OPERATING THE LIA-1

INTRODUCTION

The LIA-1 is a dedicated purpose lock-in amplifier module that provides a cost-effective, high performance instrumentation solution to synchronous detection applications. It can be effectively used with all EOS receiver modules

ORGANIZATION/OPERATION

The organization of the LIA is shown in the following diagram.

- Input power: The module requires bipolar DC power. It is set up for +15V, GND -15V, 50mA. Connection is through a shielded cable with solder connects (or a 9-pin Dsub if the PS-1 is also ordered).
- Signal Input: The BNC connector on the input side feeds a conditioning amplifier with a 3-position gain selection switch for x10, x100, and x1000, providing for a wide range of signal levels.
- Reference Input: The additional BNC connector on the input side is for the incoming frequency reference signal from the chopper or other modulation controller. This reference input accepts TTL or sine wave. This signal feeds the synchronous demodulator.
- Phase: A switch on the input side 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 an output BNC for connection to user's data analysis equipment. A 3-position 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 output side is used for adjusting the DC offset.