

MC664 / MC664-X Quad Core 128 Axis Coordinator



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 and CE Approved

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 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 supports up to 64 networked digital drives, 24 analogue servo drives, 25 pulse and direction drives and 25 absolute and incremental encoders.

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 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, the MC464 and the quad core model is ideal for high axis count machine and robotic applications. It has a built-in EtherCAT port but no axes are enabled by default.

QUAD CORE MC664X:

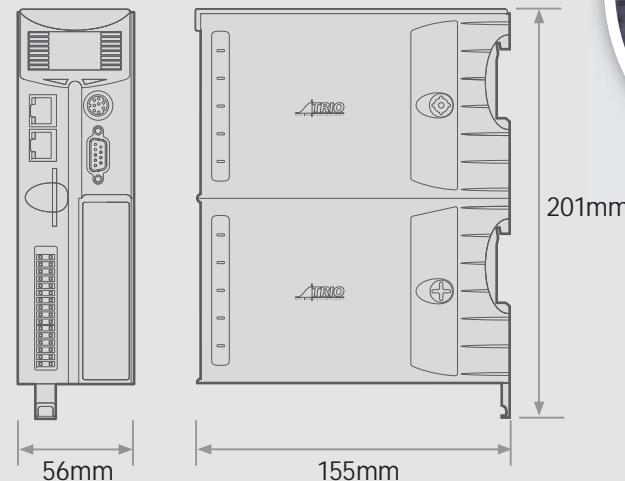


PRODUCT CODES:

| | | |
|------|--------|-----------------------|
| P861 | MC664 | Single Core Processor |
| P862 | MC664X | Quad Core Processor |

EtherCAT®

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 |
| P701 - P732 | Remote Axes FEC |
| P750 | Kinematic Runtime FEC |
| P317 - P327 | CAN I/O Modules |
| P843 - P844 | UNIPLAY 7" & 10" HMI's |
| P914 | 2 x EtherCAT Axes |



MC664 / MC664X 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 = 4 Remote Axes
P861 + 2 x P914 = 8 Remote Axes
P861 + 3 x P914 = 16 Remote Axes

P861 + 5 x P914 = 64 Remote Axes

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



| | P876 | P872 | P871 | P873 | P878 | P875 |
|--|-----------------------|----------------|-----------------------|----------------|---|---|
| Network | EtherCAT | Sercos | 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 / MC664X Expansion



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

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 | CORE AXES |
|--|-----------------------------------|-----------------------------------|-----------------------------------|---|
| Axis 0 | Core + AS | Core + AS | Core + SSI + AS | in software direction or servo drive be configured as encoder feedback encoder output |
| 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 | EXTENDED |
| Axis 5 | Extended + AS | | Core + SSI + AS | to the Core axes can also use SSI, Tamagawa encoders. |
| 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 $\pm 10V$ analogue output.