4.MAXWELL'S INDUCTANCE BRIDGE

Objective:

To determine the unknown value of inductance by comparing with a variable standard self inductance using Maxwell's Inductance bridge.

Apparatus:

Software: Lab view software.

Hardware:

Name of the apparatus	Quantity
Transformer 230/15v	1 No
Bread board	1 No
Resistors	4 No
Variable Resistor	1 No
Inductors	2 No
Digital Multimeter	1 No

Theory:

This bridge circuit measures an inductance by comparison with a variable standard self-inductance. The connections and the phasor diagrams for balance conditions are shown below.

Let, L_1 = unknown inductance of resistance R_1,

L_2 = variable inductance of fixed resistance r_2,

R_2 = variable resistance connected in series with inductor L_2,

R_3, R_4 = known non-inductive resistances.

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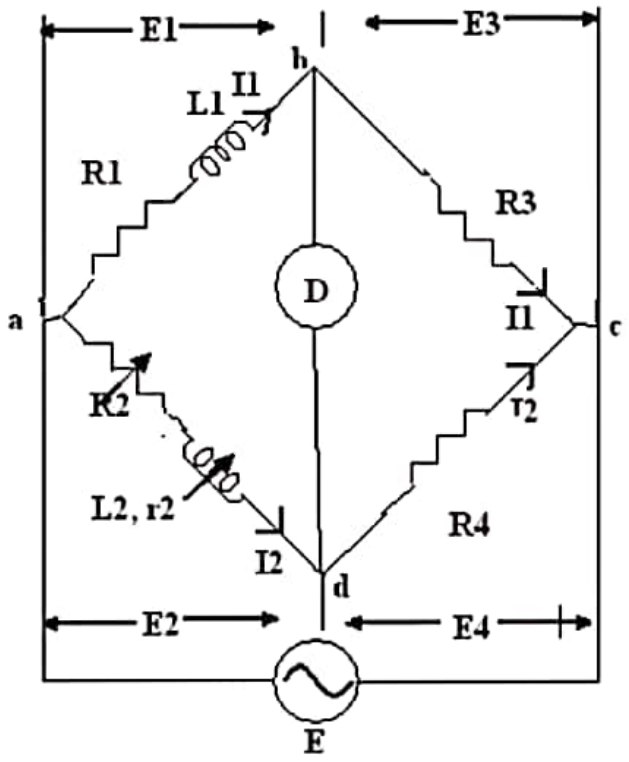

At balance, $L_1 = R_3L_2/R_4$, $R_1 = R_3(R_2+r_2)/R_4$.

Procedure:

1. Connect the circuit as shown in the figure.
2. Connect the unknown inductance in L_1.
3. Connect the multimeter between ground and output of imbalance amplifier.
4. Vary R_2, from minimum position, in clockwise direction.
5. If the selection of R_2 is correct the balance point can be obtained at minimum position.
6. Vary R_2 for fine balance adjustment.

Observation:

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S.NO	R_2	R_3	C_1	$L_1 = R_3L_2 / R_4$	True value of L_1

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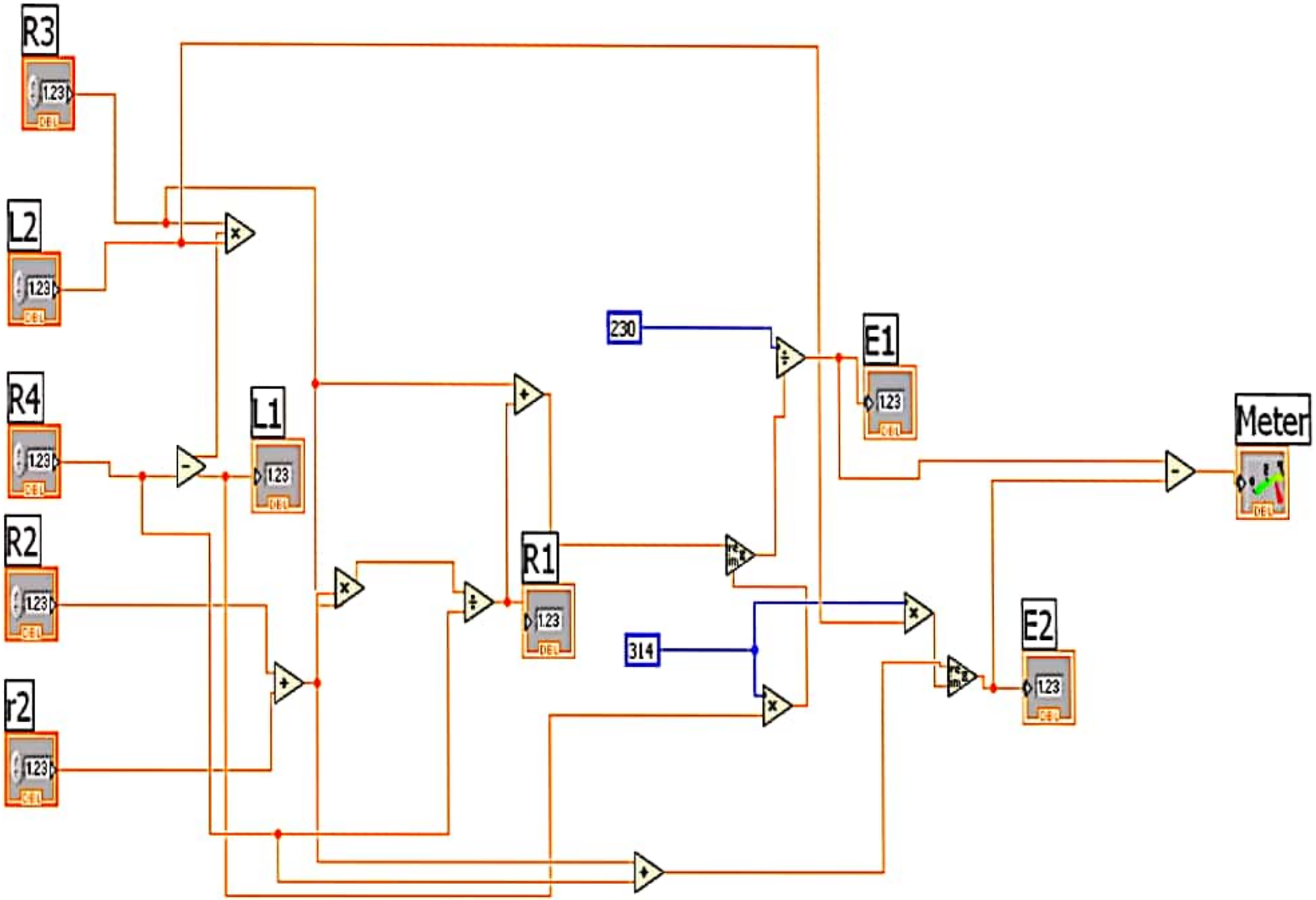

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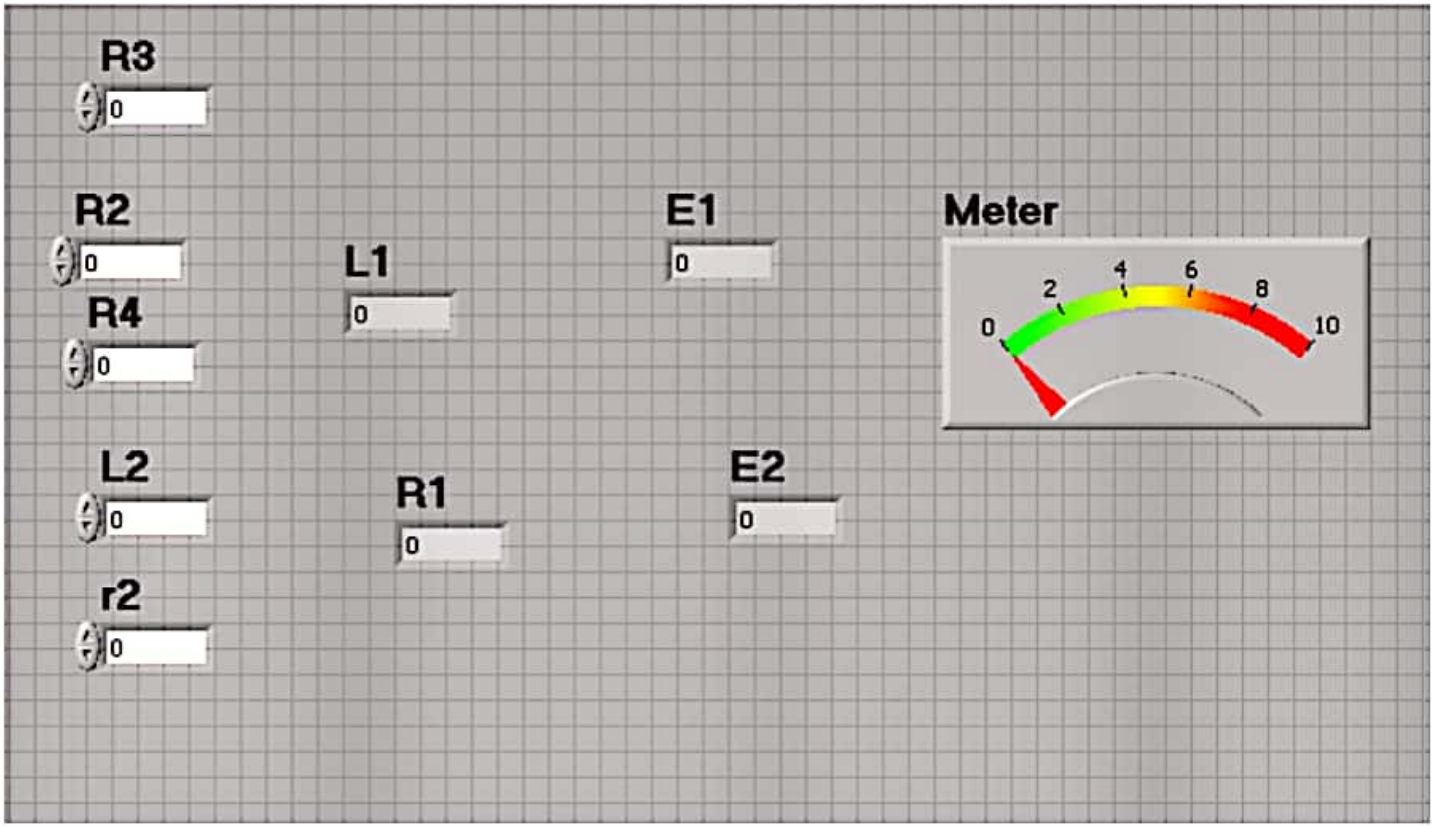

Result:

Actual and practical values of Inductances are found to be nearly equal.

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