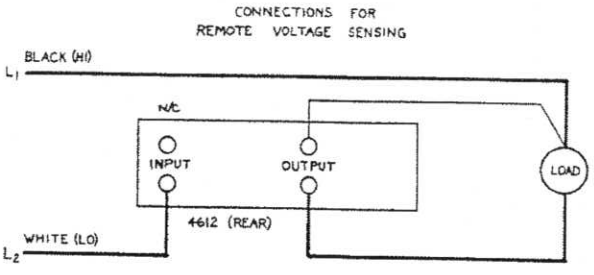

FIGURE 3

10.1.1 REMOTE POTENTIAL SENSE Figure 3 shows an alternate connection method requiring only one line of the load circuit to be interrupted. Since very little current flows through the potential line to output high, light wire is satisfactory for this connection.

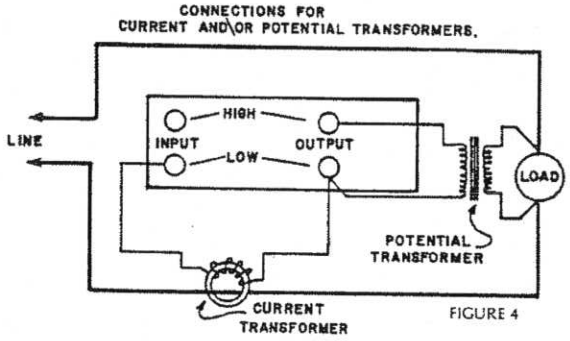

FIGURE 4

10.1.2 CURRENT AND POTENTIAL TRANSFORMERS As shown in Figure 4, the unit can be used with either current or potential transformers. When this is done the correction factor prescribed by the transformer ratio utilized must be applied to the instrument readings. NOTE: A current transformer is available with a split core to make interruption of the line unnecessary. For details contact our customer service department.

10.2 AVERAGING START/STOP—HOLD SWITCH FUNCTIONS The averaging function is accomplished by a means of digital integration. The process is performed identically on all three parameters of amps, volts, and watts. Each parameter is summed into three registers while simultaneously incrementing a fourth register each reading cycle. Additionally, on each machine cycle of approximately 400 milliseconds, the data are reduced and displayed. This readout function is done by separate registers so that the summation registers remain intact. This is the method by which a running average is continuously displayed. There is no practical time limit on the averaging function.

The HOLD switch interrupts the above process and provides an instruction to the CPU to store all of the data. Thereafter the information can be recalled and summed into, or cleared for a fresh start. The use of the switches for this manipulation of data is described in foregoing paragraph 9.4.

11.0 SPECIFICATIONS

11.1 Accuracy, resolution, and response time for the Model 4612 power analyzer:

11.1.1 ACCURACY AC The following long-term (rated) accuracies take into account the effects of noise, distortion, and either capacitive or inductive loads. REF ANSI C39.6 1969.

Ampere Ranges
2A to 20A: rated accuracy ± (.25% of reading +.2% of full scale ±1 LSD) from 40 Hz to 100 Hz.
50A: rated accuracy ± (.25% of reading +.25% of full scale ±1 LSD) from 40 Hz to 100 Hz.

Volt Ranges
15V to 300V: rated accuracy ± (.25% of reading +.2% of full scale ±1 LSD) from 40 Hz to 100 Hz.
600V: rated accuracy ± (.25% of reading +.28% of full scale ±1 LSD) from 40 Hz to 100 Hz.

Watts, all range combinations
P.F. 0-1 lead or lag: rated accuracy ± (.25% of reading +.2% of full scale ±1 LSD) from 40 Hz to 100 Hz.

ACCURACY DC AND 100 TO 500 Hz As stated above, + (±5 LSD).

11.1.2 RESOLUTION Amps, all ranges: 1.0 MA or .0167% of full scale, whichever is greater.
Volts, all ranges: .0167% of full scale.
Watts: .0167% of full scale volt-amps.

11.1.3 RESPONSE In normal mode, each reading is updated every 750 milliseconds. In integrating mode, each data sample is obtained at intervals of approximately 400 ±20 milliseconds.

11.2 Accuracy, resolution, and response time for the analog output, option 01:

11.2.1 ACCURACY, ALL RANGES Rated accuracy ±(.35% of full scale +.1% reading + 300μv/°c) DC and 40 Hz to 400 Hz.

11.2.2 RESOLUTION Infinite.

11.2.3 RESPONSE From 10% to 90% of range with a stepped input of 0 to full scale at 60 Hz, all ranges: volts and amps, 160 milliseconds; watts, 80 milliseconds.

12.0 CALIBRATION

CAUTION: THE ANALOG CIRCUIT BOARD AND MANY OF THE COMPONENTS THEREON ARE COMMON TO THE INPUT AND OUTPUT CONNECTORS. IF THE POWER LINE IS CONNECTED TO THE INPUTS, DO NOT CONNECT ANY TEST INSTRUMENTS TO ANY POINT ON THIS BOARD.

Two levels of calibration are covered in the following descriptions. Section 12.1 is a condensed procedure for full-scale calibration of all ranges of volts, amps, and watts. Section 12.2 is a complete procedure for offset feed-thru adjustments.

12.1 FULL-SCALE CALIBRATION Disconnect all input connectors and the power service lines to the instrument. To remove the top cover, first remove the retaining screws in the upper left and right corners, then slide the cover panel to the rear.

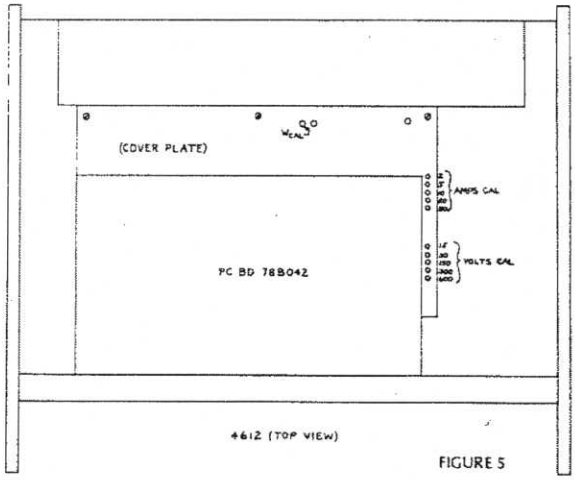

FIGURE 5

12.1. 1 VOLTS CALIBRATION A source of stable AC voltage of known value is required. Turn on the power analyzer and apply the potential to the black and white input terminals. After a suitable warmup time, refer to Figure 5 and adjust the appropriate trim pots, accessible through the holes in the cover plate, until the indicated value agrees with the diagrammed reference.

12.1. 2 AMPS CALIBRATION Follow the instructions for volts calibration, except that a known value of AC amps must be applied through the two lower white terminals.

12.1. 3 WATTS CALIBRATION To calibrate AC watts, it is necessary to set up a high power-factor load with a known voltage and a known current. This needs to be done on only one range of volt-amps. To minimize power-factor errors when calibrating by the volt-amp method, the circuit inductance should be kept as low as possible and the total circuit resistance as high as possible, since

$$\theta = \tan^{-1} \frac{2\pi FL}{R}, \text{ and P.F.} = \cos\theta.$$