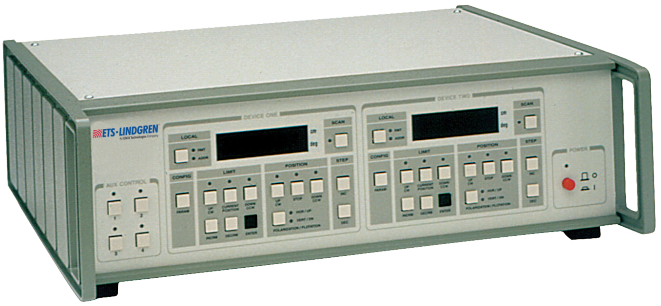
TEST SITE HARDWARE POSITIONING CONTROLLER



ETS-Lindgren's Model 2090 Positioning Controller allows you to synchronize simultaneous movement of two primary ETS-Lindgren devices (towers or turntables), and on/off operation of up to four auxiliary devices (LISNs, EUTs, etc.). Independent operation of primary devices can be performed manually, by either of the two front panel controls, or remotely by a separate GPIB address for each device. Fiber optic control lines eliminate RF interference that can be conducted through traditional wire cables.

MODEL 2090

- **Control for Two Primary and Four Auxiliary Devices**
- **Seek and Scan Functions**
- **Automatic Target Overrun Correction**
- **Element Saving Limit Setting**
- **Fiber Optic Control Lines**
- **IEEE-488.2 I/O Port**
- **Speed Control**

FEATURES

Automatic Target Overrun Correction

The Model 2090 constantly monitors inertia-induced target overrun. If overrun on turntables or towers occur, it is identified and tracked. Utilizing a special algorithm, the Model 2090 continually adjusts subsequent positions to minimize overrun, allowing for proper device positioning during tests.

Element Saving Limit Setting

To prevent damage to antenna elements which may accidentally rotate into the ground plane or ceiling during polarization, the Model 2090 allows you to program two upper and two lower limit settings. These settings allow you to safely maximize antenna scan height in either horizontal or vertical polarization – especially useful with BiConiLogs™, biconicals, log periodics, and other antennas with protruding elements.

Fiber Optic Input/Output Lines

The Model 2090 features fiber optic control lines to eliminate conducted noise. Each primary device cable contains two fiber optic lines (transmit/receive). Auxiliary device lines are output only. Reliable and easy-to-use ST connectors are standard.

GPIB

The General Purpose Interface Bus (GPIB) complies with IEEE 488.1/488.2 standards. All front panel functions can be exercised using GPIB commands while in the remote mode. GPIB commands are backward compatible with ETS-Lindgren Model 1050, 1060 and 1090 Controllers, simplifying upgrades to the new model. Model 1050 and 1060 commands are compatible with Hewlett Packard's Model HP 85876A Commercial Radiated EMI Measurement Software and Rohde & Schwarz Model ES-KI EMI Measurement & Evaluation Software.

Speed Control

Users whose test facilities include a two-speed turntable will find the Model 2090 positioning controller well suited to their needs. The unit's SLOW control activates the turntable's lower speed drive. The FAST control activates the turntable's higher speed drive. The controller can be used for speed-control with ETS-Lindgren turntables that feature dual speeds and other brands of two-speed turntables.

Memory

All settings in the Model 2090 are saved when the unit is turned off, allowing for easy set-up when testing is interrupted and returned to later.

Precise Resolution

Display accuracy on the Model 2090 is highly precise. The unit offers position readout increments of 1 mm for towers and 0.1 degree for turntables.

Universal Power Supply

The positioning controller has a convenient built-in auto ranging feature that automatically senses supply voltage. Any AC power source input within the range of 115/230 VAC, 50/60 Hz can be used.

Rack Mounting

For convenience, the Model 2090 is standard rack width and 3U rack size.

FUNCTIONS

The front panel design of the Model 2090 features a user-friendly interface which simplifies device control and clearly communicates primary device movement to the operator. Two separate sets of controls (Device One and Device Two), each with identical displays and functions, are included. Other front panel features include four auxiliary control switches and the Model 2090 power switch.

A number of useful primary device commands can be performed by the operator. The SEEK function enables the user to reposition a device to a new target location and the SCAN command initiates cyclic movement of a device. The CONFIG and LIMIT functions enable the user to program operational parameters and upper/lower or clockwise/counterclockwise limits for each device. The POSITION and STEP functions work together to control tower cross boom and/or turntable positioning. Expanded details of these functions are offered below.

Seek and Scan

SEEK allows a target location to be entered to redirect the device from its current location. Target locations can be automatically incremented/decremented by a given value. The SEEK command is available only through the GPIB. All other functions can be performed from both the GPIB and the front panel. The SCAN key initiates cyclic movement of a device between pre-programmed limits. A cycle is defined as movement from the lower/counterclockwise limit to the upper/clockwise limit and back to the lower/counterclockwise limit. The total number of cycles is programmable from 1 to 999 or an entry of "000" causes the device to scan continuously.

Config and Limit

The CONFIG (Configuration of Parameters) and LIMIT keys work together for system set up. The CONFIG function enables the operator to select six operational parameters for primary devices.

The LIMIT keys allow the operator to set upper and lower, or clockwise and counterclockwise limits. The user simply sets the limit by pressing the INCRM or DECRM keys until the desired limit is shown on the display and then selects the ENTER key. To verify or set the current position of a device under control, the user can press the CURRENT POSITION key.

Position and Step

The POSITION and STEP functions work together to manually position the tower cross boom and/or turntable. Four POSITION keys and two STEP keys are available to achieve this control.

Position Keys

- **UP/CW**
  - UP Moves the Tower Cross Boom Upwards
  - CW Moves the Turntable Clockwise
- **DOWN/CCW**
  - DOWN Moves the Tower Cross Boom Downwards
  - CCW Moves the Turntable Counterclockwise
- **STOP**
  - STOP Ceases Movement of Device
- **POLARIZATION/FLOTATION/ SPEED**
  HOR/UP/FAST
  VERT/DN/SLOW
  - On a tower, pressing this button will toggle the tower cross boom between HORIZONTAL and VERTICAL polarization.
  - On an air flotation turntable, pressing this button will toggle the UP (inflation) and DOWN (deflation) of the turntable top.
  - On a two-speed turntable, pressing this button will toggle the speed of the turntable between FAST and SLOW.
  - On a variable speed turntable, pressing this button will cycle the SPEED between four presets. Indicator lights will illuminate in a binary fashion to indicate the current preset speed selection (first preset OFF-OFF, second preset ON-OFF, etc.)

Step Keys

The controller will move the device in the desired direction as long as the key is pressed. The device will stop when the key is released.

- **INC**
  - INC Moves the Device Up or Clockwise
- **DEC**
  - DEC Moves the Device Down or Counterclockwise

Local/Remote Operation

The Model 2090 can be operated manually from the front panel or remotely via the GPIB port. When the Model 2090 is addressed via the GPIB port, the RMT indicator light will illuminate and the ADDR indicator will flash to show bus activity. Pressing the LOCAL function key allows you to exit the remote mode. When the optional Hand Control Unit is used, all position changes will be recorded and displayed by the Model 2090 Controller.

Auxiliary Control

Four front panel keys are available to control auxiliary devices. While in manual mode, you can activate an auxiliary device by pressing the AUX CONTROL key that corresponds to the auxiliary device port. In remote mode, auxiliary devices can be activated by using the appropriate GPIB command. The control lines are on/off output only. In order to use these four auxiliary lines, an interface box that will perform a custom function and accept a fiber optic input, is needed. Contact ETS-Lindgren for further information.

Standard Configuration

- Controller Assembly
- IEC 320 Power Cord
- Fiber Optic Cables (Two)
- Manual

Options

- Hand Control Unit
- Auxiliary Control Unit
- Additional Fiber Optic Cable
- Fiber Optic Feedthrough
- Rack Mount Rails

Technical Specifications

Electrical	
Power	115/230 VAC[1], 50/60 Hz
Fuse	2 A, 200 VAC Time Delay
Maximum Continuous Power	8 Fiber Optic Connectors
	IEEE-488.2 Connector
	IEC 320 Power Inlet
	Fuse Holder
Physical	
Width	43.8 cm
	17.3 in
Depth[2]	34.3 cm
	13.5 in
Height	13.3 cm
	5.3 in
Weight	4.5 kg
	10.0 lbs

[1] Autoselect

[2] Excluding Handles

Information presented is subject to change as product enhancements are made. Contact ETS-Lindgren Sales Department for current specifications.

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