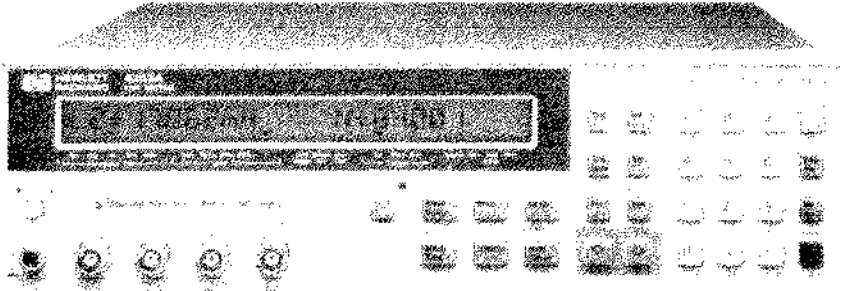


Effective Transformers/LF Coils Testing

- HP 4263A LCR Meter -



INTRODUCTION

Transformers/LF Coils have gradually become miniaturized and are used in power supply circuits and digital networks (for example, ISDN), and are manufactured in increasing volume. QA and manufacturing have to improve evaluation of transformers/LF Coils, but they are faced with big measurement problems due to the complicated evaluation parameters which are required to be measured. We will describe the solutions offered by the HP 4263A LCR Meter to meet these measurement requirements.

CURRENT PROBLEMS FOR TRANSFORMER/LF COIL EVALUATION

The major parameters which need to be known for transformer/LF coils, are self inductance, dc resistance, turns ratio, and interwinding capacitance. Existing low cost LCR meters have the following shortcomings when used for transformer/LF Coil evaluation.

- (1) Primary and secondary dc resistance can't be measured. (The dc resistance is measured using a multimeter.)
- (2) The turns ratio, one of the major parameters of a transformer, can't be measured with existing LCR meters. (The turns ratio commonly requires using a special turns ratio checker.)
- (3) The major parameters can't be measured at 100 kHz because low cost LCR meters' frequency range doesn't extend up to 100 kHz.
- (4) The test signal level is automatically selected according to the measurement range, so the test signal level can't be set to a user specified level.
- (5) Total throughput isn't improved for measurements on the production line because of slow measurement speed.
- (6) It's troublesome to change the connections required for measuring transformer primary and secondary parameters.

HP 4263A LCR METER SOLUTION

(1) DC Resistance Measurement Capability

An HP 4263A equipped with Option 001 (N/M/DCR measurement capability) can also measure dc resistance in addition to self inductance, so a separate multimeter and the additional measurement step isn't needed, thereby test efficiency is improved.

(2) Turns Ratio, Mutual Inductance Measurement Capability

An HP 4263A equipped with Option 001 adds turns ratio and mutual inductance measurement capability. Turns ratios of 0.9000 to 200.00 at 100 kHz can be measured, and this combination is suitable for standards specification pulse transformer evaluation.

(3) Wide Frequency Range

The HP 4263A covers test frequencies of 100 Hz, 120 Hz, 1 kHz, 10 kHz, and 100 kHz, and can be used to evaluate transformers at test

For more information call your local HP sales office listed in your telephone directory or an HP regional office listed below for the location of your nearest sales office.

United States:
Hewlett-Packard Company
4 Choke Cherry Road
Rockville, MD 20850

Hewlett-Packard Company
5201 Tollview Drive
Rolling Meadows, IL 60008

Hewlett-Packard Company
5161 Lankershim Blvd.
No. Hollywood, CA 91601

Hewlett-Packard Company
2015 South Park Place
Atlanta, GA 30339

Canada:
Hewlett-Packard Ltd.
6877 Goreway Drive
Mississauga, Ontario L4V1M8

Australia/New Zealand:
Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Melbourne, Australia

Europe/Africa/Middle East:
Hewlett-Packard S.A.
Central Mailing Department
P.O. Box 529
1180 AM Amstelveen
The Netherlands

Far East:
Hewlett-Packard Asia Ltd.
22/F Bond Centre
West Tower
89 Queensway
Central, Hong Kong

Japan:
Yokogawa-Hewlett-Packard Ltd.
29-21, Takaido-Higashi 3-chome
Suginami-ku, Tokyo 168

Latin America:
Latin American Region Headquarters
Monte Pelvoux Nbr. 111
Lomas de Chapultepec
11000 Mexico, D.F. Mexico

frequencies up to 100 kHz. So you can perform the 1 kHz transformer evaluation as defined in IEC 1007 (also JIS C 6435), and in addition you can measure the leakage inductance and the interwinding capacitance at 100 kHz to evaluate transformers used in switching power supplies.

(4) 5 Selectable Test Signal Levels

You can select one of five selectable signals (50 mV, 100 mV, 250 mV, 500 mV, and 1 V) independent of the measurement range used, and you can evaluate your device at the level you specify.

(5) Higher Throughput

The HP 4263A's measurement speed is 25 ms (in the SHORT integration time mode). In addition, the HP 4263A has the following functions which make for easy system integration, and improve measurement throughput and reliability.

- * Built-in Comparator
- * Handler Interface
- * HP-IB Interface
- * Fast Contact Check
- * Trigger Delay Function

(6) HP 16060A Transformer Test Fixture

The HP 16060A Transformer Test Fixture used with the HP 4263A, can measure both the primary and secondary parameters by just changing the position of a switch on the test fixture. Figure 1 shows you the HP 4263A with the HP 16060A for the transformer measurements.

CONCLUSION

The HP 4263A LCR Meter realizes the wide frequency range, and 5 selectable signals with high measurement speed. In addition, when equipped with Option 001 the HP 4263A offers a one box measurement solution for DC resistance, Turns Ratio, and Mutual Inductance. So now an effective measurement solution is available for your transformer/LF coil evaluation needs.

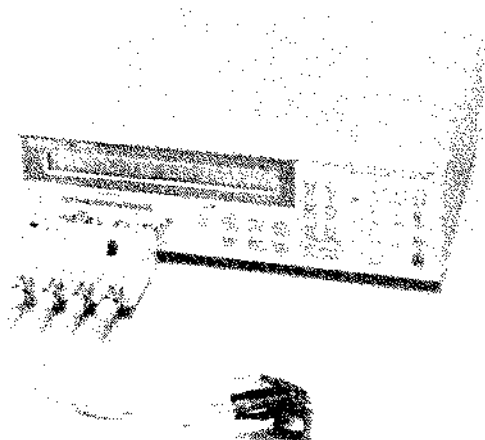


Figure 1. Transformer Measurement Using the HP 16060A