AVTM36610
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DELTA2000/3000
C&DF Optional Accessories
TTR Capacitor
and
HV Reference Capacitors
Instruction Manual

HIGH-VOLTAGE EQUIPMENT

Read this entire manual before operating.

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C&DF Optional Accessories
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Instruction Manual

The information presented in this manual is believed to be adequate for the intended use of the product. If the product or its individual instruments are used for purposes other than those specified herein, confirmation of their validity and suitability must be obtained from Megger. Refer to the warranty information below. Specifications are subject to change without notice.

WARRANTY

Products supplied by Megger are warranted against defects in material and workmanship for a period of one year following shipment. Our liability is specifically limited to replacing or repairing, at our option, defective equipment. Equipment returned to the factory for repair must be shipped prepaid and insured. Contact your MEGGER representative for instructions and a return authorization (RA) number. Please indicate all pertinent information, including problem symptoms. Also specify the serial number and the catalog number of the unit. This warranty does not include batteries, lamps or other expendable items, where the original manufacturer's warranty shall apply. We make no other warranty. The warranty is void in the event of abuse (failure to follow recommended operating procedures) or failure by the customer to perform specific maintenance as indicated in this manual.

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Table of Contents

List of Figures

Megger.

1

Introduction

Receiving Instructions

Check the equipment received against the packing list to ensure that all materials are present. Notify Megger of any shortage. Telephone (610) 676-8500 and ask for the Customer Service Department.

Examine the instrument for damage received in transit. If damage is discovered, file a claim with the carrier at once and notify Megger, giving a detailed description of the damage.

This instrument has been thoroughly tested and inspected to meet rigid specifications before being shipped. It is ready for use when set up as indicated in this manual.

General Information

The TTR Capacitor Cat No. 36610 when used with the DELTA2000/3000 and assisted with Power DB software can help to determine the turn's ratio of transformers using high voltage (10kV). The capacitor may also double as a 10nF

reference capacitor. This TTR test can return results that are within 0.5% of the transformer nameplate information.

The HV Reference Capacitors No. 36610-1 and -2 are for checking the DELTA2000/3000 for proper operation in the field. The two HV References use a 100pF capacitor or a 1000pF capacitor. Each Reference provides for reading the capacitor alone and with an additional terminal with a resistance value for Dissipation or Power Factor reading in UST mode. The values should remain within +/-10% @ 25°C of indicated values.

2

Safety

Safety is the responsibility of the user.

Only qualified and trained operators should operate the DELTA2000/3000 system. Operator must read and understand this entire Instruction Manual prior to operating the equipment. Operator must follow the instructions of this Instruction Manual and attend the equipment while the equipment is in use. In the event of equipment malfunction, the unit should immediately be de-energized and returned to Megger for repair. The Safety precautions herein are not intended to replace your Company's Safety Procedures. Refer to IEEE 510 - 1983, IEEE Recommended Practices for Safety in High-Voltage and High-Power Testing, for additional information.

General Safety Precautions

The DELTA2000/3000 and the Unit Under Test (UUT) should both be considered as sources of instantaneously lethal levels of electrical energy.

It is not possible to eliminate all potential hazards from, and in using, electrical test equipment. For

this reason, every effort has been made to point out in this instruction manual the proper procedures and precautions to be followed by the user in operating this equipment and to mark the equipment itself with precautionary warnings where appropriate. It is not possible to foresee every hazard which may occur in the various applications of this equipment. It is therefore essential that the user, in addition to following the safety rules in this manual, also carefully consider all safety aspects of the test before proceeding.

Observe the following safety precautions:

- Safety is the responsibility of the user.
- Misuse of this high-voltage equipment can be extremely dangerous.
- The purpose of this equipment is limited to use as described in this manual. Do not use the equipment or its accessories with any device other than specifically described.
- Never connect the test set to energized equipment.
- Operation is prohibited in rain or snow.
- Do not use the test set in an explosive atmosphere.

- A qualified operator should be in attendance at all times while the test equipment is in operation.

- Observe all safety warnings marked on the equipment.

- Corrective maintenance must only be performed by qualified personnel who are familiar with the construction and operation of the test set and the hazards involved.

- Refer to IEEE 510 - 1983, "IEEE Recommended Practices for Safety in High-Voltage and High-Power Testing," for information.

- If the test equipment is operated properly and all grounds correctly made, test personnel need not wear rubber gloves. As a routine safety procedure, however, some users require that rubber gloves be worn, not only when making connections to the high-voltage terminals, but also when manipulating the controls. Megger considers this an excellent safety practice.

- High-voltage discharges and other sources of strong electric or magnetic fields may interfere with the proper functioning of heart pacemakers. Persons with heart pacemakers should obtain expert advice on the possible risks before operating this equipment or

being close to the equipment during operation.

Warning and Caution Notices

Warning and caution notices are used throughout this manual where applicable and should be strictly observed. These notices appear in the format shown below and are defined as follows:

WARNING

Warning, as used in this manual, is defined as a condition or practice which could result in personal injury or loss of life.

CAUTION

Caution, as used in this manual, is defined as a condition or practice which could result in damage to or destruction of the equipment or apparatus under test.

3

Measurement Instructions

To test the Turns Ratio of a transformer requires three steps using the TTR Capacitor Cat No. 36610;

1. Place the DELTA2000/3000 in the UST mode, connect the Cap reference between the HV lead and the Measurement lead. Make sure the Cap. Reference and cable ends are suspended in air, two feet from all objects. Take a reading at 10kV. The result will be the value for C1.

$I_1 = V_1\omega(Ca)$

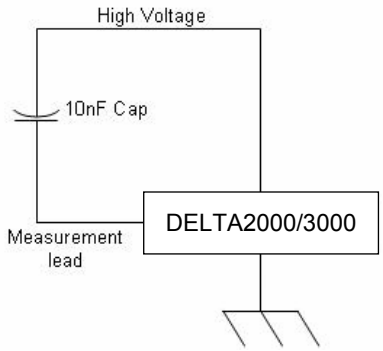

Figure 1 - Measure for C_1

2. Connect the Cap. Reference as shone in the illustration below. With the Cap Reference in series with the secondary of the transformer and the DELTA2000/3000's measurement lead, take another UST reading for the C_2 value.

$I_2 = V_2\omega(Ca)$

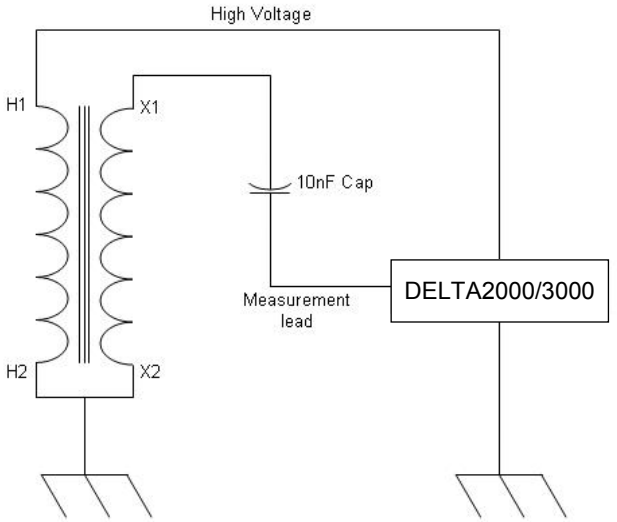

Figure 2 - Measure for C_2

3. The Transformer name plate ratio; N = V1/ V2. The measured ratio of the transformer is N = C1/ C2.

To test the DELTA's capacitance and DF or PF for proper operation requires using the HV Reference Capacitor Cat No. 36610-1 or 36610-2;

Place the DELTA2000/3000 into the UST mode with the connections as seen in the Figure 3 below.

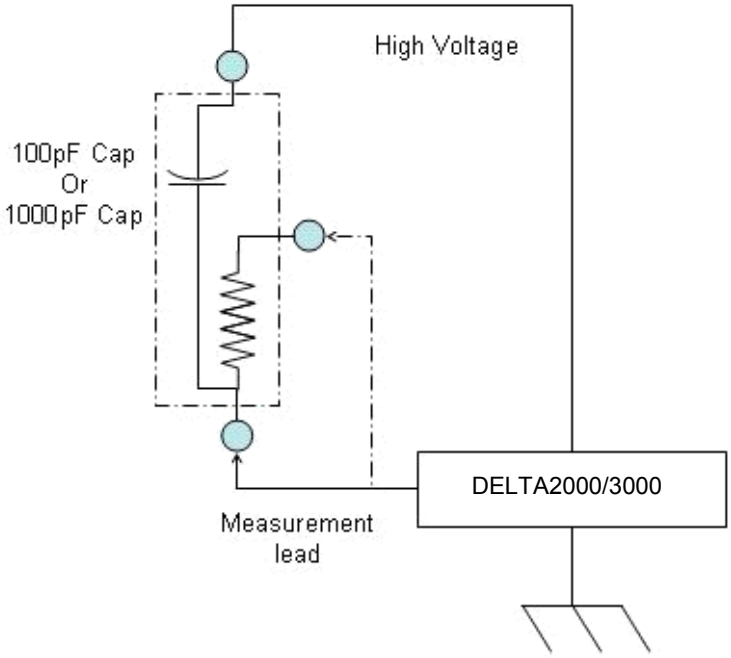

Figure 3 – Measure for C and Power Factor (Dissipation Factor)

4

PARTS

Catalog Numbers

36610-Kit includes Catalog numbers;

36610	TTR Capacitor, 10nF
36610-1	HV Reference Capacitor, 100pF
36610-2	HV Reference Capacitor, 1000pF
36610-CC	Capacitor Carry Case

Individual components may be purchased separately.

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