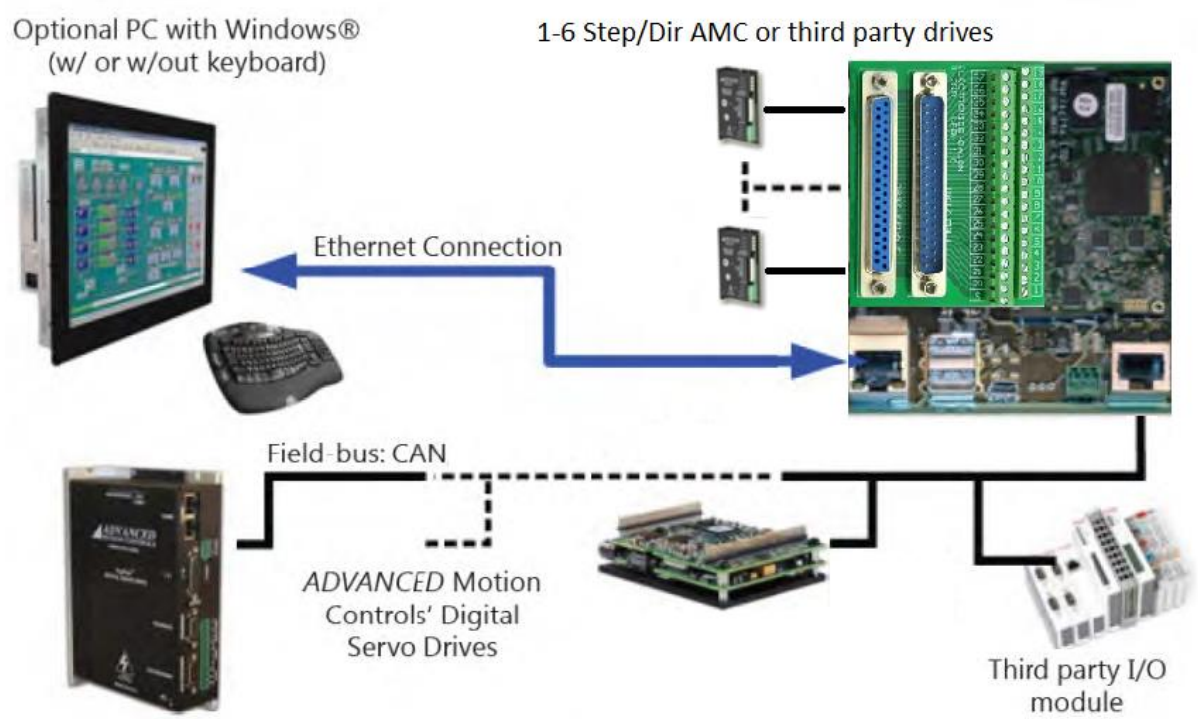
Micro-MACC

Motion **A**utomation **C**ontrol **C**ard

System Configuration



(This picture is for illustration only, actual connectors may differ)

Description

The Micro-MACC (Motion Automation Control Card) is a compact low cost controller for the control of up to 6 (or optionally more) axes of servos or steppers with step/dir (or pulse/dir) inputs. The Micro-MACC communicates with a C&M (Click and Move) user application - running on a PC- via RS232, RS485, USB or Ethernet ports.
The C&M application calculates the Position and Velocity points in Time (PVT). The PVT points are interpolated and converted into step/dir signals.
All the resources (including memory) of the PC are available to the programmer in the powerful C&M environment.
On board buffering is utilized to overcome the non-real time nature of the Windows OS.

The CAN output of the MicroMACC enables the user to mix and match AMC networked servo drives with third party step/dir servo or stepper drives.
E.G. X, Y, Z axes can be AMC networked servos and A, B, C axes can be third party step/dir drives.

Using the latest generation 32-bit Risc processor engine and Field Programmable Gate Array (FPGA), it offers a high speed and flexible user programmable motion controller. The C&M IDE (Integrated Development Environment) is used to create applications.
The Micro-MACC can also serve as an intelligent I/O module with I/Os synchronized to motion.
The on board I/Os can be further expanded with CANopen devices conforming to the standard DS401 I/O profile.

Application specific pre-programmed MicroMACC versions are available for OEM-s. High speed hard real-time applications (e.g. servo loops, data acquisition etc.) can be implemented in the user programmable MicroMACC version.

Features

- 32-bit 160MHz Risc Processor
- 256KByte zero wait state SRAM for data
- 2MByte FLASH for firmware and user program storage
- 4kByte EEPROM for non-volatile parameter storage
- Supports 6 axes of stepper, or 6 axes of servo in step and direction mode
- 24 uncommitted non-isolated digital inputs
  Programmable for hardware limits, home input, stop input and error input. 6 of the inputs can be programmed for high-speed capture of position with 1 microsecond.
- 16 uncommitted digital outputs. 5V open collector Darlington
  Programmable for drive enable and high speed position compare output
- 24V/150mA relay output to signal system error conditions
- Optional 2 x 3 simultaneously sampled 12-bit uncommitted analog inputs
- Optional 2 x 12-bit uncommitted analog outputs
- RS232 (115,200 Baud), 10/100Mbit Ethernet (via UDP/IP) and USB programming interfaces
  USB drivers compatible with Windows 2000/XP and Linux
  Optional RS485 serial port
- Optional 2 x CAN interfaces for I/O expansion and HMI interfaces. Can be used to provide full peer-to-peer networking capabilities with other controllers
- Comprehensive move types including: linear, circular and helical interpolation; software cams; 3D shape cutting; flying shears; splines; synchronization with positional offsets and virtual axes via the PC based C&M (Click and Move) motion controller application.

I/O connections

Per Step and Direction axis. (All signals are RS422 differential.)

Conn1…Conn6

Pin num	Signal	Direction
1	Step+	OUT
2	Step-	OUT
3	Dir+	OUT
4	Dir-	OUT
5	GND	
6	EnableDrive+	OUT
7	EnableDrive-	OUT
8	AtPosition+	OUT
9	AtPosition-	OUT
10	GND	
11	DriveReady+	IN
12	DriveReady-	IN
13	PosCapture+	IN
14	PosCapture-	IN
15	GND	

Uncommitted I/Os.

Conn7

Pin num	Signal	Direction
1	DigitalIn0	IN
2	DigitalIn1	IN
3	DigitalIn2	IN
4	DigitalIn3	IN
5	GND	
6	DigitalIn4	IN
7	DigitalIn5	IN
8	DigitalIn6	IN
9	DigitalIn7	IN
10	GND	
11	DigitalIn8	IN
12	DigitalIn9	IN
13	DigitalIn10	IN
14	DigitalIn11	IN
15	GND	

Conn8

Pin num	Signal	Direction
1	DigitalIn12	IN
2	DigitalIn13	IN
3	DigitalIn14	IN
4	DigitalIn15	IN
5	GND	
6	DigitalIn16	IN
7	DigitalIn17	IN
8	DigitalIn18	IN
9	DigitalIn19	IN
10	GND	
11	DigitalIn20	IN
12	DigitalIn21	IN
13	DigitalIn22	IN
14	DigitalIn23	IN
15	GND	

Conn9

Pin num	Signal	Direction
1	DigitalOut0	OUT
2	DigitalOut1	OUT
3	DigitalOut2	OUT
4	DigitalOut3	OUT
5	GND	
6	DigitalOut4	OUT
7	DigitalOut5	OUT
8	DigitalOut6	OUT
9	DigitalOut7	OUT
10	GND	
11	DigitalOut8	OUT
12	DigitalOut9	OUT
13	DigitalOut0	OUT
14	DigitalOut11	OUT
15	GND	

Conn10

Pin num	Signal	Direction
1	DigitalOut12	OUT
2	DigitalOut13	OUT
3	DigitalOut14	OUT
4	DigitalOut15	OUT
5	GND	
6	GND	
7	GND	
8	GND	
9	GND	
10	ANALOG_GND	
11	AnalogOut1+	OUT
12	AnalogOut1-	OUT
13	AnalogOut2+	OUT
14	AnalogOut2-	OUT
15	ANALOG_GND	

Conn11

Pin num	Signal	Direction
1	AnalogIn1+	IN
2	AnalogIn1-	IN
3	AnalogIn2+	IN
4	AnalogIn2-	IN
5	ANALOG_GND	
6	AnalogIn3+	IN
7	AnalogIn3-	IN
8	AnalogIn4+	IN
9	AnalogIn4-	IN
10	ANALOG_GND	
11	AnalogIn5+	IN
12	AnalogIn5-	IN
13	AnalogIn6+	IN
14	AnalogIn6-	IN
15	ANALOG_GND	

Optional CAN interface connectors

Conn12…Conn13

Pin num	Signal	Direction
1	-	
2	CAN_L	BI
3	CAN_GND	
4	-	
5	CAN_SHIELD	
6	-	
7	CAN_H	BI
8	CAN_TERM	
9	-	