

MI-4190 Family of Position Controllers



*Solutions for virtually every
motion control application*



1-800-854-3660
www.mi-technologies.com

Position Controllers for Up to 16 Axes of Motion

The MI Technologies' MI-4190 Family of Position Controllers offers solutions for nearly every motion control application - from precision placement and rotation of tools, targets or instruments in laboratories, test facilities or remote field locations - to complex, multi-axis positioners and scanners. MI Technologies offers a broad array of product configurations that meet the demands for motion control and motion management for both indoor and outdoor applications.

The easy-to-use, microprocessor-based controllers combine manual and automatic position control, position display, and programming functions for up to 16 axes of motion. In addition, the MI-4190 Position Controllers can control the motion of any of MI Technologies' and most third party manufactured positioners.

Software applications provide users with a wide range of operational features, from simple routines entered into the functional front panel, to full-scale system

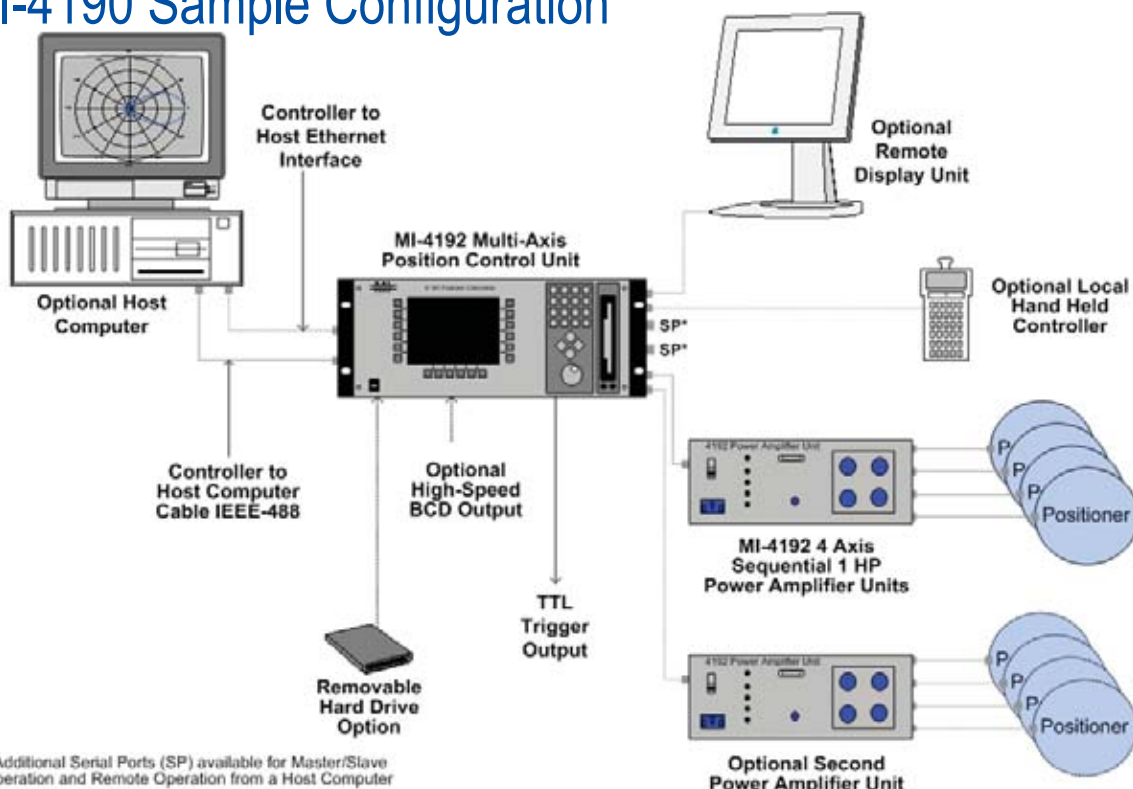
implementations controlled via a host computer system. Optional hand held local control units may also be used to provide local operator control at the device being controlled.

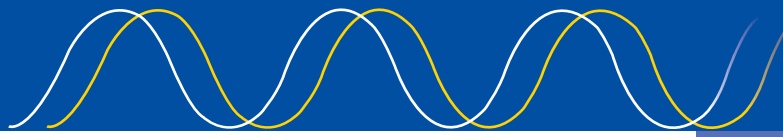
Users can operate any of the MI-4190 controllers through the IEEE-488, RS-232C, or ethernet interface to a host or network computer. The controller may also be operated independently through the front panel interface which provides pushbutton, menu driven management of all motion control functions.

The user interface, either through a host computer or the front panel, provides the operator with a broad array of easy-to-understand options and a wide selection of specific motion attributes for any motion control task.



MI-4190 Sample Configuration





Operational functions are entered from easy-to-follow display screens and pull down selection options. With more than 50 user selections available, motion requirements are assured. Some of these functions include:

- Status display of up to 8 axes
 - Current position
 - Command position
 - Operational mode
 - Fault status
 - Activation status
 - Velocity
- Operational mode selection
 - Position
 - Velocity
 - Torque
- Local hand held control unit
- Remoteability
- Advanced Motion Control Modes
 - Coordinated Motion of 2 or more axes
 - Geared mode
 - Virtual Axis mode
- Axis configuration
 - Axis name
 - Position units: degrees, millimeters, centimeters, meters, inches, feet, radians, & revolutions
 - Position offset
 - Limits: forward & reverse positions, velocity & torque
 - Motion profiles
- Virtual front panel (PC Control)
- Full keyboard, mouse & monitor connections
- Master/slave functionality

Designed to provide a specific set of capabilities related to individual positioning needs, each controller in the MI-4190 Family shares a common digital platform design, operating system and user interface.

LCD Display Screen: the left, right and bottom edges of the display are always reserved for labels that identify the 18 adjacent softkeys. The contents of the remainder of the screen depend on the currently selected operating screen or configuration menu.

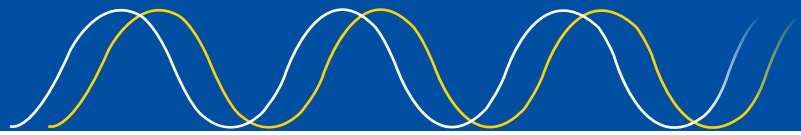
Four directional diamond cursor keys are located below the numeric keypad to easily move the Logical Axis Selection Pointer between the Axis Display Bins. They can also be used to navigate the configuration menus.

A standard 12-key numeric keypad is provided for entering numeric parameters. Four command keys are located to the left of the numeric pad.



Eighteen softkeys are located adjacent to the LCD display. Their functions are noted on the display screen.

Detented rotary control knob serves primarily as a manual control of the selected axis. Depending on the current motion mode, it can be either a velocity control or a position jog control. The velocity/position change per detent sensitivity of the knob is conveniently adjustable to meet various operating requirements.



The MI-4190 Family of Position Controllers Is Comprised of Four Models

Product Specifications

Characteristic	MI-4191	MI-4192	MI-4193	MI-4195
Number of selectable axes	1 Axis	1-4 sequential (standard) 1-8 sequential (optional) Up to 2 Axes Active Simultaneously	1-4 simultaneous (standard) 1-16 sequential (optional) Up to 4 Axes Active Simultaneously	1-4 sequential (standard) 1-8 sequential (optional) Up to 2 Axes Active Simultaneously
Program entry	Front panel menu driven. IEEE-488, Ethernet or RS-232C remote protocols			
Operating Modes	Position, Velocity, Torque, Index			
Speed Control Resolution	.1 degree/second (other units can be used)			
Record Increment (Event Trigger)	Not recommended for record Increment applications	TTL; nominally 600 nsec to 1 msec pulse		
<u>Position Resolution:</u> Encoder Dual Speed Synchro Single Speed Synchro	0.0001° 0.001° 0.01°			
Motor Field Supply	160V VDC, 3.4 amps			
Speed Regulation	Synchro or Tach Feedback			
Control Unit External Dimensions	18" x 7" x 19" (L x H x W)			
Weight Control Unit	41 lbs.	27 lbs.		
Power Amplifier Unit External Dimensions	Not Applicable	18" x 7" x 19" (L x H x W)		
Weight PAU	Not Applicable	49 lbs.	60 lbs.	85 lbs.
Power Requirements Control Unit	2 Power inputs 110±15 VAC @ 55±8 Hz, 30A, single phase	110±15 VAC @ 55±8 Hz, 7A, single phase		
Power Requirements Power Amplifier Unit	Not Applicable	110±15 VAC @ 55±8 Hz, 12A max, single phase	110±15 VAC @ 55±8 Hz, 45A max, single phase	208±/-15 VAC, max 55A, three phase wye
Power Requirements with optional power conditioner	230±25 VAC @ 55±8 Hz, 25A, single phase	230±25 VAC @ 55±8 Hz, 7A, single phase	230±25 VAC @ 55±8 Hz, 23A max, single phase	Not Applicable
Operating Temperature	0° to +50° C			
Storage Temp	-20° to +75° C			
Position Data Output	Ethernet, IEEE-488	IEEE-488, Optional High-Speed BCD, Ethernet, RS-232		
Drive Power	≤ 1 HP	≤ 1 HP	≤ 1 HP / axis	≤ 5 HP

MI-4191

The MI-4191 offers basic motion control of a single axis motion device. As with all the models, it can be configured for synchro or encoder feedback, use local control options, interface to a host computer system and even operate with a personal computer using an optional virtual control panel. The MI-4191 can be operated in a slave configuration via the serial interface with another MI-4190 model serving as the master. With the front panel control, the MI-4191 is an integrated controller and amplifier capable of full independent functionality and control of single axis motion control devices.

MI-4192

The Model MI-4192 extends position control capabilities from one axis as on the MI-4191, to up to eight axes. The standard model MI-4192 can sequentially drive four fractional

horsepower axes and with an additional Power Amplifier Unit drive up to eight axes. The Control Unit provides all the functionality of the single axis unit but for multiple axes. All axis switching functions are provided through user interfaces or software control. With the additional PAU, the user may operate one axis from each PAU at the same time.

MI-4193

If simultaneous control of multiple axes is required, the MI-4193 model is the preferred solution. This unit provides all the functionality of the MI-4191 and MI-4192 and can drive up to four axes simultaneously. This capability provides the user with unique operational opportunities to create complex motion profiles. By adding up to 3 additional PAUs, the MI-4193 can control up to 16 axes of motion.

MI-4195

For the very large position control application, the MI-4195 is the ideal solution. The four axis sequential operation of this model provides precision control for user requirements of up to five horsepower drives. This model is very similar in operation to the MI-4192 with the addition of a higher power output capability. An additional Power Amplifier Unit may be used to increase capacity from four to eight axes. The additional power amplifier selection may also include the fractional horsepower PAU typically used with the MI-4192, thus combining the capabilities of both models in one configuration.



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