

MICRO LYNX™ 4/7



INTEGRATED MICROSTEPPING MOTOR DRIVER AND HIGH PERFORMANCE MACHINE/PROCESS CONTROLLER

FEATURES

- Integrated Driver and Controller 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 Defined 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



ACTUAL SIZE

DESCRIPTION

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

Available in two output power ranges, MicroLYNX fits 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.

Optional differential I/O modules give the MicroLYNX 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 the second communicates with an operator interface or additional MicroLYNX.

EXPANDABILITY

The MicroLYNX can be used to control both simple and complex systems. With plug-in accessory modules OEMs have the option of only purchasing the features they need for any given system design, reducing overall cost. The MicroLYNX can be field upgraded by simply removing its side cover and adding or changing an expansion module, minimizing system down time.

UPGRADABILITY

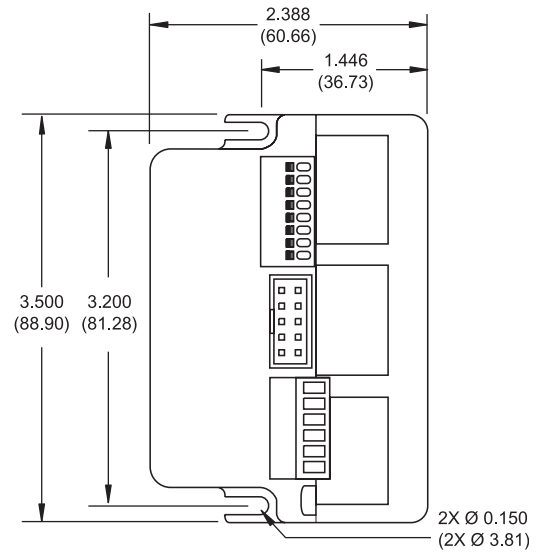
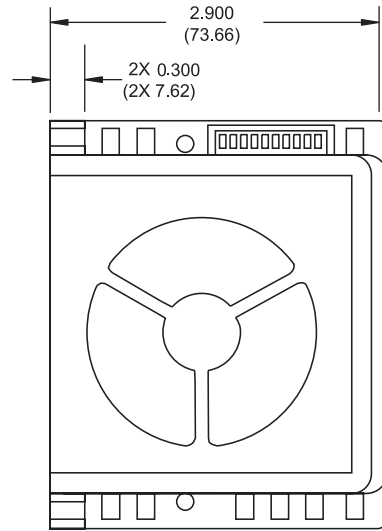
Software for the MicroLYNX is upgradable. Updates are posted on the IMS web site and can be downloaded and installed using the IMS Terminal/Upgrade software provided with the MicroLYNX. This allows older units to use new features and expansion modules as they become available.

GENERAL SPECIFICATIONS

ELECTRICAL	MOTION
<p>Power Supply Requirements</p> <p>Voltage¹ -4 version +12 to +48 VDC -7 version +24 to +75 VDC</p> <p>¹Includes Motor Back EMF, Ripple and Hi Line.</p> <p>Current² -4 version 2 Amps typical -7 version 3 Amps typical</p> <p>²Actual requirements depend on application and programmable current settings.</p> <p>Recommended supply: ISP200 (-4/-7)</p> <p>Motor Drive</p> <p>Motor Type 2/4 phase bipolar stepper Motor Current (software programmable) -4 version to 4 Amps peak -7 version to 7 Amps peak</p> <p>Resolution Number of settings 14 Steps per Revolution (1.8° Motor) 400, 800, 1000, 1600, 2000, 3200, 5000, 6400, 10000, 12800, 25000, 25600, 50000, 51200</p> <p>General Purpose I/O</p> <p>Number of I/O 6 Input Voltage +5 to +24 VDC Output Current Sink 350 mA Input Filter Range 215Hz to 21.5kHz (programmable) Pull-ups 7.5 kohm individually switchable Pull-up Voltage +5 VDC on-board or externally up to +24 VDC Protection Over Temp, Short Circuit, Inductive Clamp Isolated Ground Common to 6 I/O</p>	<p>Counters Type Position, Encoder1, Encoder2: 32 Bits Edge Rate (Max) 5 MHz</p> <p>Electronic Gearing[†] External Clock In Range* -1 to 1 Resolution 32 Bits Secondary Clock Out Range* -2 to 2 Resolution 16 Bits [†] Requires Differential I/O Expansion Module. * Adjusting the microstep resolution of the driver can increase the range.</p> <p>Velocity Range ±5,000,000 steps/sec Resolution 0.005 steps/sec Update Period 25.6 Microseconds</p> <p>Acceleration/Deceleration Range ±1,530,000,000 steps/sec² Resolution 0.711 steps/sec² Types Linear, triangle s-curve, parabolic, sinusoidal s-curve, user defined</p>
COMMUNICATION	SOFTWARE
<p>Asynchronous</p> <p>Interface Type COMM 1: RS-232 COMM 2: RS-485 Number of Bits/Character 8 Parity none Handshake none Baud Rate 4.8 to 38.4kbps selectable Error Checking 16 bit check sum (binary mode) ASCII Text or Binary Communication Modes</p> <p>CAN</p> <p>CAN Communications replaces Asynchronous Communications in Base System (uses COMM 1 internally)</p> <p>CAN compliance Version 2.0B Active</p> <p>2 receive message frames 1 transmit frame</p> <p>Isolated Ground Common to COMM1 and COMM2</p>	<p>User Program Space 8175 Bytes Number of User Definable Labels, Variables and Flags... 291 Program and Data Storage... Flash 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</p> <p>Acceleration & Deceleration... Separate Variables and Flags - 4 Pre-Defined Types and 1 User Defined</p> <p>Limit Switch Definable: Deceleration and Type Isolated I/O Line Software Selectable as Dedicated or General Purpose</p> <p>Predefined I/O Functions 25 (Limit, Home, etc.) Program Trip Functions 13 - 4 I/O Input Trips, 4 Timer Trips, 4 Position Trips, 1 Velocity Trip</p> <p>User Programs 2 Executed Simultaneously - 1 Foreground, 1 Background</p> <p>Party Mode Names 62 Communication Modes 2 - ASCII, Binary Mechanical Compensation... Backlash Encoder Functions Stall Detection and Position Maintenance</p>
	ENVIRONMENTAL
	<p>Ambient Operating Temp 0 to 50° C* Storage Temperature -20 to 70° C Humidity 0 to 90% non-condensing * Can be duty cycle dependent.</p>
	MECHANICAL
	<p>Dimensions (see Mechanical Specs) # of Expansion Modules up to 3 Cooling Built-in fan Mounting 2-#6 (or M3.5) machine screws Mounting Screw Torque 5.0 to 7.0 lb-in</p>

MECHANICAL SPECIFICATIONS

Dimensions in Inches (mm)



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	Ground	

Power and Motor Connections

Communication –

Dual COMM Version

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

PIN	CONNECTOR OPTION	
	TERMINAL BLOCK	PIN HEADER
1	232RX	NO CONNECT
2	232TX	232TX
3	485RX-	232RX
4	485RX+	NO CONNECT
5	485TX-	C GROUND
6	C GROUND	485RX+
7	485TX+	485RX-
8		485TX-
9		485TX+
10		C GROUND

Asynchronous Communications Connections

CAN Version

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

PIN	CONNECTOR OPTION	
	TERMINAL BLOCK	PIN HEADER
1	Isolated GND	NO CONNECT
2	CAN_L	CAN_L
3	SHIELD	Isolated GND
4	CAN_H	SHIELD
5	NO CONNECT	SHIELD
6	/CONFIG	NO CONNECT
7	NO CONNECT	CAN_H
8		NO CONNECT
9		NO CONNECT
10		/CONFIG

CAN Comm1 Communications Connections (Comm2 Available with Expansion Modules)

General Purpose I/O

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

PIN	CONNECTOR OPTION	
	TERMINAL BLOCK	PIN HEADER
1	VPULLUP	I/O 21
2	I/O 21	I/O 22
3	I/O 22	VPULLUP
4	I/O 23	I/O 23
5	I/O 24	FAULT INPUT +
6	I/O 25	I/O 24
7	I/O 26	FAULT INPUT -
8	I/O GROUND	I/O 25
9		I/O GROUND
10		I/O 26

General Purpose I/O Connections

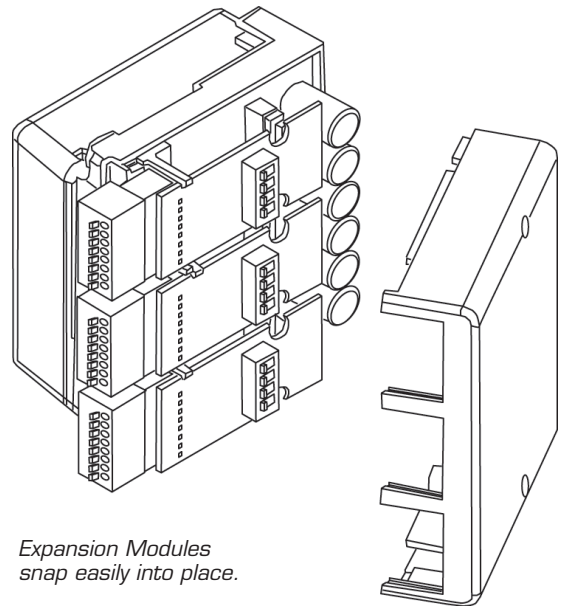
SWITCHES

SWITCH	SIGNAL 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

EXPANSION MODULES

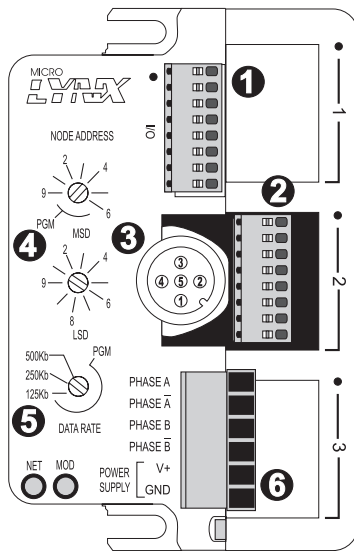
Up to three expansion modules can be added to fill the MicroLYNX expansion slots. Module combinations are limited to 2 Analog Input/Joystick Modules, 2 Analog Output Modules, 1 Twelve Channel I/O Module, up to 2 High-Speed Differential I/O Modules, and up to 3 General Purpose I/O Modules per system.

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



Expansion Modules snap easily into place.

DEVICENET MicroLYNX



- ❶ I/O Connector
- ❷ Encoder Connector*
- ❸ DeviceNet Connector
- ❹ Address Select Switches
- ❺ Data Rate Select Switch
- ❻ Motor/Power

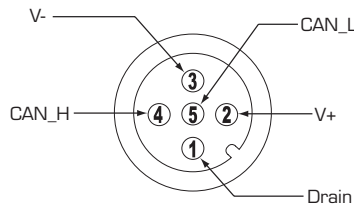
* High Speed Differential I/O Board Optional for Encoder Functions. Board must be placed in Expansion Slot #2. Note that the High Speed Differential I/O Expansion is the ONLY Expansion Module available for the DeviceNet MicroLYNX.

The DeviceNet MicroLYNX is specifically designed to conform with ODVA Volume II, Release 2.0 Errata 3 as a Position Controller (Device Type 16).

- Node Address MSD and LSD switch-selectable on front panel.
- Data Rate switch-selectable on front panel.
- Conforms to the Predefined Master/Slave Connection Set as a group 2 Slave.
- Supports Poll I/O and Explicit Messaging.
- Included GUI to aid in configuration and EDS file.
- No support for UCMM.

Communication

5 Pin DeviceNet Micro, Male



DeviceNet I/O

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

PIN	CONNECTOR OPTION	
	TERMINAL BLOCK	PIN HEADER
1	VPULLUP	Home Input
2	Home Input	CW Limit Input
3	CW Limit Input	VPULLUP
4	CWW Limit Input	CWW Limit Input
5	Fault Input	No Connect
6	Brake Output	Fault Input
7	General Purpose	No Connect
8	I/O Ground	Brake Output
9		I/O Ground
10		General Purpose

DeviceNET I/O Connections

ORDER INFORMATION

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

Note: Terminal Block Mating Connector Supplied.

Pin Header Mating Connector **Not Supplied**, order information at www.imshome.com/quick.html.

MICROLYNX CONTROL SYSTEMS

TYPE	DESCRIPTION	CONNECTOR TYPE		PART NUMBER	
		COMMUNICATION	I/O	4 AMP DRIVER	7 AMP DRIVER
Control System with Asynchronous Communication	[6] +5 to +24 VDC Isolated I/O, RS-232 and RS-485 Communication, 4 or 7 Amp Motor Drive	Pin Header**	Terminal Block	<i>MX-CS100-401</i>	<i>MX-CS100-701</i>
		Terminal Block	Terminal Block	MX-CS101-401	MX-CS101-701
		Pin Header**	Pin Header	MX-CS102-401	MX-CS102-701
		Terminal Block	Pin Header	MX-CS103-401	MX-CS103-701
Control System with CAN Communication	[6] +5 to +24 VDC Isolated I/O, CAN Communication, 4 or 7 Amp Motor Drive	Pin Header	Terminal Block	MX-CS200-401	MX-CS200-701
		Terminal Block	Terminal Block	MX-CS201-401	MX-CS201-701
		Pin Header	Pin Header	MX-CS202-401	MX-CS202-701
		Terminal Block	Pin Header	MX-CS203-401	MX-CS203-701
Control System with DeviceNet Communication	[6] +5 to +24 VDC Isolated I/O, DeviceNet Communication, 4 or 7 Amp Motor Drive	DeviceNet Micro, Male	Terminal Block	MX-CS300-401	MX-CS300-701
			Pin Header	MX-CS302-401	MX-CS302-701

**Communication cable accessory recommended with first order.

EXPANSION MODULES

TYPE (max # per system)	DESCRIPTION	PART NUMBER	
		TERMINAL BLOCK	PIN HEADER
Isolated Digital I/O Module (3)	[6] +5 to +24 VDC General Purpose Isolated Digital I/O	<i>MX-DI100-000</i>	MX-DI200-000
High-Speed Differential I/O Module (2)	[3] High-Speed Differential (or Single Ended) Lines for General Purpose I/O, Encoder Feedback, Electronic Gearing, or Driving an Additional Axis Sequentially	<i>MX-DD100-000</i>	MX-DD200-000
Analog Input/Joystick Module (2)	[2] Channels of 0 to +5 VDC 12 Bit Resolution Analog Input or Single Axis Joystick	<i>MX-AJ100-000</i>	MX-AJ200-000
Analog Output Module (2)	[2] Channels (Up to 4 total) of 0 to +5 VDC 12 Bit Resolution Analog Output	<i>MX-DA100-000</i>	MX-DA200-000
RS-232 Communication Module (1)	RS-232 Port 2 Communication Module used <i>only</i> with CAN Based Control System – <i>cannot combine with RS-485 Module</i>	MX-CM102-000	<i>MX-CM202-000</i>
RS-485 Communication Module (1)	RS-485 Port 2 Communication Module used <i>only</i> with CAN Based Control System – <i>cannot combine with RS-232 Module</i>	<i>MX-CM104-000</i>	MX-CM204-000
12 Channel I/O Module (1)	General Purpose I/O Module with Twelve +5 to +24 VDC Isolated Digital I/O	Not Available	<i>MX-DI400-000</i> PIN & RECEPTACLE MX-DI401-000†

†Refer to 12 Channel I/O page for details.

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	<i>LX-HI100-000</i>
Communication Cable	10 Pin Pin-Receptacle to 9 Pin Sub D Provides Easy Connection for RS-232 Communication	<i>MX-CC100-000</i>
Communication Cable (For Party Line)	[2] 10 Pin Pin-Receptacle to 9 Pin Sub D (For Party Line Communication with Two MicroLYNX) Provides Easy Connection for RS-232 Communication to First MicroLYNX and RS-485 Communication from First to Second MicroLYNX	<i>MX-CC200-000</i>
Operating Manual	Operating Instruction Manual for MicroLYNX Systems - Paper Version*	<i>LX-OM200-000</i>
6 Pin Terminal Block	[6] Pin Screw-Type Terminal Block – Motor and Power	<i>MX-CN006</i>
7 Pin Terminal Block	[7] Pin Spring Clamp Terminal Block 0.1" Center – MicroLYNX Communications	<i>MX-CN007</i>
8 Pin Terminal Block	[8] Pin Spring Clamp Terminal Block 0.1" Center, MicroLYNX I/O and Expansion Modules	<i>MX-CN008</i>
CAN Dongle	Communication Cable for MicroLYNX CAN Version	MX-CC500-000
DeviceNet Programmer	Cable for use in Upgrading MicroLYNX DeviceNet Firmware	MX-CC600-000

*Manual on CD provided with system shipment.