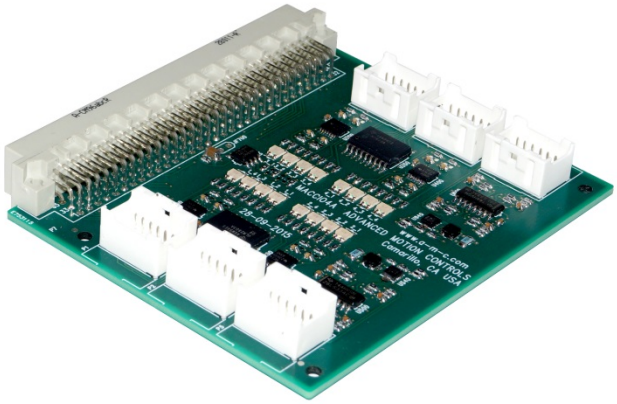
Description

The Motion Automation Control Card (MACC) family are general purpose motion/automation controllers with embedded Click&Move® programming capability.

Most applications for the MACC platform require digital and/or analog input/output hardware elements. *ADVANCED* Motion Controls® offers a wide range of input/output modules to fulfill any application requirement. These modules are partial or fully customizable to fit the application specifications and budget.

The MACCIO4 module features the necessary digital I/O's to support up to four position mode servo or stepper drives with Step/Dir command input. A cost-effective and high performance motion control system can be built using the hardware resources of the MACC on-board FPGA and the software resources of the Click&Move® software development environment.

The MACCIO4 can fit other data acquisition applications as well.



Click&Move®

Automation Solution

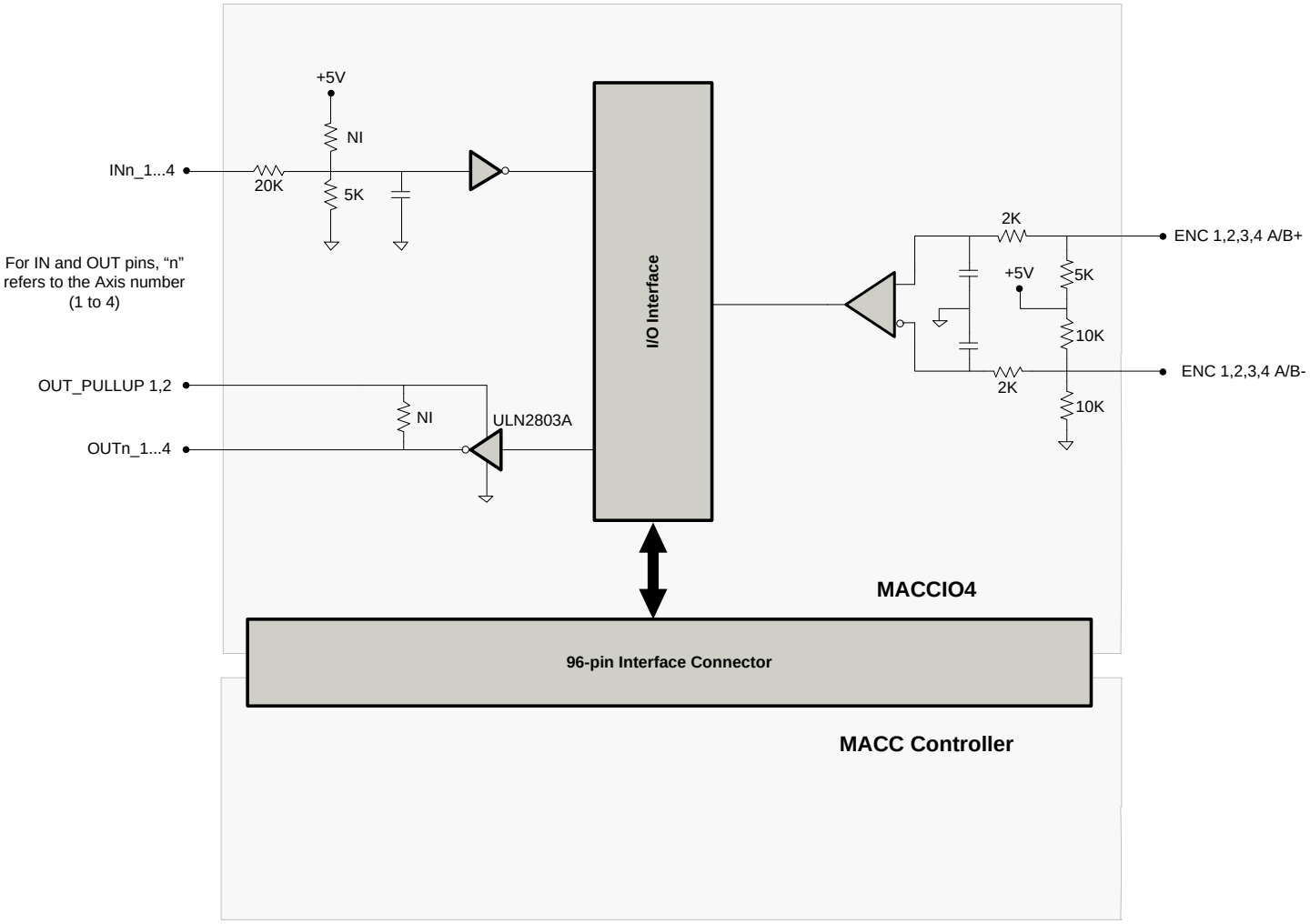
FEATURES

- 16 non-isolated digital outputs (4 per axis) (open collector darlington)
- 16 non-isolated digital inputs (4 per axis)
- 4 independent encoder inputs supporting encoders or handwheels
- Fits standard DIN rail plastic case

COMPATIBLE CONTROL CARDS

- MACC02
- MACC11

BLOCK DIAGRAM

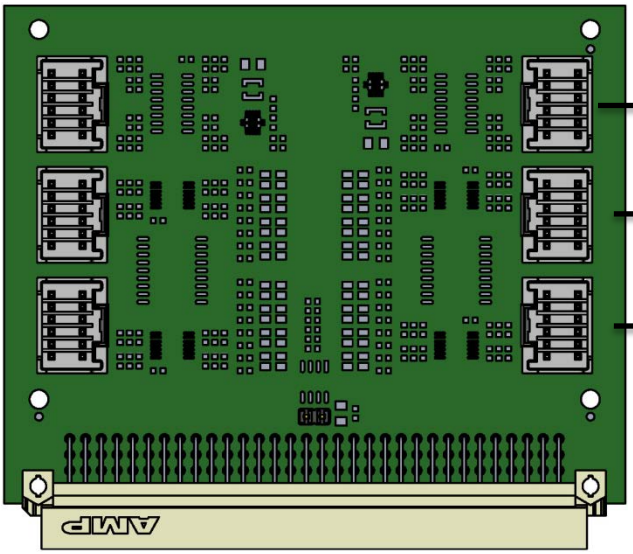


SPECIFICATIONS

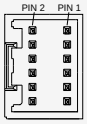
Power Specifications		
Description	Units	Value
DC Supply Voltage	VDC	Directly from the MACC, no external power supply required
I/O Specifications		
Description	Units	Value
Digital Outputs		
Maximum Turn On Delay	ns	50
Typical Turn Off Delay	ns	200 (@ 240 ohm pull-up to 24V)
Typical Saturation Voltage	V	1 (@ 100 mA load)
Maximum Continuous Output Current	mA	100
Maximum Peak Output Current	mA	250 (@ 50% duty cycle)
Maximum Output Voltage	V	30
Digital Inputs		
Maximum Turn On Delay	µs	2 (@ 24 V input)
Maximum Turn Off Delay	µs	2
Minimum Input Voltage	V	18
Maximum Input Voltage	V	30
Mechanical Specifications		
Description	Units	Value
Agency Approvals	-	UL Pending, cUL Pending, CE Pending, RoHS II
Size (H x W x D)	mm (in)	99.9 x 80.0 x 11.4 (3.94 x 3.15 x 0.45)
Weight	g (oz)	TBD
Operating Temperature Range	°C (°F)	0 - 75 (32 - 167)
Storage Temperature Range	°C (°F)	-40 - 85 (-40 - 185)
I/O Connectors	-	12-pin, 2.00 mm spaced dual-row vertical or right-angled headers
MACC INTERFACE I/O Connector	-	96-pin, 2.54 mm spaced plug connector

Information on Approvals and Compliances	
RoHS II Compliant	The RoHS II Directive 2011/65/EU restricts the use of certain substances including lead, mercury, cadmium, hexavalent chromium and halogenated flame retardants PBB and PBDE in electronic equipment.

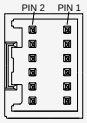
CONNECTOR INFORMATION



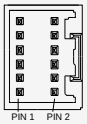
P5 – Encoder Input Connector
- 12-pin, 2.00 mm spaced dual-row vertical header (Molex P/N 55917-1210)
- Mating Connector (Molex:P/N 51353-1200)



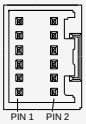
P1 and P2 – Digital I/O Connectors
- 12-pin, 2.00 mm spaced dual-row vertical header (Molex P/N 55917-1210)
- Mating Connector (Molex:P/N 51353-1200)

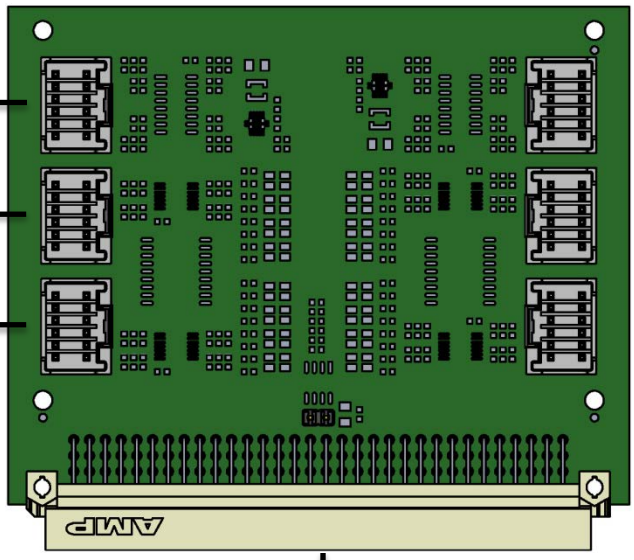


P6 – Encoder Input Connector
- 12-pin, 2.00 mm spaced dual-row vertical header (Molex P/N 55917-1210)
- Mating Connector (Molex:P/N 51353-1200)

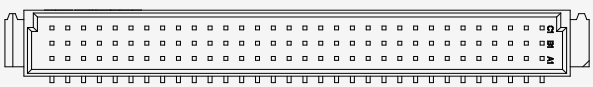


P3 and P4 – Digital Input/Output Connectors
- 12-pin, 2.00 mm spaced dual-row vertical header (Molex P/N 55917-1210)
- Mating Connector (Molex:P/N 51353-1200)





P7 – MACC Interface I/O Connector
- 96-pin, 2.54 mm spaced plug connector
- I/O Module control card interface



PIN FUNCTIONS

P1 – Axis 1 Digital I/O Connector

Pin	Name	Description / Notes	I/O
1	GND	Ground	GND
2	GND	Ground	GND
3	OUT1_4	Digital output	O
4	IN1_4	Digital input	I
5	OUT1_3	Digital output	O
6	IN1_3	Digital input	I
7	OUT_PULLUP1	Digital output pull-up for OUT1_x and OUT2_x outputs	-
8	GND	Ground	GND
9	OUT1_2	Digital output	O
10	IN1_2	Digital input	I
11	OUT1_1	Digital output	O
12	IN1_1	Digital input	I

P2 – Axis 2 Digital I/O Connector

Pin	Name	Description / Notes	I/O
1	GND	Ground	GND
2	GND	Ground	GND
3	OUT2_4	Digital output	O
4	IN2_4	Digital input	I
5	OUT2_3	Digital output	O
6	IN2_3	Digital input	I
7	OUT_PULLUP1	Digital output pull-up for OUT1_x and OUT2_x outputs	-
8	GND	Ground	GND
9	OUT2_2	Digital output	O
10	IN2_2	Digital input	I
11	OUT2_1	Digital output	O
12	IN2_1	Digital input	I

P3 – Axis 3 Digital I/O Connector

Pin	Name	Description / Notes	I/O
1	GND	Ground	GND
2	GND	Ground	GND
3	OUT3_4	Digital output	O
4	IN3_4	Digital input	I
5	OUT3_3	Digital output	O
6	IN3_3	Digital input	I
7	OUT_PULLUP2	Digital output pull-up for OUT3_x and OUT4_x outputs	-
8	GND	Ground	GND
9	OUT3_2	Digital output	O
10	IN3_2	Digital input	I
11	OUT3_1	Digital output	O
12	IN3_1	Digital input	I

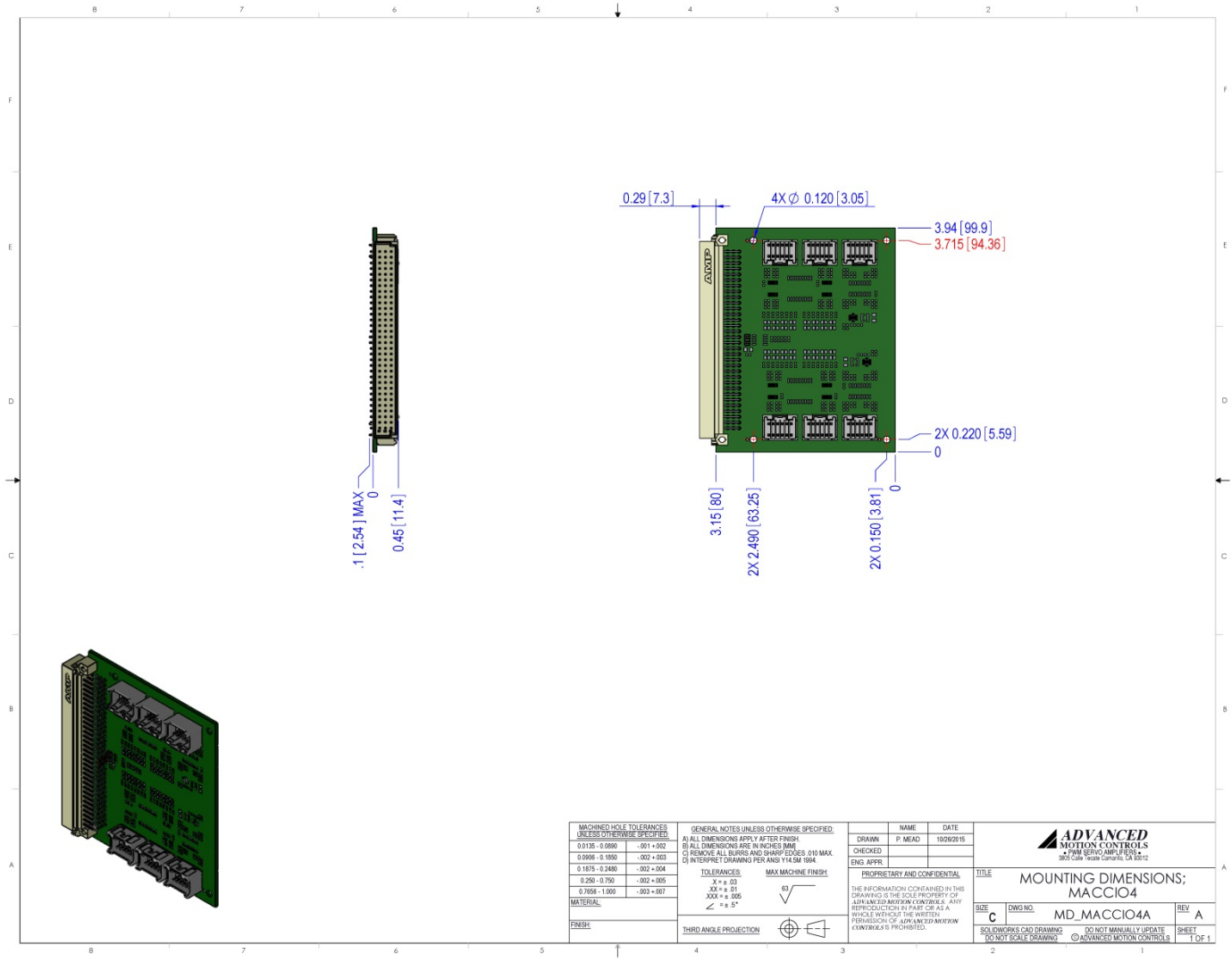
P4 – Axis 4 Digital I/O Connector

Pin	Name	Description / Notes	I/O
1	GND	Ground	GND
2	GND	Ground	GND
3	OUT4_4	Digital output	O
4	IN4_4	Digital input	I
5	OUT4_3	Digital output	O
6	IN4_3	Digital input	I
7	OUT_PULLUP2	Digital output pull-up for OUT3_x and OUT4_x outputs	-
8	GND	Ground	GND
9	OUT4_2	Digital output	O
10	IN4_2	Digital input	I
11	OUT4_1	Digital output	O
12	IN4_1	Digital input	I

P5 – Encoder Connector			
Pin	Name	Description / Notes	I/O
1	GROUND	Ground	GND
2	GROUND	Ground	GND
3	ENC_B_2-	Differential encoder 2 B-channel negative input (leave open for single-ended encoders)	I
4	ENC_B_1-	Differential encoder 1 B-channel negative input (leave open for single-ended encoders)	I
5	ENC_B_2+	Differential encoder 2 B-channel positive input	I
6	ENC_B_1+	Differential encoder 1 B-channel positive input	I
7	+5V OUT	+5V encoder supply output. Maximum load on pins 7 and 8 together is 400mA.	O
8	+5V OUT	+5V encoder supply output. Maximum load on pins 7 and 8 together is 400mA.	O
9	ENC_A_2-	Differential encoder 2 A-channel negative input (leave open for single-ended encoders)	I
10	ENC_A_1-	Differential encoder 1 A-channel negative input (leave open for single-ended encoders)	I
11	ENC_A_2+	Differential encoder 2 A-channel positive input	I
12	ENC_A_1+	Differential encoder 1 A-channel positive input	I

P6 – Encoder Connector			
Pin	Name	Description / Notes	I/O
1	GROUND	Ground	GND
2	GROUND	Ground	GND
3	ENC_B_4-	Differential encoder 4 B-channel negative input (leave open for single-ended encoders)	I
4	ENC_B_3-	Differential encoder 3 B-channel negative input (leave open for single-ended encoders)	I
5	ENC_B_4+	Differential encoder 4 B-channel positive input	I
6	ENC_B_3+	Differential encoder 3 B-channel positive input	I
7	+5V OUT	+5V encoder supply output. Maximum load on pins 7 and 8 together is 400mA.	O
8	+5V OUT	+5V encoder supply output. Maximum load on pins 7 and 8 together is 400mA.	O
9	ENC_A_4-	Differential encoder 4 A-channel negative input (leave open for single-ended encoders)	I
10	ENC_A_3-	Differential encoder 3 A-channel negative input (leave open for single-ended encoders)	I
11	ENC_A_4+	Differential encoder 4 A-channel positive input	I
12	ENC_A_3+	Differential encoder 3 A-channel positive input	I

MOUNTING DIMENSIONS



CUSTOMIZATION INFORMATION

ADVANCED Motion Controls also has the capability to promptly develop and deliver specified products for OEMs with volume requests. Our Applications and Engineering Departments will work closely with your design team through all stages of development in order to provide the best servo drive solution for your system. Equipped with on-site manufacturing for quick-turn customs capabilities, *ADVANCED* Motion Controls utilizes our years of engineering and manufacturing expertise to decrease your costs and time-to-market while increasing system quality and reliability. Feel free to contact Applications Engineering for further information and details.

Examples of Customized Products

- Optimized Footprint
- Private Label Software
- OEM Specified Connectors
- No Outer Case
- Increased Current Resolution
- Increased Temperature Range
- Custom Control Interface
- Integrated System I/O
- Tailored Project File
- Silkscreen Branding
- Optimized Base Plate
- Increased Current Limits
- Increased Voltage Range
- Conformal Coating
- Multi-Axis Configurations
- Reduced Profile Size and Weight