

TRIO MOTION TECHNOLOGY DX5 SERVO PACKAGES



- THE MOTION SPECIALIST -

DX5 Multi-Axis Servo Drives

AT A GLANCE

- ★ DX5 drives and Trio's motion controller fully integrated into *Motion Perfect*
- ★ EtherCAT network for motion control
- ★ Zero stacking gap installation
- ★ Optimized for multi-axis machines
- ★ 200V ac supply module
- ★ Dual 750W axis module, supporting 750W and 400W motors
- ★ Dual 400W axis module, supporting 400W, 200W and 100W motors
- ★ 23-bit multi-turn absolute encoder
- ★ 350% overload
- ★ Internal drive protection functions
- ★ Comprehensive tuning technology
- ★ Field upgradable firmware
- ★ Matched with MXL motors
- ★ I/O functions handled by motion controller as part of the DX series 'Everything you need nothing more' concept

EtherCAT®

TRIO
MOTION TECHNOLOGY
A MEMBER OF THE ESTUN GROUP



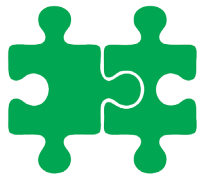
Building on the Trio DX series concept of 'everything you need, nothing more', DX5 is highly optimised for high axis counts and designed to maximise efficiency in all stages of design, installation and operation. It's optimized hardware is designed to minimize cost in multi-axis motion systems by expanding at the controller and system I/O level.

Cabinet space is minimised by combining dual-axis drives units and DC power supply and reduced cabling and AC power side components.

This result can be a 8-axis system that uses 50% of a cabinet space of a typical AC servo system of similar power.

DX5 Multi-Axis Servo Drives

Efficiency-Benefits



Integration Efficiency

Rapid application development of controller and drive configuration within *Motion Perfect*.



Space Efficient

Highly compact compared to standalone AC powered servo drives solution. AC power cabling and system wiring reduced by up to 80%.



Design Efficient

One system to program, simplifying development and any future production changes when required.



Energy Efficient

DC Bus regenerative energy is reused by the system. Energy savings for the life of the system, motor braking is absorbed and reused by all axes.

DX5

DX5-06KA

200V ac (3-phase)
Power Supply Module

DX5

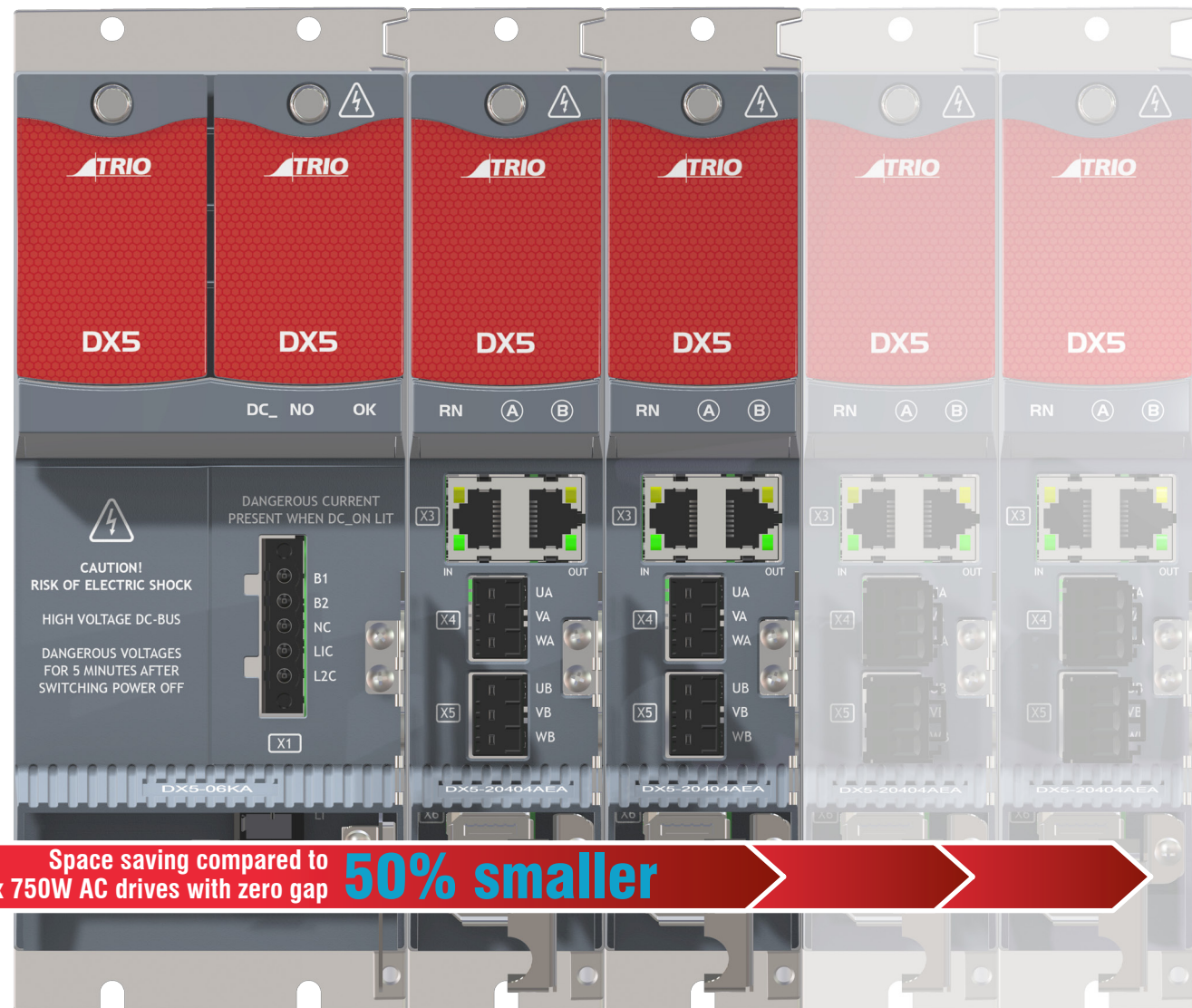
DX5-20404AEA

Dual 400W axis
module, supporting
400W, 200W and
100W motors

DX5

DX5-20808AEA

Dual 750W axis
module, supporting
750W and **400W**
motors



APPLICATION SOLUTIONS

Multi-Axis Servo Solutions

Scalable System Solutions for Machinery OEMs

Factory Automation

Communicate on all major Ethernet Technologies and Fieldbus level networks.

Automation Packages for Machine Control

Scalable Control Architectures.
Open Communications and Tools.

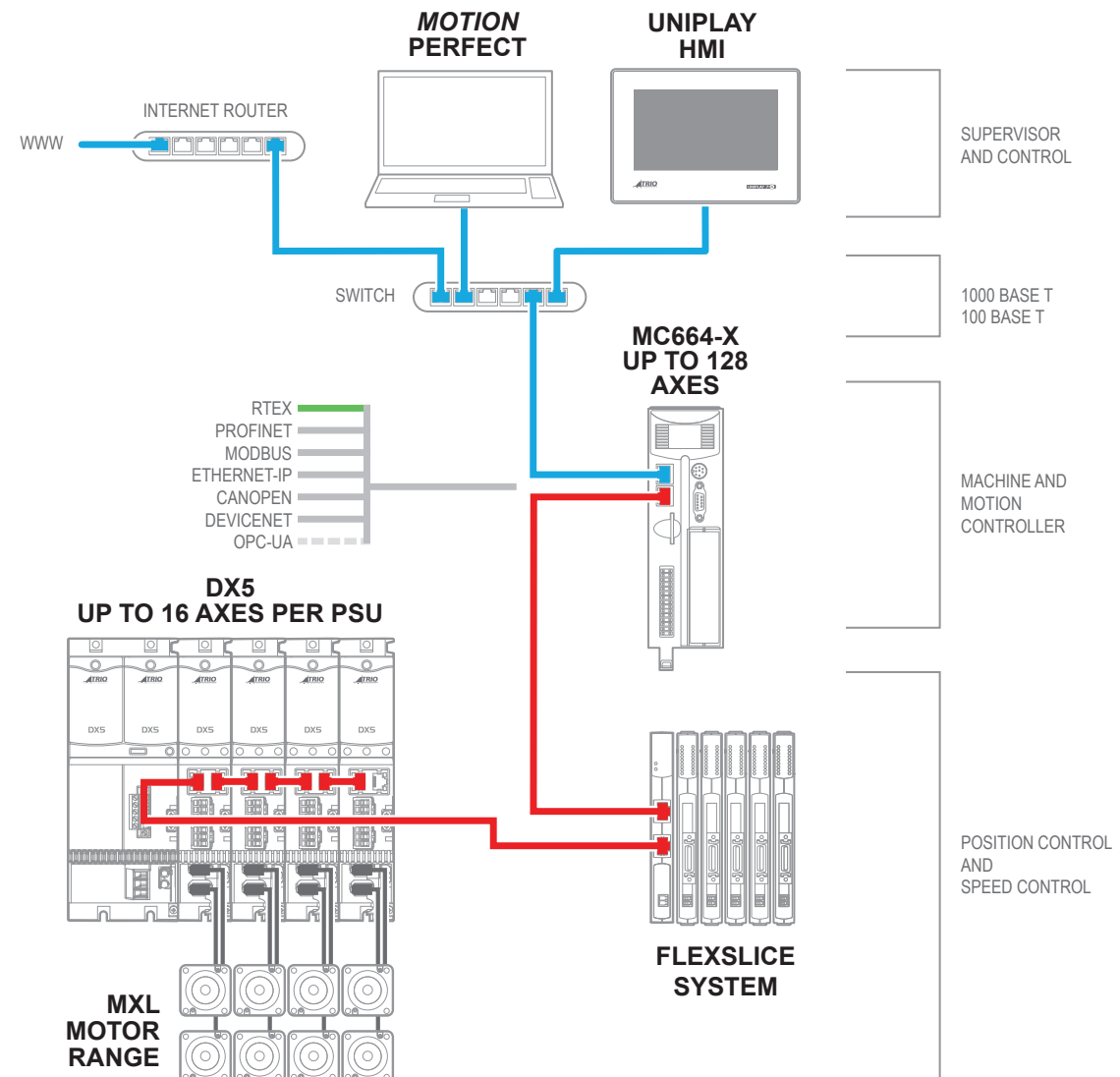
Motion Control Range

Motion Coordinator with scalable CPU performance.

Packaged Servo Offering.

Modular Decentralised I/O Systems:

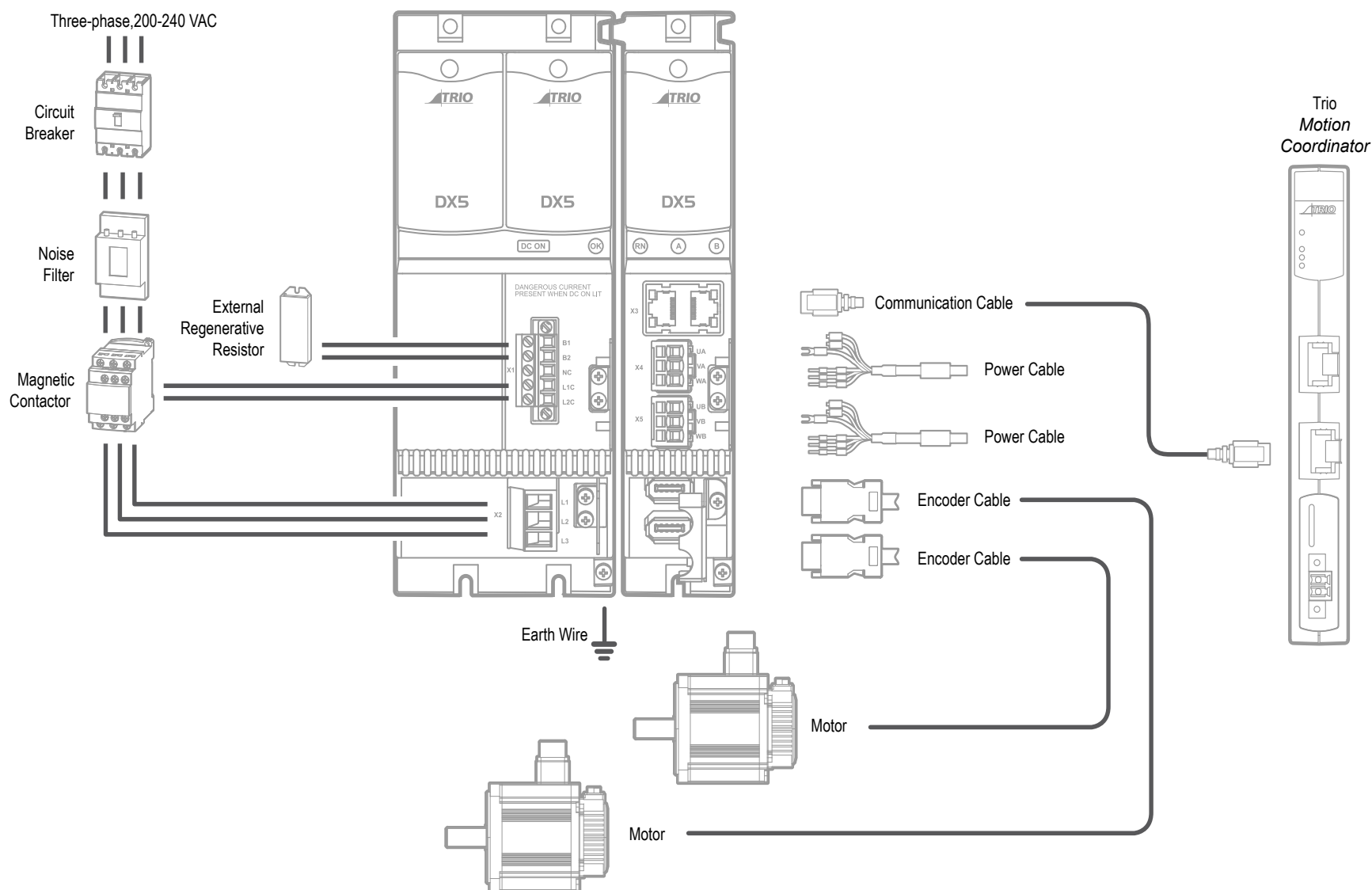
Digital / Analogue I/O, Stepper & Servo axes, Temperature Control and more.





DX5

Wiring Solution Example

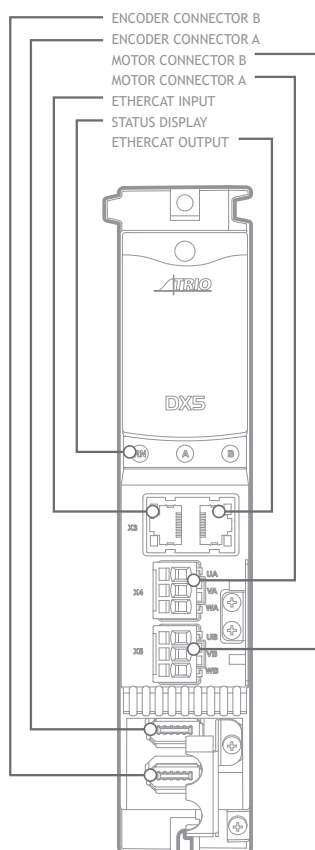




DX5

Multi-Axis Servo Solutions

Specification - DX5-20404AEA | DX5-20808AEA - Axis Modules



Drive Model: DX5		204040AEA	20808AEA
Continuous Output Power [W]		400	750
Continuous Output Current [Arms]		2.9	5.1
Instantaneous Maximum Output Current [Arms]		11.5	19.5
Power Supply	Main Circuit	270 V dc to 324 V dc, -15% to +10%	
	Control Circuit	24 V dc +/- 10%	
Control Method		SVPWM	
Feedback		Serial encoder: 23-bits single-turn, 16-bits multi-turn absolute encoder	
Environmental Conditions	Temperature	Operating temperature: -5°C to 45°C Storage temperature: -20°C to +85°C	
	Humidity	Both operating and storage: 5% to 95% (with no condensation)	
	Protection Class	IP20	
	Altitude	1,000 m or less	
	Vibration Resistance	4.9 m/s ²	
	Shock Resistance	19.6 m/s ²	
	Power System	TN System *3	
Mounting		Base-mounted	
Performance	Speed Control Range	1:5000	
	Coefficient of Speed Fluctuation	±0.01% of rated speed max. (For a load fluctuation of 0% to 100%)	
		0% of rated speed max. (For a rated voltage fluctuation of ±10%) ±0.1% of rated speed max. (For a temperature fluctuation of 25°C±25°C)	

Drive Model: DX5		204040AEA	20808AEA
EtherCAT Communications	Applicable Communications Standards	IEC 61158 Type12, IEC 61800-7 CiA402 Drive Profile	
	Physical Layer	100BASE-TX (IEEE802.3)	
	Communications Connectors	X3 (RJ45 pair): EtherCAT signal input/output connector	
	Cable	Category 5, Shielded/Foiled Twisted Pairs (CAT5e SF/UTP)	
	Sync Manager	SM0: Mailbox output, SM1: Mailbox input, SM2: Process data output, and SM3: Process data input	
	FMMU	FMMU 0: Mapped in process data output (RxPDO) area.	
		FMMU 1: Mapped in process data input (TxPDO) area.	
		FMMU 2: Mapped to mailbox status.	
	EtherCAT Commands (Data Link Layer)	APRD, FPRD, BRD, LRD, APWR, FPWR, BWR, LWR, ARMW, FRMW (APRW, FPRW, BRW, and LRW commands are not supported).	
	Process Data	Assignments can be changed with PDO mapping.	
	MailBox (CoE)	Emergency, SDO request, response, SDO information	
	FoE	File transfer for:	
		Firmware update	
		Parameter values upload/download	
		Scope data upload	
	Distributed Clocks	DC Mode, SM2 (SM2 event synchronisation) Applicable DC cycles: 250 µs to 2 ms	
	Slave Information Interface	2k bytes EEPROM	
CiA402 Drive Profile		Cyclic Synchronous Position Mode Cyclic Synchronous Velocity Mode Cyclic Synchronous Torque Mode	
Indicator Lamps		RN, A, B, LA1, LA2	
Protective Functions		Over-speed, Over-current, Over-voltage, Under-voltage, Overload, Over-temperature, PSU Failure, EtherCAT Communication Fault, Encoder Feedback Error, IPM failure	
Utility Functions		Alarm history, Jogging, Load inertia identification, Auto-Tuning, etc.	

Preliminary specifications may change without notice

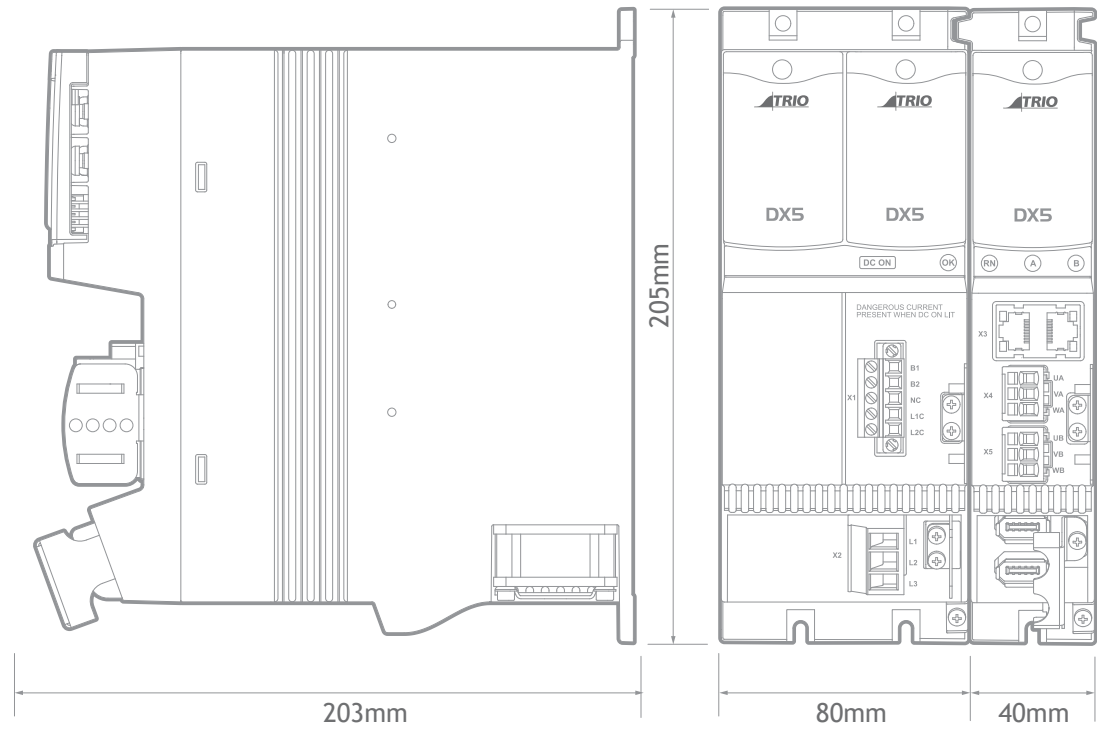
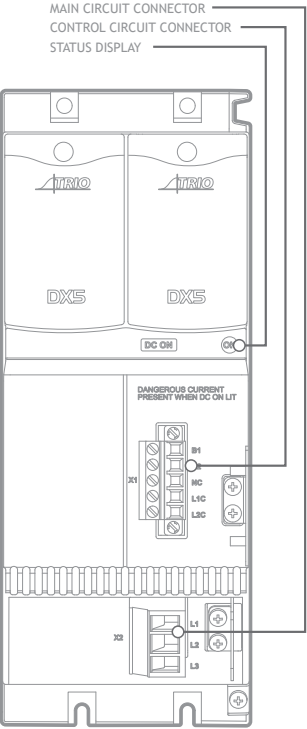
DX5

Multi-Axis Servo Solutions

Specification - DX5-06KANA - PSU

Dimensions - All Models

PSU Model: DX5		06KANA
Power Supply Input	Main Circuit	Three-phase 200 V ac to 240 V ac -15% to +10%, 50 Hz or 60 Hz
	Control Circuit	Single-phase 200 V ac to 240 V ac -15% to +10%, 50 Hz or 60 Hz
Power Supply Output	DC Bus Power	4200 W
	DC Bus Voltage	270 V dc to 324 V dc, -15% to +10%
	Control Bus Voltage	24 V dc +/- 10%
Environmental Conditions	Temperature	Operating temperature: -5°C to 45°C Storage temperature: -20°C to +85°C
	Humidity	Both operating and storage: 5% to 95% (with no condensation)
	Protection Class	IP20
	Altitude	1,000 m or less
	Vibration Resistance	4.9 m/s ²
	Shock Resistance	19.6 m/s ²
	Power System	TN System *3
Regenerative Processing		An external resistor can be connected if the application requires it
Indicator Lamps		DC_IN, OK



Model No.	Part No	Output Power	Height (mm)	Width (mm)	Depth (mm)
DX5-06KA NA	D0500	PSU	205	80	203
DX5-20404AEA	D0504	400W	205	40	203
DX5-20808AEA	D0508	750W	205	40	203
All Models : Voltage = 200V ac					

DX5

Multi-Axis Servo Solutions

DX Drives Matched to Motors

The MX family of servo motors include solutions with 17-bit or 23-bit encoders, are suitable for application speeds up to 6000 rpm, include variants with an integrated brake.

Low inertia allows very fast response times and these motors develop a very high torque despite their small size. In combination with our servo drives, they are ideal for applications with high dynamic responses and fast and precise positioning.

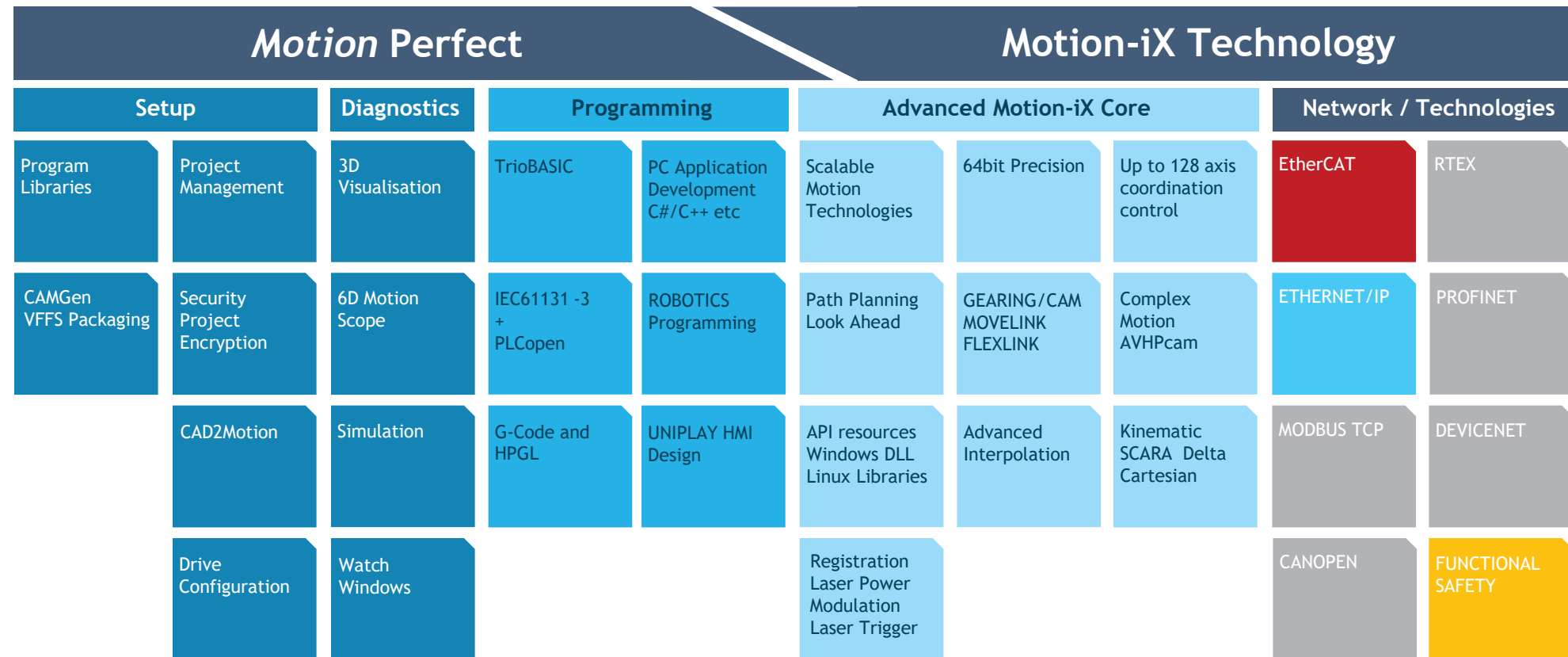
Our servo drive systems can be used in a wide range of applications thanks to their high performance, available power range and compact dimensions.

	MXL	DX5
200V	50W	✗
	100W	✓
	200W	✓
	400W	✓
	750W	✓
	1kW	✗
	1.5kW	✗
	2kW	✗
	3kW	✗



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Motion Optimal Engineering Technologies



Not all technologies are used with all Trio product.

Combining an advanced motion core with Trio's ease-of-use, Motion-iX offers performance and dependability of packaged solutions, from “The Motion Specialist”, where motion is the core and not just a bolt-on capability.

Motion-iX – a unified software engineering framework for machine development, that places the focus on optimising motion and complex kinematics, including robotics such as SCARA, to deliver truly optimal machine control performance.

Motion-iX includes development in IEC61131 and PLCopen, and boasts inverse kinematics

capabilities to truly coordinate all machine axes as one, including robots to maintain tight synchronisation or robots and machine as one. Virtualization allows simulation of the mechanics and motion to significantly reduce development and testing, delivering optimal control every time, by minimising machine cycle times.

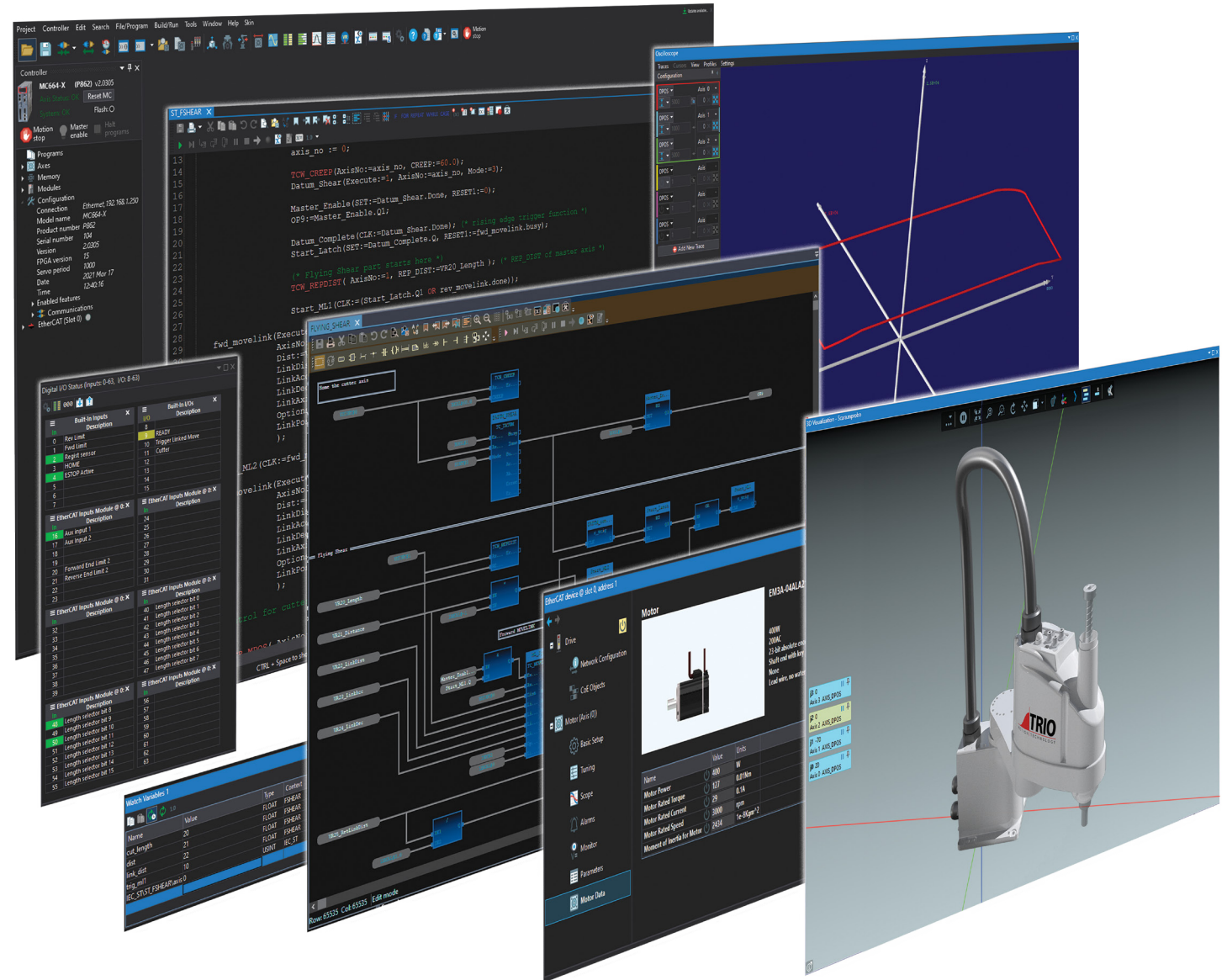
Motion Perfect

Design, Develop, Test, Deploy and Secure

Built on Trio's **Motion-iX** core technology, *Motion Perfect* provides the user with a re-designed easy to understand interface for rapid application development, controller and drive configuration and monitoring of functions.

The commissioning of DX Servo Drives is made simple with a series of Device Configuration Screens allowing access to status information and diagnostics at a glance. All motor axes can be detected, setup, monitored and controlled in real-time from the easy to use dialogue windows.

Motion Perfect includes access to IEC 61131 and PLCopen and the robotics solution; TrioRPS. Advanced visualisation including a 3D oscilloscope and IP protection of your projects are also included within *Motion Perfect*.



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TRIO

Worldwide Network



TRIO OFFICES
UK - Tewkesbury HQ
USA - Pittsburgh
India - Pune
China - Shanghai
Italy - Milan

R&D Centres
2 x Control & Software Technology
2 x Servo Drives & motors

EUROPE
BELGIUM
DENMARK
FRANCE
GERMANY

HUNGARY
ITALY
NETHERLANDS
NORWAY

POLAND
PORTUGAL
ROMANIA
SLOVAKIA

SLOVENIA
SPAIN
TURKEY

NORTH AMERICA

ALABAMA
ARIZONA
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QUEBEC
COLORADO
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MEXICO
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OHIO
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SOUTH CAROLINA
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SHANGHAI
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ISRAEL
UAE

ASIA
INDIA
KOREA
SINGAPORE
TAIWAN
THAILAND

OCEANIA
AUSTRALIA
NEW ZEALAND

4

R&D Centres

18

Integrators

32

Countries of Sale

103

Sales Partners Globally

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TRIO MOTION TECHNOLOGY
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Trio Motion Technology specialises in advanced motion control as a core, providing a range of *Motion Coordinators*, drives and motors, expansion interfaces, I-O modules and HMI's built on *Motion-iX* technologies and designed to enable the control of industrial machines with the minimum of external components.

In support of the Trio concept, we aim to offer the best technical support by telephone, email, our comprehensive website and training courses held throughout the year. Please look at our web site for details.

www.triomotion.com

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Specifications may be subject to change without notice. E & O.E.

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