MPI Compatible Controller

XMP-CPCI

Hardware Specification

Key Features

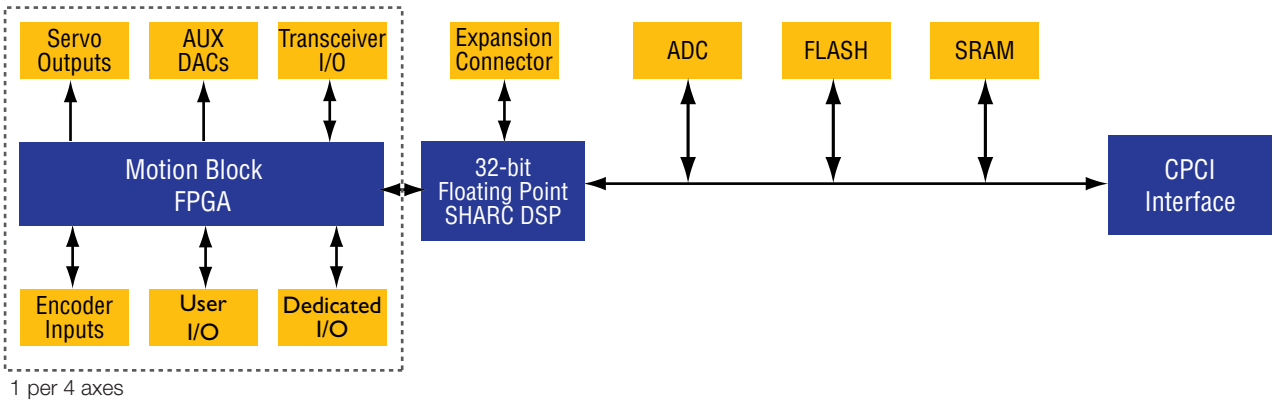
- MPI: one programming interface for multiple platforms – Object-oriented, C/C++ programmable
- 32-bit floating point DSP
- Servo update rates: 20 kHz for 4 axes, 10 kHz for 8 axes
- 16 axes of servos or steppers
- Support for Windows 2000, Windows NT, Windows 95/98, VenturCom, VxWorks and other real-time operating systems
- On-board sinusoidal commutation for 16 axes
- Optional scale interpolation – 1024X increased position resolution after quadrature

MEI's XMP-CPCI motion controller offers a high level of programmability, speed, and precision. With its software-defined capabilities, the XMP-CPCI can be readily customized to fit the requirements of the most demanding OEM applications.

The XMP's object-oriented API, the Motion Programming Interface (MPI), lets you create complex, multi-threaded applications in C or C++. Commands and data pass from host to XMP across a high-speed PCI bus via a 32-bit direct memory interface.

The XMP-CPCI with an optional daughter board provides up to 16 local axes support. The 150 MFLOPS DSP delivers servo update rates of 20 kHz for 4 axes (10 kHz for 8 axes).

XMP Architecture

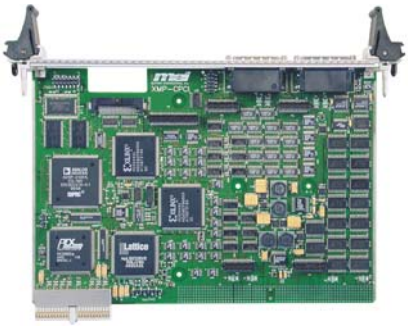


Motion Engineering

XMP Example Configurations

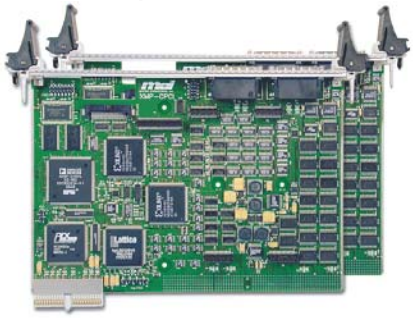
MEI provides a wide array of custom configurations. The configurations listed below represent a small sampling of options. Please ask your OEM business manager about appropriate configurations available for your machine.

Single XMP-CPCI controller



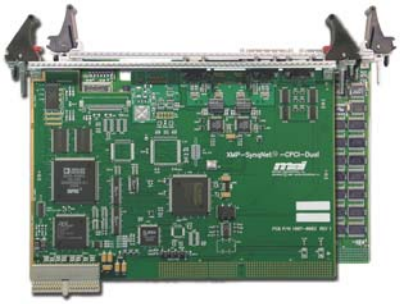
Control up to 8 axes of servo or stepper.

XMP-CPCI controller with optional expansion board



Control up to16 axes of servo or stepper.

XMP-SynqNet-CPCI controller with XMP-CPCI expansion board



Control up to 24 axes of servo or stepper across a SynqNet Network, and an additional 8 axes via the XMP-CPCI expansion board.

Optional Features

Scale Interpolation Module

Optional SIM4 module increases resolution by 1024X. Maximum 4 per XMP-CPCI. Maximum encoder input frequency: 200 kHz before interpolation (equivalent to 8.2 million cts/sec after interpolation). Higher performance SIM4 modules are available.
Please consult factory.

*other custom configurations available

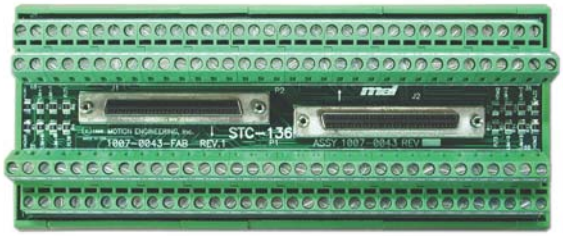
*Current Mode – P/N 3007-0001
*Voltage Mode (1 Vpp) – P/N 3007-0002

Connection Accessories

Screw Terminal Modules

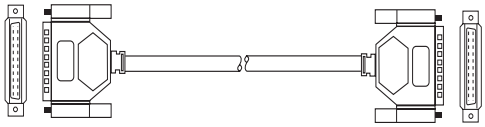
MEI provides STC-136 non-powered pass-through screw-terminal modules that allow easy wiring when prototyping.

STC-136: P/N C002-012



XMP Connector Cables

CBL-68 cable provides a standard connection from board to STC-136 or other compatible mating device. Available in 3 lengths.



P/N C001-0011 (1 Meter)
-0012 (2 Meter)
-0013 (3 Meter)

Pin-outs & Connector Information

Expansion Board Note:

The pin-outs for the expansion board (Axes 8-15) follow the same convention as Axes 0-7 with the exception of non-connected pins notated by an *.

Axis Connector

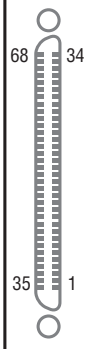
Honda Connectors 68pin VHDCI
Mfg P/N HDRA-E68W1LFDT1EC-SL

Mating Connector

Honda Connectors
Mfg P/N HDRA-E68MA1

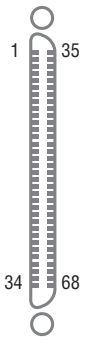
For more information:
www.hondaconnectors.com

AXES 0-1



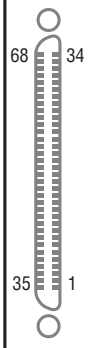
1	Analog_IN_0+*	Analog_IN_0-	35
2	Analog_IN_1+*	Analog_IN_1-	36
3	Gnd	AGnd	37
4	Enc0_A+	Enc0_A-	38
5	Enc0_B+	Enc0_B-	39
6	Enc0_I+	Enc0_I-	40
7	Home0_IN	5V_OUT	41
8	Pos_Lim0_IN	Gnd	42
9	Neg_Lim0_IN	HomeLim0_Rtn	43
10	Cmd_Dac_OUT_0+	Cmd_Dac_OUT_0-	44
11	Aux_Dac_OUT_0+	Aux_Dac_OUT_0-	45
12	Amp_Flt0_IN	Amp_Flt0_Rtn	46
13	Amp_En0_Collector	Amp_En0_Emitter	47
14	UserIO_A0	UserIO_A0_Rtn	48
15	XcvroA+	Xcvr0A-	49
16	XcvroB+	Xcvr0B-	50
17	XcvroC+	Xcvr0C-	51
18	Enc1_A+	Enc1_A-	52
19	Enc1_B+	Enc1_B-	53
20	Enc1_I+	Enc1_I-	54
21	Home1_IN	5V_OUT	55
22	Pos_Lim1_IN	Gnd	56
23	Neg_Lim1_IN	HomeLim1_Rtn	57
24	Cmd_Dac_OUT_1+	Cmd_Dac_OUT_1-	58
25	Aux_Dac_OUT_1+	Aux_Dac_OUT_1-	59
26	Amp_Flt1_IN	Amp_Flt1_Rtn	60
27	Amp_En1_Collector	Amp_En1_Emitter	61
28	Gnd	Gnd	62
29	Xcvr1A+	Xcvr1A-	63
30	Xcvr1B+	Xcvr1B-	64
31	Xcvr1C+	Xcvr1C-	65
32	UserIO_A1	UserIO_A1_Rtn	66
33	RESET_IN*	UserIO_A2	67
34	ESTOP_IN*	UserIO_A2_Rtn	68

AXES 2-3



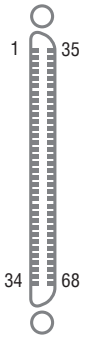
1	EncA_A+	EncA_A-	35
2	EncA_B+	EncA_B-	36
3	EncA_I+	EncA_I-	37
4	Enc2_A+	Enc2_A-	38
5	Enc2_B+	Enc2_B-	39
6	Enc2_I+	Enc2_I-	40
7	Home2_IN	5V_OUT	41
8	Pos_Lim2_IN	Gnd	42
9	Neg_Lim2_IN	HomeLim2_Rtn	43
10	Cmd_Dac_OUT_2	Cmd_Dac_OUT_2-	44
11	Aux_Dac_OUT_2	Aux_Dac_OUT_2-	45
12	Amp_Flt2_IN	Amp_Flt2_Rtn	46
13	Amp_En2_Collector	Amp_En2_Emitter	47
14	UserIO_A3	UserIO_A3_Rtn	48
15	Xcvr2A+	Xcvr2A-	49
16	Xcvr2B+	Xcvr2B-	50
17	Xcvr2C+	Xcvr2C-	51
18	Enc3_A+	Enc3_A-	52
19	Enc3_B+	Enc3_B-	53
20	Enc3_I+	Enc3_I-	54
21	Home3_IN	5V_OUT	55
22	Pos_Lim3_IN	Gnd	56
23	Neg_Lim3_IN	HomeLim3_Rtn	57
24	Cmd_Dac_OUT_3	Cmd_Dac_OUT_3-	58
25	Aux_Dac_OUT_3	Aux_Dac_OUT_3-	59
26	Amp_Flt3_IN	Amp_Flt3_Rtn	60
27	Amp_En3_Collector	Amp_En3_Emitter	61
28	Gnd	Gnd	62
29	Xcvr3A+	Xcvr3A-	63
30	Xcvr3B+	Xcvr3B-	64
31	Xcvr3C+	Xcvr3C-	65
32	Gnd	AGnd	66
33	Analog_IN_2+*	*Analog_IN_2-	67
34	Analog_IN_3+*	*Analog_IN_3-	68

AXES 4-5



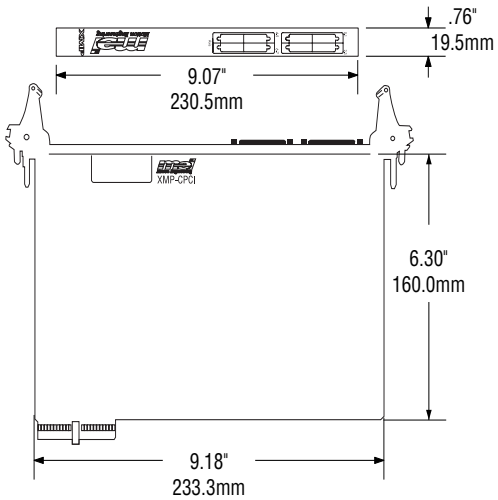
1	UserIO_B0	UserIO_B0_Rtn	35
2	UserIO_B1	UserIO_B1_Rtn	36
3	Gnd	Gnd	37
4	Enc4_A+	Enc4_A-	38
5	Enc4_B+	Enc4_B-	39
6	Enc4_I+	Enc4_I-	40
7	Home4_IN	5V_OUT	41
8	Pos_Lim4_IN	Gnd	42
9	Neg_Lim4_IN	HomeLim4_Rtn	43
10	Cmd_Dac_OUT_4	Cmd_Dac_OUT_4-	44
11	Aux_Dac_OUT_4	Aux_Dac_OUT_4-	45
12	Amp_Flt4_IN	Amp_Flt4_Rtn	46
13	Amp_En4_Collector	Amp_En4_Emitter	47
14	UserIO_B2	UserIO_B2_Rtn	48
15	Xcvr4A+	Xcvr4A-	49
16	Xcvr4B+	Xcvr4B-	50
17	Xcvr4C+	Xcvr4C-	51
18	Enc5_A+	Enc5_A-	52
19	Enc5_B+	Enc5_B-	53
20	Enc5_I+	Enc5_I-	54
21	Home5_IN	5V_OUT_2	55
22	Pos_Lim5_IN	Gnd	56
23	Neg_Lim5_IN	HomeLim5_Rtn	57
24	Cmd_Dac_OUT_5+	Cmd_Dac_OUT_5-	58
25	Aux_Dac_OUT_5+	Aux_Dac_OUT_5-	59
26	Amp_Flt5_IN	Amp_Flt5_Rtn	60
27	Amp_En5_Collector	Amp_En5_Emitter	61
28	Gnd	Gnd	62
29	Xcvr5A+	Xcvr5A-	63
30	Xcvr5B+	Xcvr5B-	64
31	Xcvr5C+	Xcvr5C-	65
32	GndA	AGnd	66
33	Analog_IN_4+*	*Analog_IN_4-	67
34	Analog_IN_5+*	*Analog_IN_5-	68

AXES 6-7



1	Analog_IN_6+*	*Analog_IN_6-	35
2	Analog_IN_7+*	*Analog_IN_7-	36
3	Gnd	Gnd	37
4	Enc6_A+	Enc6_A-	38
5	Enc6_B+	Enc6_B-	39
6	Enc6_I+	Enc6_I-	40
7	Home6_IN	5V_OUT	41
8	Pos_Lim6_IN	Gnd	42
9	Neg_Lim6_IN	HomeLim6_Rtn	43
10	Cmd_Dac_OUT_6+	Cmd_Dac_OUT_6-	44
11	Aux_Dac_OUT_6+	Aux_Dac_OUT_6-	45
12	Amp_Flt6_IN	Amp_Flt6_Rtn	46
13	Amp_En6_Collector	Amp_En6_Emitter	47
14	UserIO_B3	UserIO_B3_Rtn	48
15	Xcvr6A+	Xcvr6A-	49
16	Xcvr6B+	Xcvr6B-	50
17	Xcvr6C+	Xcvr6C-	51
18	Enc7_A+	Enc7_A-	52
19	Enc7_B+	Enc7_B-	53
20	Enc7_I+	Enc7_I-	54
21	Home7_IN	5V_OUT	55
22	Pos_Lim7_IN	Gnd	56
23	Neg_Lim7_IN	HomeLim7_Rtn	57
24	Cmd_Dac_OUT_7+	Cmd_Dac_OUT_7-	58
25	Aux_Dac_OUT_7+	Aux_Dac_OUT_7-	59
26	Amp_Flt7_IN	Amp_Flt7_Rtn	60
27	Amp_En7_Collector	Amp_En7_Emitter	61
28	Gnd	Gnd	62
29	Xcvr7A+	Xcvr7A-	63
30	Xcvr7B+	Xcvr7B-	64
31	Xcvr7C+	Xcvr7C-	65
32	EncB_A+	EncB_A-	66
33	EncB_B+	EncB_B-	67
34	EncB_I+	EncB_I-	68

Board Dimensions



Specifications

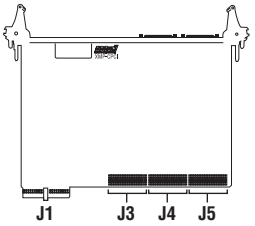
Function	Parameter	Specification
Processor	DSP	Analog Devices SHARC 32-bit floating point
	Speed	40 MHz / 150 MFLOPS
Board Interface	Connectors	68-pin VHDCI
	Host Bus	CompactPCI Slot
	Memory Interface	32-bit direct memory map
Servo Loop	Update Rate	User programmable
	8 Axes Update Rate	Max:10 kHz
	16 Axes Update Rate	Max: 5 kHz
Servo Output	No. of Axes	4, 8, 12, or 16*
	Resolution	±10 V @ 16-bit resolution
	Update	Simultaneous of all axes
	Sinusoidal Commutation	Standard
Step Output	Max Output Frequency	4 MHz
	Loop Control	Open
	Pulse Width	200 nsec ~ 25.5 μsec
	Line Driver Output	EIA-422
	Modes	Step / Dir, CW/CCW, Quadrature
Dedicated I/O	Voltage	5 or 24 V logic*
	Current Output	10 mA max
	Current Input	2 mA min
	Latency	2 μS
	Isolation	Opto-isolated
	Output	Amp enable (1 per axis)
	Input	Home, +Limit, -Limit, Amp Fault (1 each per axis)
Transceiver I/O (EIA-422)	Latency	~60 nsec
	Modes	Step / Dir, CW/CCW, capture & compare, general purpose
	Lines	48 Max: 3 per axis
User I/O	Voltage	5 or 24 V*
	Current Output	20 mA max
	Current Input	2 mA min
	Latency	2 μs
	Isolation	Opto-isolated
	Lines	16 max (1 per axis)
Encoder Inputs (EIA-422)	Count Rate	20 MHz
	Current Termination	100 Ω
	Latency	19 nsec
Kinematic Ranges	Position, Velocity, Acceleration, Jerk	32-bit floating point
Scale Interpolation (optional)	ADC	12 bit
	Resolution	1024X
	Current Mode Input	11 μA p-p differential
	Voltage Mode Input	1 V p-p differential
	Axes Supported	4 per SIM4 module
	Max Frequency	200 kHz
Environment	Operating Temperature	0-50° C
	Storage Temperature	0-50° C
	Humidity	20-90% RH, non-condensing
Safety	Encoder Broken Wire Detection	Enabled
	Encoder Illegal State Detection	Enabled

*must be factory configured at time of order

Rear I/O Pinouts

J3 Connector

A1	Not Connected	Not Connected	D1
A2	Not Connected	Not Connected	D2
A3	Not Connected	Not Connected	D3
A4	Not Connected	Not Connected	D4
A5	Not Connected	Not Connected	D5
A6	Not Connected	Not Connected	D6
A7	Not Connected	Not Connected	D7
A8	Not Connected	Not Connected	D8
A9	Not Connected	Not Connected	D9
A10	Not Connected	Not Connected	D10
A11	Not Connected	Not Connected	D11
A12	Not Connected	Not Connected	D12
A13	UserIO_A1	UserIO_A2_Rtn	D13
A14	ESTOP_IN	UserIO_B1	D14
A15	UserIO_A3	UserIO_B3	D15
A16	UserIO_A0	UserIO_B2	D16
A17	EncA_I+	EncB_I+	D17
A18	EncA_B+	EncB_B+	D18
A19	EncA_A+	EncB_A+	D19
B1	Not Connected	Not Connected	E1
B2	Not Connected	Not Connected	E2
B3	Not Connected	Not Connected	E3
B4	Not Connected	Not Connected	E4
B5	Not Connected	Not Connected	E5
B6	Not Connected	Not Connected	E6
B7	Not Connected	Not Connected	E7
B8	Not Connected	Not Connected	E8
B9	Not Connected	Not Connected	E9
B10	Not Connected	Not Connected	E10
B11	Not Connected	Not Connected	E11
B12	Not Connected	Not Connected	E12
B13	UserIO_A1_Rtn	UserIO_A2	E13
B14	RESET_IN	UserIO_B1_Rtn	E14
B15	UserIO_A3_Rtn	UserIO_B3_Rtn	E15
B16	UserIO_A0_Rtn	UserIO_B2_Rtn	E16
B17	EncA_I-	EncB_I-	E17
B18	EncA_B-	EncB_B-	E18
B19	EncA_A-	EncB_A-	E19
C1	Gnd	Gnd	F1
C2	Not Connected	Gnd	F2
C3	Gnd	Gnd	F3
C4	Not Connected	Gnd	F4
C5	Gnd	Gnd	F5
C6	Not Connected	Gnd	F6
C7	Not Connected	Gnd	F7
C8	Not Connected	Gnd	F8
C9	Not Connected	Gnd	F9
C10	Not Connected	Gnd	F10
C11	UserIO_B0	Gnd	F11
C12	UserIO_B0_Rtn	Gnd	F12
C13	Gnd	Gnd	F13
C14	Gnd	Gnd	F14
C15	Gnd	Gnd	F15
C16	Gnd	Gnd	F16
C17	Gnd	Gnd	F17
C18	Gnd	Gnd	F18
C19	Gnd	Gnd	F19



J4 Connector

A1	Enc4_A+	Xcvr7C+	D1
A2	Enc4_B+	Xcvr7B+	D2
A3	Enc4_I+	Xcvr7A+	D3
A4	Cmd_Dac_OUT_4+	Amp_En7_Collectr	D4
A5	Aux_Dac_OUT_4+	Amp_Flt7_IN	D5
A6	Amp_Flt4_IN	Aux_Dac_OUT_7+	D6
A7	Amp_En4_Collectr	Cmd_Dac_OUT_7+	D7
A8	Xcvr4A+	Enc7_I+	D8
A9	Xcvr4B+	Enc7_B+	D9
A10	Xcvr4C+	Enc7_A+	D10
A11	Enc5_A+	Xcvr6C+	D11
A12	Not Connected	Not Connected	D12
A13	Not Connected	Not Connected	D13
A14	Not Connected	Not Connected	D14
A15	Enc5_B+	Xcvr6B+	D15
A16	Enc5_I+	Xcvr6A+	D16
A17	Com_Dac_OUT_5+	Amp_En6_Collectr	D17
A18	Aux_Dac_OUT_5+	Amp_Flt6_IN	D18
A19	Amp_Flt5_IN	Aux_Dac_OUT_6+	D19
A20	Amp_En5_Collectr	Cmd_Dac_OUT_6+	D20
A21	Xcvr5A+	Enc6_I+	D21
A22	Xcvr5B+	Enc6_B+	D22
A23	Xcvr5C+	Enc6_A+	D23
A24	Analog_IN_4+	Analog_IN_7+	D24
A25	Analog_IN_5+	Analog_IN_6+	D25
B1	Enc4_A-	Xcvr 7C-	E1
B2	Enc4_B-	Xcvr7B-	E2
B3	Enc4_I-	Xcvr7A-	E3
B4	Cmd_Dac_OUT_4-	Amp_En7_Emitter	E4
B5	Aux_Dac_OUT_4-	Amp_Flt7_Rtn	E5
B6	Amp_Flt4_Rtn	Aux_Dac_OUT_7-	E6
B7	Amp_En4_Emitter	Cmd_Dac_OUT_7-	E7
B8	Xcvr4A-	Enc7_I-	E8
B9	Xcvr4B-	Enc7_B-	E9
B10	Xcvr4C-	En7_A-	E10
B11	Enc5_A-	Xcvr6C-	E11
B12	Not Connected	Not Connected	E12
B13	Not Connected	Not Connected	E13
B14	Not Connected	Not Connected	E14
B15	Enc5_B-	Xcvr6B-	E15
B16	Enc5_I-	Xcvr6A-	E16
B17	Cmd_Dac_OUT_5-	Amp_En6_Emitter	E17
B18	Aux_Dac_OUT_5-	Amp_Flt6_Rtn	E18
B19	Amp_Flt5_Rtn	Aux_Dac_OUT_6-	E19
B20	Amp_En5_Emitter	Cmd_Dac_OUT_6-	E20
B21	Xcvr5A-	Enc6_I-	E21
B22	Xcvr5B-	Enc6_B-	E22
B23	Xcvr5C-	Enc6_A-	E23
B24	Analog_IN_4-	Analog_IN_7-	E24
B25	Analog_IN_5-	Analog_IN_6-	E25
C1	5V_OUT	Gnd	F1
C2	Gnd	Gnd	F2
C3	Home4_IN	Gnd	F3
C4	Pos_Lim4_IN	Gnd	F4
C5	Neg_lim4_IN	Gnd	F5
C6	Home_Lim4_Rtn	Gnd	F6
C7	Home_Lim7_Rtn	Gnd	F7
C8	Neg_Lim7_IN	Gnd	F8
C9	Pos_Lim7_IN	Gnd	F9
C10	Home7_IN	Gnd	F10
C11	5V_OUT	Gnd	F11
C12	Not Connected	Gnd	F12
C13	Not Connected	Gnd	F13
C14	Not Connected	Gnd	F14
C15	Not Connected	Gnd	F15
C16	Home5_IN	Gnd	F16
C17	Pos_Lim5_IN	Gnd	F17
C18	Neg_Lim5_IN	Gnd	F18
C19	HomeLim5_Rtn	Gnd	F19
C20	HomeLim6_Rtn	Gnd	F20
C21	Neg_Lim6_IN	Gnd	F21
C22	Pos_Lim6_IN	Gnd	F22
C23	Home6_IN	Gnd	F23
C24	Gnd	Gnd	F24
C25	GND	Gnd	F25

J5 Connector

A1	Analog_IN_0+	Analog_IN_3+	D1
A2	Analog_IN_1+	Analog_IN_2+	D2
A3	Enc0_A+	Xcvr3C+	D3
A4	Enc0_B+	Xcvr3B+	D4
A5	Enc0_I+	Xcvr3A+	D5
A6	Cmd_Dac_OUT_0+	Amp_En3_Collectr	D6
A7	Aux_Dac_OUT_0+	Amp_Flt3_IN	D7
A8	Amp_Flt0_IN	Cmd_Dac_OUT_3+	D8
A9	Amp_En0_Collectr	Aux_Dac_OUT_3+	D9
A10	Xcvr0A+	Enc3_I+	D10
A11	Xcvr0B+	Enc3_B+	D11
A12	Xcvr0C+	Enc3_A+	D12
A13	Enc1_A+	Xcvr2C+	D13
A14	Enc1_B+	Xcvr2B+	D14
A15	Enc1_I+	Xcvr2A+	D15
A16	Cmd_Dac_OUT_1+	Amp_En2_Collectr	D16
A17	Aux_Dac_OUT_1+	Amp_Flt_IN	D17
A18	Amp_Flt1_IN	Com_Dac_OUT_2+	D18
A19	Amp_EN1_Collectr	Aux_Dac_OUT_2+	D19
A20	Xcvr1A+	Enc2_I+	D20
A21	Xcvr1B+	Enc2_B+	D21
A22	Xcvr1C+	Enc2_A+	D22
B1	Analog_IN_0-	Analog_IN_3-	E1
B2	Analog_IN_1-	Analog_IN_2-	E2
B3	Enc0_A-	Xcvr3C-	E3
B4	Enc0_B-	Xcvr3B-	E4
B5	Enc0_I-	Xcvr3A-	E5
B6	Cmd_Dac_OUT_0-	Amp_En3_Emitter	E6
B7	Aux_Dac_OUT_0-	Amp_Flt3_Rtn	E7
B8	Amp_Flt0_Rtn	Cmd_Dac_OUT_3-	E8
B9	Amp_En0_Emitter	Aux_Dac_OUT_3-	E9
B10	Xcvr0A-	Enc3_I-	E10
B11	Xcvr0B-	Enc3_B-	E11
B12	Xcvr0C-	Enc3_A-	E12
B13	Enc1_A-	Xcvr2C-	E13
B14	Enc1_B-	Xcvr2B-	E14
B15	Enc1_I-	Xcvr2A-	E15
B16	Cmd_Dac_OUT_1-	Amp_En2_Emitter	E16
B17	Aux_Dac_OUT_1-	Amp_Flt2_Rtn	E17
B18	Amp_Flt1_Rtn	Com_Dac_OUT_2-	E18
B19	Amp_En1_Emitter	Aux_Dac_OUT_2-	E19
B20	Xcvr1A-	Enc2_I-	E20
B21	Xcvr1B-	Enc2_B-	E21
B22	Xcvr1C-	Enc2_A-	E22
C1	AGnd	Gnd	F1
C2	Gnd	Gnd	F2
C3	Home0_IN	Gnd	F3
C4	Pos_Lim0_IN	Gnd	F4
C5	Neg_lim0_IN	Gnd	F5
C6	Home_Lim0_Rtn	Gnd	F6
C7	Home_Lim3_Rtn	Gnd	F7
C8	Neg_Lim3_IN	Gnd	F8
C9	Pos_Lim3_IN	Gnd	F9
C10	Home3_IN	Gnd	F10
C11	No Connect	Gnd	F11
C12	5V_OUT	Gnd	F12
C13	Home1_IN	Gnd	F13
C14	Pos_Lim1_IN	Gnd	F14
C15	Neg_Lim1_IN	Gnd	F15
C16	HomeLim1_Rtn	Gnd	F16
C17	HomeLim2_Rtn	Gnd	F17
C18	Neg_Lim2_IN	Gnd	F18
C19	Pos_Lim2_IN	Gnd	F19
C20	Home2_IN	Gnd	F20
C21	Gnd	Gnd	F21
C22	5V_OUT	Gnd	F22

MEI Software

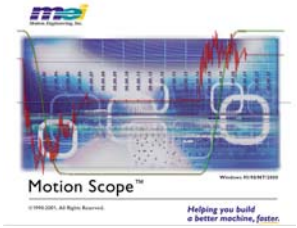
XMP motion controllers are a modular and scalable ready-to-go platform programmed under one API: the Motion Programming Interface ***(MPI)***.

The MPI is a set of object-oriented C-language functions & data types. The MPI is platform independent, meaning the same code can run on any XMP controller, on any host and operating system, and across TCP/IP and ***SynqNet***™ connections. MPI Integrates into standard C & C++ environments like Microsoft Visual Studio® and others.

This allows for a wide range of compilers and debug tool options.

Motion Console™ configures software objects, optimizes and exercises system motion.

Motion Scope™ graphs real-time data from the controller and can access any resource in the controller including I/O.



Filter Designer allows for custom notch and low pass filters to be implemented.

VM3 accesses any XMP memory location.

Controls Toolkit allows for sine sweep and frequency analysis to help the controls engineer understand and optimize machine performance.

With a robust software toolkit and a single programming interface, the XMP series controllers provide a powerful solution for the most extreme motion control requirements.

For more information visit us online at www.motioneng.com.

MPI	**One Programming Interface**
XMP	**Multiple Platforms**

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Helping you build a better machine, faster.