1.1 INTRODUCTION

The Elgar Model PIP 9012A Plug-In Programmer (PIP) provides the following capabilities:

- Full Automatic Test Equipment (ATE) Qualification for ATLAS Based Language Extension (ABLE).
- 100% Control of AC Power Source.
- General Purpose Interface Bus (GPIB) and Front Panel Control.
- Extensive Display Supports Programming, Status Indications, and Fault Indications.
- Built-in Test and True Readback of AC Power Source.
- Automatic Control of AC Power Source Range and Disconnect Relays.

1.2 GENERAL DESCRIPTION

The Elgar Model PIP 9012A is a plug-in programmable oscillator test module specifically designed for use with Elgar AC Power Sources. The PIP 9012A features a digitally controlled precision oscillator function with multiple outputs for independent three-phase stimulus. Each oscillator function output drives a respective power amplifier phase from the AC source. In addition, the PIP provides automatic regulation, and built-in-test and display, with local and remote (GPIB) control.

The PIP 9012A performs local programming setups via its front panel using plainly marked multi-function keyboard entries. Status is available via the integral light emitting diode (LED) display. Remote programming and reporting is accomplished with the GPIB using the ABLE language.

In addition to the multi-phase capability as an oscillator, the PIP 9012A provides powerful measurement capabilities. Measurement is provided by local and remote control, and includes:

- Output voltage;
- Load current;
- Load watts; and,
- Output frequency.

The PIP 9012A constantly monitors each phase for proper output. The AC Power Source is immediately triggered to shut down in the event of over/under voltage and overcurrent, thus protecting the user's load and the AC Power Source during unexpected operation. The PIP 9012A also generates and responds to SRQ (Service Request) commands.

Appendix A provides a listing of acronyms commonly used in this manual and Appendix B provides a listing of the commonly used IEEE-488 interface connections.

NOTE

The PIP 9012A is not recommended for use with Elgar "C" Series Power Sources due to servo problems.

1.3 PHYSICAL DESCRIPTION

The PIP 9012A is contained in a rectangular module approximately 7.25" (184.15 mm) wide, 3.5" (88.9 mm) high, and 8.0" (203.2 mm) deep and is specifically designed to fit the standard oscillator cavity of all Elgar AC Power Sources. Electrical connections are made as the PIP is inserted into the appropriate Elgar AC Power Source.

Connections for sense lines and GPIB interface are connected through the rear panel of the AC Power Source (the PIP 9012A is not suitable for use as a stand-alone device).

1.4 SPECIFICATIONS

1.4.1 General

Input Power: 117 VAC, +42 VDC and -42 VDC from the associated AC Power Source.

Output Signal: 0 to 2.5 VAC to an 800 Ω load (per phase).

Operating Temperature Range: 0°C to 50°C (32°F to 122°F).

Programming: Front panel keyboard/ display (local) and GPIB IEEE 488-1978 (remote).

Distortion (THD): <1% within the AC Power Source range.

Control: Front panel keyboard/display (local) and GPIB (IEEE 488-1978) via ABLE language (remote).

1.4.2 Frequency

Ranges: 45 Hz to 99.99 Hz in 0.01 Hz steps; 45 Hz to 999.9 Hz in 0.1 Hz steps; 45 Hz to 5000 Hz in 1 Hz steps.

Accuracy: 0.001% of programmed value.

Temperature Coefficient: 0.003% per °C average.

Settling Time: 1/2 cycle, or less, at new frequency.

1.4.3 Amplitude

Ranges: 0 to 135 VAC in 0.1 VAC steps; 0 to 270 VAC in 0.1 VAC steps.

Accuracy: ±0.2% of Full Scale (Full Scale) from 5% of Full Scale to Full Scale.

Temperature Coefficient: ±0.025% per °C average.

Line Regulation: ±0.015% for a 10% line change within line operating range.

Load Regulation: ±0.015% full wave average at point of sense, no load to full load.

Settling Time: <50 ms when programming from >5% of Full Scale.

1.4.4 Phase Angle

Separation: 120° for three phase; 90° for two phase; 60° for open delta.

Accuracy: ±1° from 45 Hz to 2 kHz. Add 1° per kHz above 2 kHz.

1.4.5 Current Limit

Range: 5% to 100%.

Resolution: 0.01 Ampere.

Accuracy: ±1% of Full Scale ±1.0% of Reading.

Crest Factor: 3.5:1 minimum.

Temperature Coefficient: ±0.02% of Full Scale ±0.02% of Reading per °C average.

1.4.6 Measurement System (5% of Full Scale to Full Scale; 45 Hz to 5 kHz)

1.4.6.1 Voltage

Range:	0 to 300V
Resolution:	0.1 VRMS from 0 to 300 VRMS
Accuracy:	±0.1% of Full Scale ±0.1% of Reading
Temperature Coefficient:	±0.01% of Full Scale ±0.01% of Reading per °C average

1.4.6.2 Current

Range:	5A, 10A, 20A, 40A (jumper selected)
Resolution:	0.01 Amperes
Accuracy:	±1% of Full Scale ±1% of Reading
Crest Factor:	3.5:1 minimum
Temperature Coefficient:	±0.02 of Full Scale ±0.02% of Reading per °C average

1.4.6.3 Power

Range:	500W, 1KW, 2KW and 4KW (jumper selected, not auto-range)
Resolution:	1 Watt
Accuracy:	±1% of Full Scale ±1% of Reading
Temperature Coefficient:	±0.01% of Full Scale ±0.02% of Reading per °C average

1.4.6.4 Frequency

Range:	45 to 5000 Hz
Resolution:	2 Hz
Accuracy:	0.12% of Full Scale ±0.008% of Reading
Temperature Coefficient:	0.012% of Full Scale ±0.008% of Reading per °C

NOTE

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.