

Integrated Position Controller



ELE-IPC



FEATURES

- Provides measurement triggering of other instruments based on position. Captures position data responding to external triggers
- Integrated Controller and Power Amplifier functionality for “one box” configuration minimizing hardware and cabling
- Modes of operation include Position, Velocity, Torque and Incremental Motion Control
- Virtual Axes Provide Coordinated Motion per Mathematically Defined Relationships
- Scalable architecture for control of up to 8 axes with up to 8 stored profiles per axis
- Supports High Accuracy Incremental and Absolute Position Feedback Sensors
- Positioner Accuracy Enhancement Corrects for Repeatable Systemic Errors

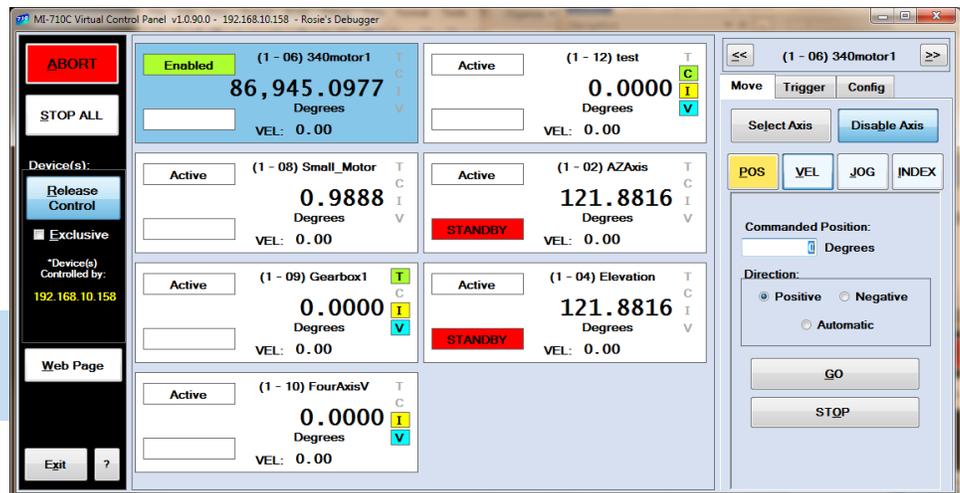
DESCRIPTION

NSI-MI's Integrated Position Controller (ELE-IPC) is based on a modular chassis to accommodate multiple functions in one box. The modular and flexible architecture is configurable for control of up to 8 axes. The architecture allows an increased connectivity to a wider variety of positioning equipment. The ELE-IPC is needed for complex control functions and offers local or remote control. Position Control functions are accessible from full scale system implementations managed by a host computer system. Ethernet connectivity is used to connect to the host workstation or an optional touchscreen display. An optional hand-held local control unit may be used to provide operator control near the final positioner. A Virtual Control Panel (VCP) can run on any Windows-based local control device or rack mounted front panel. A user programmable position trigger output is provided to initiate measurements at specific locations. This trigger is used in many microwave test systems to initiate an entire sequence of measurements. These position signals are especially powerful when combined with Vector Field Analyzer™ (ELE-VFA).

SPECIFICATIONS

Function / Parameter	Performance		
	Low power	Medium power	Medium-High power
Maximum Number of Axes			
Simultaneous Axis	8	4	2
Sequential Axis	8	8	4
Virtual Axis	4	4	4
Drive Capacity (maximum continuous current)	6 A per axis 27 A max simultaneous per chassis	12 A per axis 48 A max simultaneous per chassis	20 A per axis 48 A max simultaneous per chassis
Motor Bus Voltages	24 VDC	160 VDC with 120 VAC chassis	320 VDC with 240 VAC chassis
Deliverable Amps	6	12	20
Deliverable Watts (hp)	144 (0.2)	1000 (1.3) / 2000 (2.6)	2100 (2.8) / 3600 (4.9)
AC Power Requirements			
120 VAC chassis:	110 VAC +/-10%, 50 Hz 120 VAC +/-10%, 60 Hz (up to 50 A)	110 VAC +/-10%, 50 Hz 120 VAC +/-10%, 60 Hz (up to 50 A)	N/A
240 VAC chassis:	N/A	N/A	220 VAC +/-10%, 50 Hz 240 VAC +/-10%, 60 Hz (up to 50 A)
Position Feedback	Single Speed Synchro Dual Speed Synchro Incremental Encoder Absolute Encoder		
Velocity Feedback	Tachometer Incremental Encoder		
Motor Types	DC Servo Motor Brushed, Brushless Permanent magnet or shunt-wound field (requires optional field supply)		
Control Interfaces	Remote Control: Ethernet Position Trigger: Trigger Bus Remote Power: AC Power Control, Emergency Stop		
Chassis Size (H x W x D)	26.6 x 43.6 x 58.4 cm (10.5 x 17.2 x 23 in.) without rack mounting hardware		
Operating Temperature	0 to 40 C°		

Virtual Control Panel (VCP)



MULTI-AXIS CONFIGURABILITY

This flexible chassis design allows the ELE-IPC to be configured with a variable number of amplifiers and connections for a variable number of axes. Each of these amplifiers can be set for switched or non-switched operation. Although there is a maximum of 8 I/O slots on a given ELE-IPC chassis, multiple chassis can be combined and easily configured for a given positioning solution. This makes the number of axes allowed by the ELE-IPC Integrated Position Controllers practically unlimited. There are two different chassis options currently available for the ELE-IPC to allow for different power ratings. The ELE-IPC-CH1 is rated for 120V power to supply up to 160V motor bus voltages. The ELE-IPC-CH2 uses 240V power to drive even higher power motors using a 320V motor bus voltage. When configured for switched operation, separate motors/axes are controlled through a single amplifier. As each position axis is needed, power is switched through the amplifier module to the needed motor. Switched operation is an efficient way to provide control for most motion control operations in a system with many axes. In the non-switched case, a motor or axis has a dedicated amplifier providing controlled power. This creates a separate power path through each amplifier to the respective axis allowing multiple motors to be driven simultaneously. The number of axes that can be driven simultaneously is the same as the number of amplifier modules in a given ELE-IPC configuration.

FLEXIBILITY AND COMPATIBILITY

Ethernet connectivity for control and position data allows for flexible system configuration and rapid data transfer. Synchro and encoder feedback loops allow for consistent and repeatable position control at all times. By creating a smarter and more configurable PAU system and allowing the user to remove intermediate equipment if desired, the overall system becomes easier to manage.

8 FRONT AND REAR SLOTS

The front panel of the ELE-IPC Chassis is dedicated to various interface modules. These interface modules provide I/O connectivity to the positioning system axes. These modules are customized not only for the various cabling and connector requirements of feedback lines, but also the power handling needs of the motors and amplifiers. Some interface modules, because of the high power components or connector requirements, use two slots.

The back section of the ELE-IPC Chassis is devoted to power amplifier modules. Available modules include:

- **Single-slot, low horsepower amplifiers for driving low voltage axes such as a small polarization axis or roll and Z-axis stages on planar scanners.**
- **Two-slot, medium horsepower amplifiers for driving positioning products up to 3/4 horsepower, such as the MEC-AZ-45 Azimuth Positioner or the MEC-AEA-40 Azimuth over Elevation over Azimuth Positioner.**
- **Three slot medium-high horsepower amplifiers for driving our largest positioning solutions such as the 11 meter turntable or the MEC-AEA-400 Azimuth over Elevation over Azimuth Positioner.**

**Measurement Workstation
(Windows)**



Vector Field Analyzer™



Ethernet

Ethernet

Trigger Bus

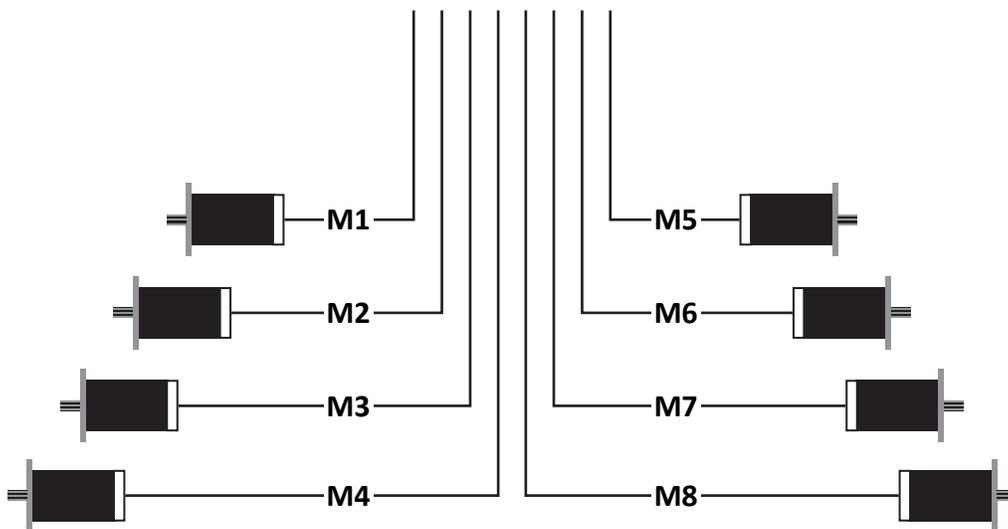
Local Control Unit



Integrated Position Controller



Emergency Stop



Motion Axes (1-8)