



OPERATING THE LIA/PS-1

INTRODUCTION

The LIA/PS-1 is a dedicated purpose lock-in amplifier system that provides a cost-effective, high performance instrumentation solution to synchronous detection applications. A low-noise bipolar power supply is included to power detector/amplifier modules. A typical application set-up is shown on Page 3.

ORGANIZATION/OPERATION

The organization of the LIA is shown on in the following pages.

- Input power: AC power entry module with changeable settings for either 115 VAC (110-120) or 230 VAC (220-240).
- Output power: 9-pin D-connector for +,- 15 VDC to operate detector modules.
- Signal Input: The top BNC connector on the rear panel feeds a conditioning amplifier with a front panel gain selection switch for x10, x100, and x1000, providing for a wide range of signal levels.
- Reference Input: The bottom BNC connector on the rear panel for the incoming frequency reference signal from the chopper or other modulation controller accepts TTL or sine wave. This signal feeds the synchronous demodulator.
- Phase: A rear panel switch allows for 0 or 180 degree phase selection. No other phase adjustment is provided. User must insure proper phase matching of the reference signal.
- Signal Output: The demodulator output goes through a filter/amplifier stage to a front panel BNC for connection to user's data analysis equipment. A front panel switch sets the filter bandwidth to give an overall time constant of 10ms, 100ms or 1 second. The time constant setting determines the equivalent-noise-bandwidth (ENBW) unless the user has installed prefiltering on the signal channel. The LIA-1 filtering sets the ENBW at $1/(4TC)$.
- Offset Adjust: A screw pot on the rear panel is used for adjusting the DC offset.