

# MICRO LYNX™ 4/7

ACTUAL  
SIZE

**INTEGRATED MICROSTEPPING MOTOR  
DRIVE AND HIGH-PERFORMANCE  
MACHINE/PROCESS CONTROLLER**

## FEATURES

- Integrated Drive and Control in One Package
- Low Cost
- Ultra Small Size (2.4 x 3.5 x 2.9 inches) (60.96 x 88.9 x 73.66 mm)
- 2 Drive Output Selections:  
12 to 48 VDC, 3A rms - 4A peak  
24 to 75 VDC, 5A rms - 7A peak
- Single Supply Operation
- No Minimum Motor Inductance
- Microstep Resolution up to 51,200 Steps per Rev. (1.8° Motor)
- Programmable Current Settings Boost Acceleration and Allow Motor to Run Cooler
- Electronic Gearing\*
- Open or Closed Loop\* Control
- Motion Values Scalable to any Units
- Six 5 to 24 VDC Isolated I/O Lines (Expandable to 24)
- Programmable Digital Filtering for Inputs
- 32 Bit Floating Point Math, Logic and Conditional Functions
- Simple 2 to 5 Letter Programming Instructions Similar to Basic
- 7 Hardware and 62 Software Addresses for Multi-Drop Communications
- Isolated Independent RS-232 and RS-485 with Selectable BAUD Rate to 38.4K, Full or Half Duplex or CAN Bus†
- 0 to 5MHz Step Clock Rate, Selectable in 0.005Hz Increments
- 4 Pre-Defined and 1 User Define Acceleration/Deceleration Curves
- Easy to Wire Removable Terminal Strips or Optional Pin Headers‡
- 3 Expansion Slots for Optional Accessory Modules
- Short Circuit and Over Temp Protection
- Power and Fault LED

\* Requires High-Speed Differential I/O Module

† RS-232 or RS-485 Available on Port 2 with Optional Expansion Module

‡ I/O, Communication and Expansion Modules Only



## DESCRIPTION

The MicroLynx is a powerful machine control system integrating a bipolar microstepping driver and an expandable programmable controller into a compact panel mounted assembly.

With the addition of differential I/O modules, the MicroLynx has the capability of driving two additional axes sequentially or allowing electronic gearing by following a rotary or linear axis or outputting a second clock at an electronically controlled ratio.

The MicroLynx provides for two fully independent communication ports. It will accept commands from either port and direct output to either as well. A system could be configured to use COMM port one to communicate to a host PC or PLC while using the second to communicate with an operator interface or additional MicroLynxes.

The MicroLynx comes in two output power ranges to fit a variety of motor sizes. Features

such as 5 to 24 VDC isolated I/O, multiple communication types and numerous expansion options make the MicroLynx an effective and powerful machine control solution.

## EXPANDABILITY

The MicroLynx can be used to control systems both simple and complex. With plug-on accessory modules OEM's have the option of only purchasing the features they need for any given system design, reducing overall cost of the system. The MicroLynx can be field upgraded. By simply removing the side cover an expansion module can be added or changed, keeping system downtime to a minimum.

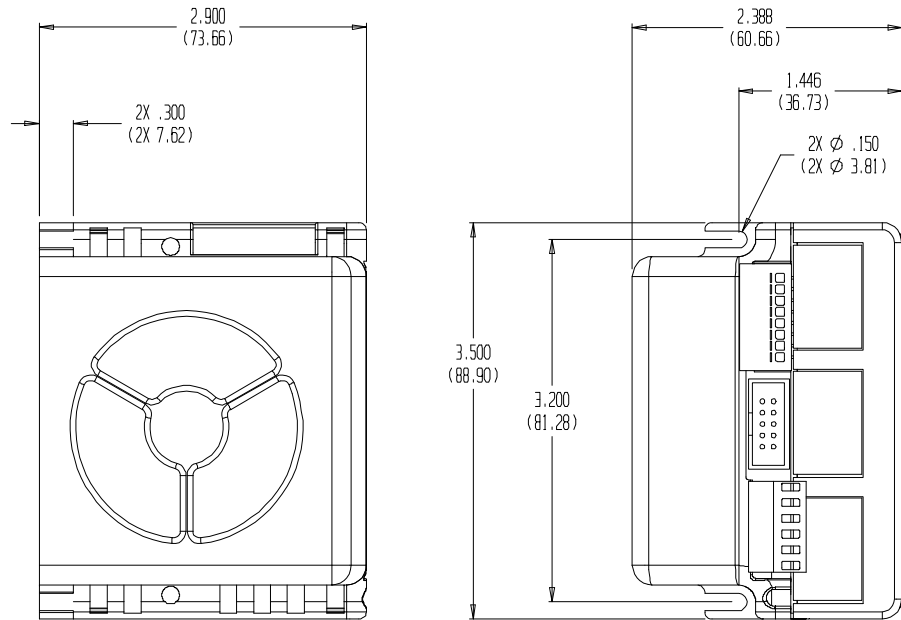
## UPGRADABILITY

The MicroLynx software is upgradeable. Updates are posted on the IMS website and can be downloaded and installed using the Terminal/Upgrade software provided with the MicroLynx. This allows older units the ability to use new features and expansion modules as they become available.

# GENERAL SPECIFICATIONS

ELECTRICAL		MOTION	
<b>Power Supply Requirements</b>		<b>Counters</b>	
Voltage*		Type	Position, Encoder #1, Encoder #2: 32 Bits
-4 version	+12 to +48 VDC	Edge Rate (Max.)	5 MHz
-7 version	+24 to +75 VDC	<b>Electronic Gearing†</b>	
*Includes Motor Back EMF		Range*	(External Clock In): -1 to 1
Current (actual requirements depend on application and programmable current settings)		Resolution	32 Bits
-4 version	2 amps typical, 4 amps peak	Range*	(Secondary Clock Out): -2 to 2
-7 version	3 amps typical, 6 amps peak	Resolution	16 Bits
RECOMMENDED SUPPLY: ISP200 (-4/-7)		*Adjusting the microstep resolution of the drive can increase the range	
<b>Motor Drive</b>		†Requires Differential I/O Expansion Module	
Motor Type	2/4 phase bipolar stepper	<b>Velocity</b>	
Motor Current (software programmable)		Range	±5,000,000 steps/sec
-4 version	to 4 amps peak	Resolution	0.005 steps/sec
-7 version	to 7 amps peak	Update Period	25.6 Microseconds
Resolution		<b>Acceleration/Deceleration</b>	
# of settings	14	Range	±1,530,000,000 steps/sec
Steps per Revolution (1.8° Motor)	400, 800, 1000, 1600, 2000, 3200, 5000 6400, 10000, 12800, 25000, 25600, 50000, 51200	Resolution	0.711 steps/sec
<b>General Purpose I/O</b>		Types: Linear, triangle, s-curve, parabolic, sinusoidal s-curve, user defined.	
Number of I/O	6	<b>SOFTWARE</b>	
Input Voltage	+5 to +24 VDC	User Program Space	8175 Bytes
Output Current Sink	350 mA	Number of User Definable Labels	291
Input Filter Range	215Hz to 21.5Khz (programmable)	Program and Data Storage	Flash
Pull-ups	7.5 Kohm individually switchable	Math, Logic and Conditional Functions	(32 Bit Floating Point Math IEEE Format) Add, Subtract, Multiply, Divide, Sine, Cosine, Tangent, Arc Sine, Arc Cosine, Arc Tangent, AND, OR, XOR, NOT, Less Than, Greater Than, Equal, Square Root, Absolute, Integer Part, Fractional Part
Pull-up Voltage	+5 VDC on-board or externally up to 24 VDC	Acceleration & Deceleration	Separate Variables and Flags 4 Pre-Defined Types and 1 User Defined
Protection	Over Temp, Short Circuit, Inductive Clamp	Limit Switch	Definable: Deceleration and Type
Isolated ground	Common to 6 I/O	Isolated I/O Line	Software Selectable as Dedicated or General Purpose
<b>COMMUNICATION</b>		Predefined I/O Functions	25 (Limit, Home, etc.)
<b>Asynchronous</b>		Program Trip Functions	13: 4 I/O Input Trips, 4 Timer Trips, 4 Position Trips, 1 Velocity Trip
Interface Type	COMM 1: RS-232 COMM 2: RS-485	User Programs	2 Executed Simultaneously: 1 Foreground, 1 Background
# of Bits/Character	8	Party Mode Names	62
Parity	none	Communication Modes	2: ASCII, Binary
Handshake	none	Mechanical Compensation	Backlash
Baud Rate	4800 to 38.8K	Encoder Functions	Stall Detection and Position Maintenance
Error Checking	16 bit CRC (binary mode)	<b>ENVIRONMENTAL</b>	
ASCII Text or Binary Communication Modes		Operating Temperature	0 to 50°C
<b>CAN</b>		Storage Temperature	-20 to 70°C
CAN Communications replaces Asynchronous Communications in Base System (uses COMM 1 internally)		Humidity	0 to 90% non-condensing
CAN compliance	Version 2.0B Active	<b>MECHANICAL</b>	
2 receive message frames		Dimensions	(see figure 1)
1 transmit frame		# of Expansion Modules	up to 3
Isolated Ground	Common to COMM 1 and COMM 2	Cooling	Built-in fan
		Mounting	2 #6 (or M3.5) machine screws
		Mounting Screw Torque	5.0 to 7.0 lb-in

# OUTLINE DRAWING



**Figure 1** Dimensions in Inches (mm)

## SWITCHES

Switch #	Switch Name	Function
1-6	I/O 21-26	Pull-up on/off Switches for I/O Lines 21-26
7-9	Address 2-0	Multi-drop Communication Address (also settable by software)
10	Upgrade	Firmware Upgrade

## CONNECTORS

### Power and Motor

6 position pluggable terminal block connector.

Pin #	Signal Name	Function
1	Phase A	Motor Connections
2	Phase /A	
3	Phase B	
4	Phase /B	
5	+V	Input Power
6	GND	

### Power and Motor connections

### Communication

#### Dual COMM version

7 position pluggable terminal block connector or optional 10 pin header.

Pin #	Connector Option	
	Terminal Block	10 Pin Header
1	232RX	N.C.
2	232TX	232TX
3	485RX-	232RX
4	485RX+	N.C.
5	485TX-	C GND
6	C GND	485RX+
7	485TX+	485RX-
8		485TX-
9		485TX+
10		C GND

### Asynchronous Communications Connections

#### CAN version

7 position pluggable terminal block connector or optional 10 pin header.

Pin #	Connector Option	
	Terminal Block	10 Pin Header
1	V- (C GND)	N.C.
2	CAN_L	CAN_L
3	SHIELD	V- (C GND)
4	CAN_H	SHIELD
5	N.C. (reserved for V+)	SHIELD
6	/CONFIG	N.C.
7	N.C.	CAN_H
8		N.C.
9		N.C. (reserved for V+)
10		/CONFIG

### CAN Communications Connections \*

\*Comm 1. Comm 2 Available with Expansion Modules.

### General Purpose I/O

8 position pluggable terminal block connector or optional 10 pin header.

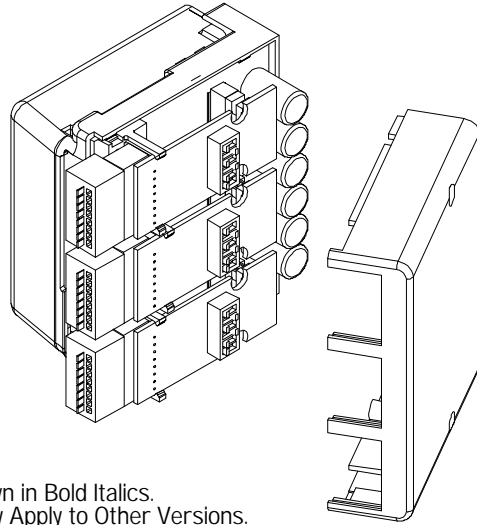
Pin #	Connector Option	
	Terminal Block	10 Pin Header
1	VPULLUP	IO 21
2	IO 21	IO 22
3	IO 22	VPULLUP
4	IO 23	IO 23
5	IO 24	LIMIT-
6	IO 25	IO 24
7	IO 26	LIMIT+
8	I/O GND	IO 25
9		I/O GND
10		IO 26

### General Purpose I/O Connections

# EXPANSION MODULES

Up to three expansion modules can be added. Modules can be combined to fill the three expansion slots. Module types are limited to 1 Analog Input/Joystick Module, up to 2 High-Speed Differential I/O Modules, and up to 3 General Purpose I/O Modules per system.

By simply removing two screws on the side cover, expansion modules can be added, removed or reconfigured. No additional hardware is required. Modules simply plug in and snap into place making even field change quick and easy.



## ORDERING INFORMATION

Standard Product Shown in Bold Italics.  
Longer Lead Times May Apply to Other Versions.

### MICROLYNX CONTROL SYSTEMS

**Note:** Terminal Block Connectors Supplied with Mating Connector.  
Pin Header Mating Connector (**Not Supplied**) Type T & B 636-1030 or Equivalent.

TYPE	DESCRIPTION	CONNECTOR TYPE		PART NUMBER	
		COMMUNICATION	I/O	4 AMP DRIVER	7 AMP DRIVER
Control System with Asynchronous Communication	6 5 to 24vdc Isolated I/O, RS-232 and RS-485 Communication, 4 or 7A Motor Drive	Pin Header**	Terminal Block	<b><i>MX-CS100-400</i></b>	<b><i>MX-CS100-700</i></b>
		Terminal Block	Terminal Block	MX-CS101-400	MX-CS101-700
		Pin Header**	Pin Header	MX-CS102-400	MX-CS102-700
		Terminal Block	Pin Header	MX-CS103-400	MX-CS103-700
Control System with CAN Communication	6 5 to 24vdc Isolated I/O, CAN Communication, 4 or 7A Motor Drive	Pin Header	Terminal Block	MX-CS200-400	MX-CS200-700
		Terminal Block	Terminal Block	<b><i>MX-CS201-400</i></b>	<b><i>MX-CS201-700</i></b>
		Pin Header	Pin Header	MX-CS202-400	MX-CS202-700
		Terminal Block	Pin Header	MX-CS203-400	MX-CS203-700

### EXPANSION MODULES

\*\*Communication cable accessory recommended with first order.

TYPE	DESCRIPTION	PART NUMBER	
		TERMINAL BLOCK	PIN HEADER
Isolated Digital I/O Module	Six 5 to 24 VDC General Purpose Isolated Digital I/O	<b><i>MX-DI100-000</i></b>	MX-DI200-000
High-Speed Differential I/O Module	3 High-Speed Differential (or Single Ended) Lines for General Purpose I/O, Encoder Feedback, Electronic Gearing, or Driving an Additional Axis Sequentially	<b><i>MX-DD100-000</i></b>	MX-DD200-000
Analog Input/Joystick Module	2 Channels of 0 to 5 vdc 12 bit Resolution Analog Input or Single Axis Joystick	<b><i>MX-AJ100-000</i></b>	MX-AJ200-000
RS-232 Communication Module	RS-232 Port 2 Communication Module used <b>only</b> with CAN based Control System	MX-CM102-000	<b><i>MX-CM202-000</i></b>
RS-485 Communication Module	RS-485 Port 2 Communication Module used <b>only</b> with CAN based Control System	<b><i>MX-CM104-000</i></b>	MX-CM204-000

### ACCESSORIES

TYPE	DESCRIPTION	PART NUMBER
Human Machine Interface (HMI)	A Programmable User Interface with 20 Character by 4 Line Display, 6 Function Keys, Numeric Keypad	<b><i>LX-HI100-000</i></b>
Communication Cable	10 Pin Pin-Receptacle to 9 Pin Sub D Provides Easy Connection for RS-232 Communication	<b><i>MX-CC100-000</i></b>
Communication Cable (For Party Line)	2 10 Pin Pin-Receptacle to 9 Pin Sub D (For Party Line Communication with Two MicroLynxes) Provides Easy Connection for RS-232 Communication to First MicroLynx and RS-485 Communication from First to Second MicroLynx	<b><i>MX-CC200-000</i></b>
Operating Manual	Operating Instruction Manual for MicroLynx (& Lynx) Systems – Paper Version*	<b><i>LX-OM200-000</i></b>
7 (or 8) Pin Terminal Block	7 (or 8) Pin Spring Clamp Terminal Block .1 Center	<b><i>MX-CN107 (or 108)</i></b>
6 Pin Terminal Block	6 Pin Screw Type Terminal Block .15 Center	<b><i>MX-CN006</i></b>

\*Manual on CD provided with system shipment.

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*Excellence in Motion™*

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