX, United Kingdom

Tel: +44 1344 266530  
[sales@emolice.com](mailto:sales@emolice.com)

## **Ireland**

### **Emolice Distribution Ltd.**

Ocean House, The Ring,  
Bracknell, RG12 1AX, United Kingdom

Tel: +44 1344 266530  
[sales@emolice.com](mailto:sales@emolice.com)



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