PRODUCTS

The *Motion Coordinator* system is extremely modular, allowing the user to tailor the controller to their specific applications, this also allows the flexibility to incorporate new modules if the need should change, making the system "future proof". Systems may be used with a stand alone program or alternatively commands can be sent from an external computer.

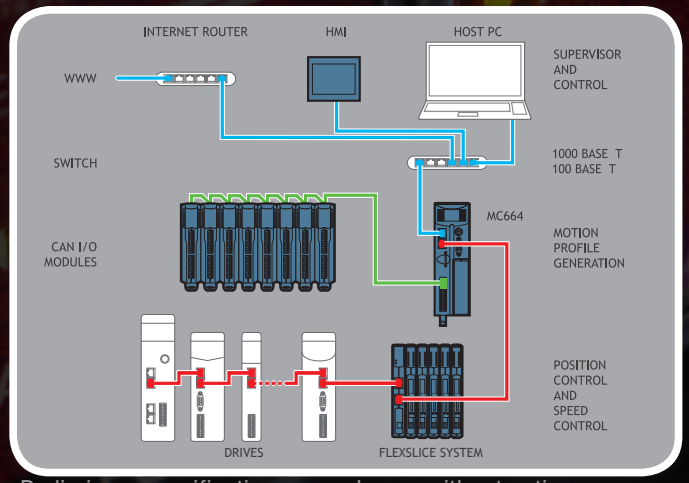
All *Motion Coordinators*, whether panel mount, rack mount, DIN-rail mount or a custom design format, allow digital or analogue I/O expansion with Trio's I/O modules. Special I/O requirements can also be accommodated using the CANopen protocol to control third party I/O modules. The Flexslice System offers fast high performance EtherCAT devices for Trio's range of EtherCAT *Motion Coordinators*.

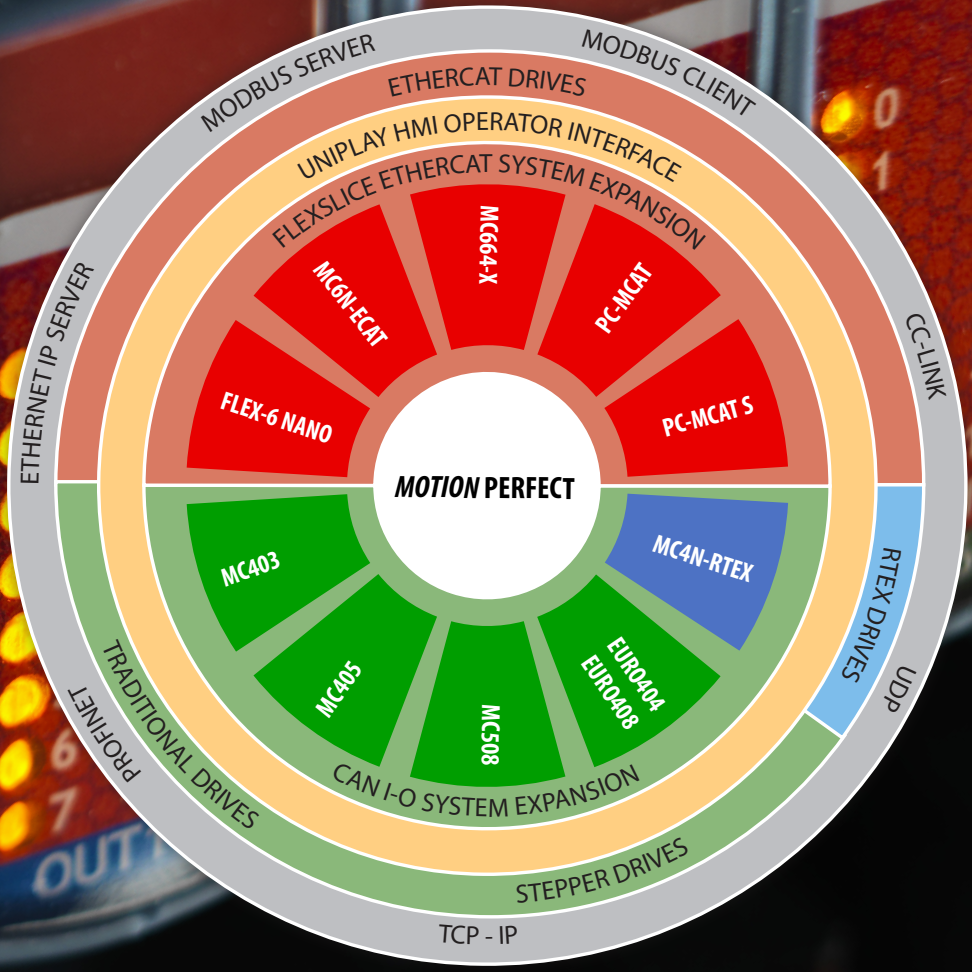
Trio's UNIPLAY range of operator interfaces provide a robust and functional HMI using the Ethernet network. Third party HMI products, touchscreens, etc. can communicate to the *Motion Coordinator* via the Modbus-RTU serial protocol.

System Set-Up

The MC4/5/6 range includes advanced networking technology for connection to Digital Servos, CANbus and Factory Networks. Access to all parts of the system by network connections allows reduced down-time with automated fault reporting and analysis.

With a MC664 *Motion Coordinator*, it is possible to control a machine with up to 128 axes (64 stepper/servo and 64 virtual), 1024 digital inputs, 1024 digital outputs, 32 analogue inputs and 16 analogue outputs.





Preliminary specifications may change without notice

MC664-X
MC664

Quad Core 128 Axis *Motion Coordinator*

The MC664 / MC664-X is Trio's highest performance and most flexible *Motion Coordinator* and is based on the Quad Core Cortex A9 1GHz ARM processor.

The MC664 (single core) and MC664X feature a total of 128 axes in software with up to 64 motor axes and 64 bit integer position registers. 64 bit floating point calculations are used for ultra precise axis resolution. Using expansion modules the MC664 range support up to 64 networked digital drives, 24 analogue servo drives, 25 pulse and direction drives and 25 absolute and incremental encoders.

EtherCAT®

FEATURES

- Up to 128 Axes - 64 Stepper / Servo Axes and 64 Virtual Axes
- Precise 64 Bit Motion Calculations with Quad Core Cortex A9 1GHz Processor (P862)
- Dedicated Communications Core
- Built-in EtherCAT Port
- EtherCAT, Sercos, SLM and RTEX Digital Drive Interfaces
- Linear, Circular, Helical and Spherical Interpolation
- Flexible CAM shapes, Linked Motion
- EnDAT and SSI Absolute Encoder Supported
- Hardware Linked Outputs for Camera / Laser Control
- Ethernet-IP / Modbus TCP / Ethernet Interface Built-In
- Anybus-CC Module for Flexible Factory Comms Including ProfiNet/Profibus
- IEC 61131-3 Programming Option
- Multi-tasking BASIC Programming
- Text File Handling
- Robotic Transformations
- SD Memory Card Slot
- CANopen I/O Expansion
- Backlit LCD Display
- RoHS, UL and CE Approved

Every axis can be programmed to move using linear, circular or helical or spherical interpolation, electronic cams, linked axes and gearboxes. The quad core 1GHz processing power allows for multiple robotic transformations to run simultaneously.

The built-in Ethernet port allows programming and connection of common HMI and PLC protocols directly to the MC664. User programs can be written in Trio's established multi-tasking TrioBASIC language using the powerful *Motion* Perfect application development software making complex motion easy. Also available as an option are the industry standard IEC 61131-3 languages allowing a fully functional PLC programming system.

A bright easy to read backlit display enables the controller status to be easily determined, whilst the single piece metal cast backplate provides an integrated earth chassis to improve noise rejection in the industrial environment.

Available in single or quad core formats,the P862 quad core version has 2 built-in EtherCAT axes which can be upgraded with the purchase of the P914 Remote Axes FEC.

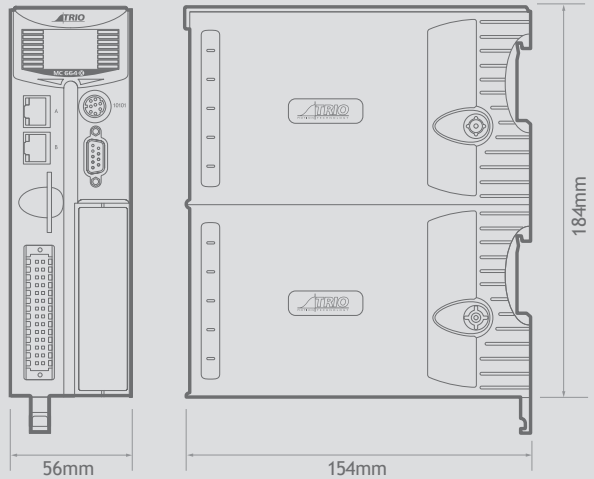
The MC664 single core *Motion Coordinator* is a "drop-in" replacement for the MC464 as it uses the same footprint as its predecessor. It has a built-in EtherCAT port but no axes are enabled by default.

PRODUCT CODES:

P861	MC664	Single Core Processor
P862	MC664X	Quad Core Processor

QUAD CORE MC664X:

OVERALL DIMENSIONS (INC EXPANSION MODULE)



ACCESSORIES

P871	MC664 RTEX Interface
P872	MC664 Sercos Interface
P873	MC664 SLM Interface
P876	MC664 EtherCAT Interface
P879	MC664 FlexAxis 4 Interface
P874	MC664 FlexAxis 8 Interface
P381	MC664 FlexAxis Splitter Cable
P875	MC664 Anybus-CC Module
P878	MC664 Blanking Module
P750	Kinematic Runtime FEC
P366 - P379	EtherCAT Flexslice System
P317 - P327	CAN I/O Modules
P843 - P844	UNIPLAY 7" & 10" HMI's
P914	2 x EtherCAT Axes

MC664 / MC664-X Expansion

Configure your application by connecting up to 7 half-height expansion modules or 3 full-height expansion modules.

Each module easily attaches to the controller with a high density bus connection and a uniquely designed screw integrates the earth planes of all modules and *Motion Coordinator* together. Trio's feature enable code system for axis activation allows the whole system to be scaled exactly to your requirements.

The P876, P872 and P871 all come equipped with two axes per module as standard. To add further axes, the P914 Feature Enable Code can be purchased. Each P914 doubles the available axes:

P861 + P914	= 2 Remote Axes	P862 + P914	= 4 Remote Axes
P861 + 2 x P914	= 4 Remote Axes	P862 + 2 x P914	= 8 Remote Axes
P861 + 3 x P914	= 8 Remote Axes	P862 + 3 x P914	= 16 Remote Axes
P861 + 5 x P914	= 16 Remote Axes	P862 + 5 x P914	= 64 Remote Axes

The enabled axes can be used via the built-in EtherCAT port or via the P876, P872 and P871 Expansion Modules.

MC664 EXPANSION OPTIONS

	P876	P872	P871	P873	P878	P875
Network	EtherCAT	Sercos II	Panasonic (RTEX)	SLM	Blanking module to ensure the system is "tied" together mechanically if there are any gaps in the build. There is no communication bus connection, but the P878 is required for the earth connection.	The CompactCom Module adds support for the Anybus CompactCom device modules listed below and bought separately. Profibus, DeviceNet, CANopen, CC-Link, EtherNet IP, USB, Modbus-TCP, Modbus-RTU, RS232, RS485, Profinet I/O, Bluetooth.
Network Speed	100Mbps	4, 8 or 16Mbps	100Mbps	SLM Standard		
Topology	Chain	Ring	Ring	Star		
Max Axes per Interface	64	16	32	6		
Max Interfaces per MC664	7	7	7	7		
Max Axes on MC664	64	64	64	42		
Cable	STP Cat 5-e or better	Fibre Optic	STP Cat 5-e or better	RS485		
Bus to MC664	32 Bit	32 Bit	32 Bit	32 Bit		
Interpolated time based registration	8 x 24V Inputs	8 x 24V Inputs	8 x 24V Inputs	6 x 24V Inputs		
Optically isolated registration inputs	Y	Y	Y	Y		
Map any I/O to any Axis	Y	Y	Y	Y		
Remote Registration	Y	Y	N/A	N/A		

MC664 EXPANSION OPTIONS

For use with Stepper, Analogue Servo and Piezo Motors with support available for SSI/Endat/Tamagawa Absolute encoders. Standard FlexAxis interface modules are available in 4 axis (P879) and 8 axis (P874) versions. An 8 axis SSI absolute encoder version (P881) is available as a special order.

	P874	P879	P881
Axis 0	Core + AS	Core + AS	Core + SSI + AS
Axis 1	Core + AS	Core + AS	Core + SSI + AS
Axis 2	Core + AS	Extended + AS	Core + SSI + AS
Axis 3	Core + AS	Extended + AS	Core + SSI + AS
Axis 4	Extended + AS		Core + SSI + AS
Axis 5	Extended + AS		Core + SSI + AS
Axis 6	Extended + AS		Core + SSI + AS
Axis 7	Extended + AS		Core + SSI + AS
Max Interfaces per MC664	3	3	3
Max Axes on MC664	24	12	24
Connectors: Encoder	15pin HD D-type	15pin HD D-type	15pin HD D-type
Discrete Wiring	Removable terminal block	Removable terminal block	Removable terminal block
Bus to MC664	32 Bit	32 Bit	32 Bit
Registration Inputs*	Flexible registration on all axes	Flexible registration on all axes	Flexible registration on all axes
Position based registration	4 x 24V inputs	4 x 24V inputs	N/A
Bi-direction registration input/position switch output	4 x 24V	4 x 24V	4 x 24V
Optically isolated registration inputs	Yes	Yes	Yes
Map any registration input to any Axis	Yes	Yes	Yes
Independant axis Configuration	Yes	Yes	Yes
No of 16 bit DAC Outputs	8	4	8

***** N/A to absolute axes.

CORE AXES – can be configured in software as pulse and direction outputs to stepper or servo drives. They can also be configured for incremental encoder feedback or simulated encoder output.

EXTENDED AXES – in addition to the Core functionality these axes can also be configured for SSI, Tamagawa or EnDat absolute encoders.

AS - Analogue 'closed loop' Servo using built-in ±10V analogue output.

P381 - Breakout cable to split the high density D-Type connectors to standard 9 way D type connectors.