DRIVE CENTRE **DC**

Industrial Automation Systems Integrators

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Machine Control Modules

Unidrive M's MCi200 and MCi210 modules extend machine control capability when combined with the Advanced Motion Controller embedded in Unidrive M700. Enabling easy connectivity of additional machine components and application software, MCi200 and MCi210 create a complete application solution. As a result of the highly flexible plug-in option module format, system design is streamlined by removing the need for PLCs and additional external equipment. Machine control is fast and easy to achieve thanks to Unidrive M's user friendly programming software - Machine Control Studio - utilizing the industry-standard open IEC 61131-3 programming environment.

The MCi200 and MCi210 machine control modules provide:

High performance machine control – high speed communications of 250 μs enables optimum performance.

High bandwidth – control multiple drive and motor axes thanks to MCi210's second Ethernet port.

Optimum ease of use – rapidly create machine control programs with Unidrive M's programming software, developed with extensive human centred design research and based on the industry-standard IEC 61131-3 programming environment.

Open environment – Standard IEEE 1588 Ethernet and IEC 61131 software enable open machine control programming, boosting the choice of component connectivity.

Streamlined machine design – plug-in option module format means less wiring, less physical space required and less financial cost, while increasing design simplicity.

User programming

The MCi200 and MCi210 modules are capable of running Machine Control Studio programs. It is an integrated development environment that supports all five of the programming languages of the IEC 61131-3 standard, including Structured Text (ST), Ladder Diagram (LD), Function Block Diagram (FBD), Sequential Function Chart (SFC) and Instruction List (IL). Continuous Function Chart (CFC) is also supported.

Optimum connectivity

Simple integration with external components such as I/O, HMIs and other networked drives can be achieved using Unidrive M's integrated standard Ethernet ports (with RTMoE or standard protocols), or fieldbuses supported by SI option modules (EtherCAT, PROFINET, PROFIBUS, CANopen).

MCi200 & MCi210

	M100	M200	M300	M400	M600	M700
						✓

Build high performance systems and productive machines

- MCi modules execute comprehensive programs that can control multiple drives and motors simultaneously across real-time networks

- M700's onboard Ethernet using RTMoE (Real Time Motion over Ethernet) provides synchronization and communication between drives using the Precision Time Protocol as defined by IEEE1588 V2

- Performance is optimized by having a motion controller embedded in each networked drive

The user has a number of tasks available to them as shown in the following table.

Task	Interval
Initial	Executes once when the user program starts
Freewheeling	No timebase
Clock0	User-specified timebase from 1 ms to 24 hours in 1 ms increments
Clock1	
Clock2	
Clock3	
Position	User-specified timebase from 250 μs to < 8 ms in 250 μs increments
Event0	No timebase. This task is triggered (e.g. by the Timer Unit, Ethernet cyclic data etc.)
Event1	
Event2	
Event3	
ErrorTask	No timebase. This task is triggered on a user program error

The Clock and Position tasks are cyclic and will run at an interval set by the user. The Freewheeling task is the lowest priority task and will run when processor resource allows.

MCi210 ensures higher performance by delivering:

- Two additional Ethernet ports with an internal switch

- Support for standard Ethernet protocols, along with RTMoE for PTP (IEEE 1588) synchronization

- Modbus TCP/IP master (up to 5 nodes)

- Parallel interface with drive processor provides faster data exchange

- Machine control over two segregated Ethernet networks enables greater flexibility in machine design

- Extends connectivity with 3 x digital inputs, 1 x digital output and 1 x digital I/O

Segregated network control
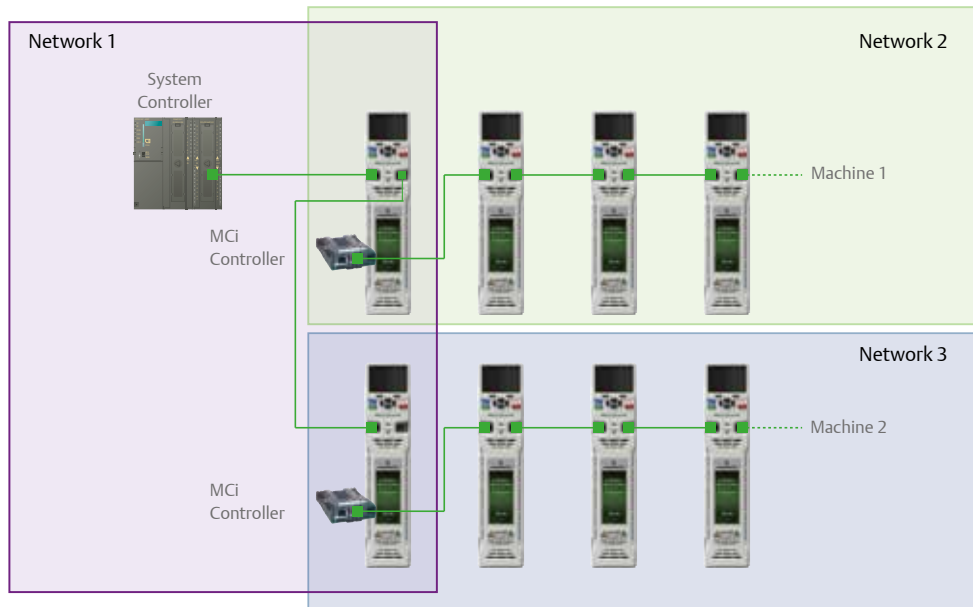
Terminal descriptions

Link / activity indicators

Spade connector

Port A

Port B

Digital I/O

Terminal	Description
1	Transmit +
2	Transmit -
3	Receive +
4	N/A
5	N/A
6	Receive -
7	N/A
8	N/A

Terminal	Description
1	Transmit +
2	Transmit -
3	Receive +
4	N/A
5	N/A
6	Receive -
7	N/A
8	N/A

Terminal	Description
1	Digital input 1
2	Digital input 2
3	Digital input 3
4	Digital I/O 4
5	Digital output 5
6	0 V common