TESTRANSFO2
User's Guide

CONTENTS

1   DOCUMENT OBJECTIVE

This document presents the **TESTRANSFO2** instrument, describing its use and also the PC software which enables storage and printing of the results obtained.

2   TERMINOLOGY

TESTRANSFO2 is a product of the MADE-S.A. company. It enables checking the function of disconnected distribution transformers in place or in the storage yard.

3   OVERVIEW

3.1 Use

The **TESTRANSFO2** is a portable instrument which is used for verifying the integrity of an MV/LV distribution transformer . It is particularly useful :

- Before installation, to verify the integrity of any internal protections after transporting the transformer
- After a failure, as an on-site diagnostic aid.
- On reception of transformers on arrival from the manufacturer (to avoid disputes).
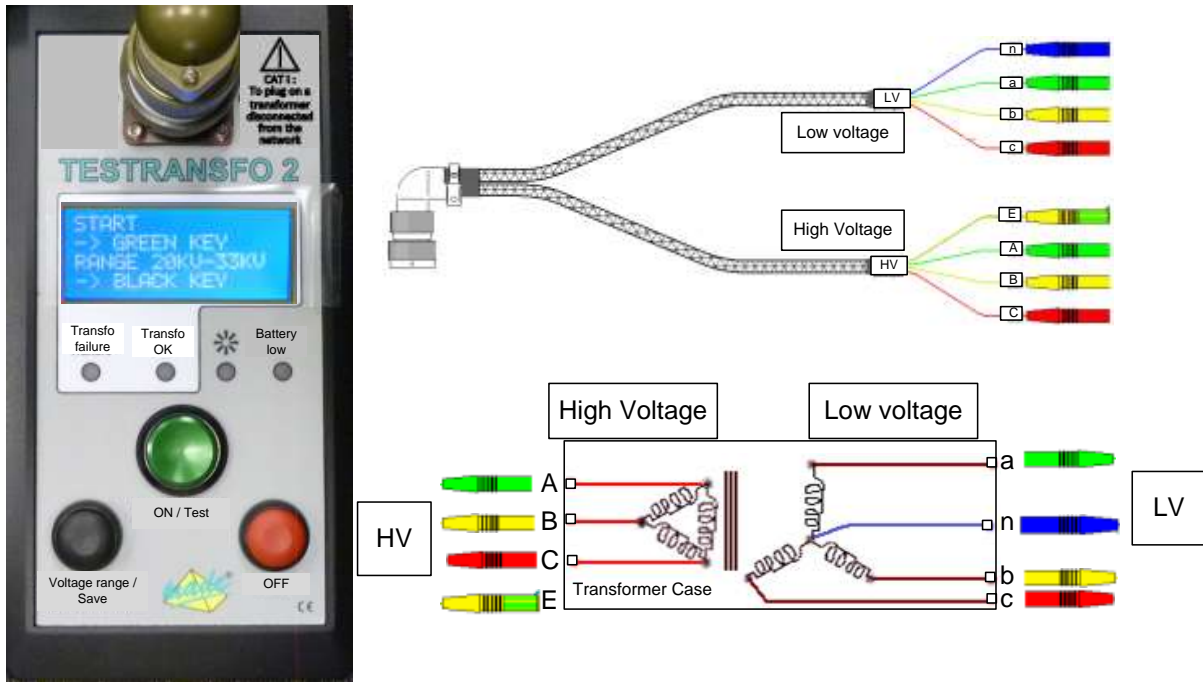
TESTRANSFO2 tests the states of any internal protections

TESTRANSFO2 tests the most common causes of failures by a series of 19 measurements.

Use the 8 crocodile clamps to connect to the transformer connections.

On the low voltage side: On the high voltage side:

Phase a: Green   Phase A: Green
Phase b: Yellow   Phase B: Yellow
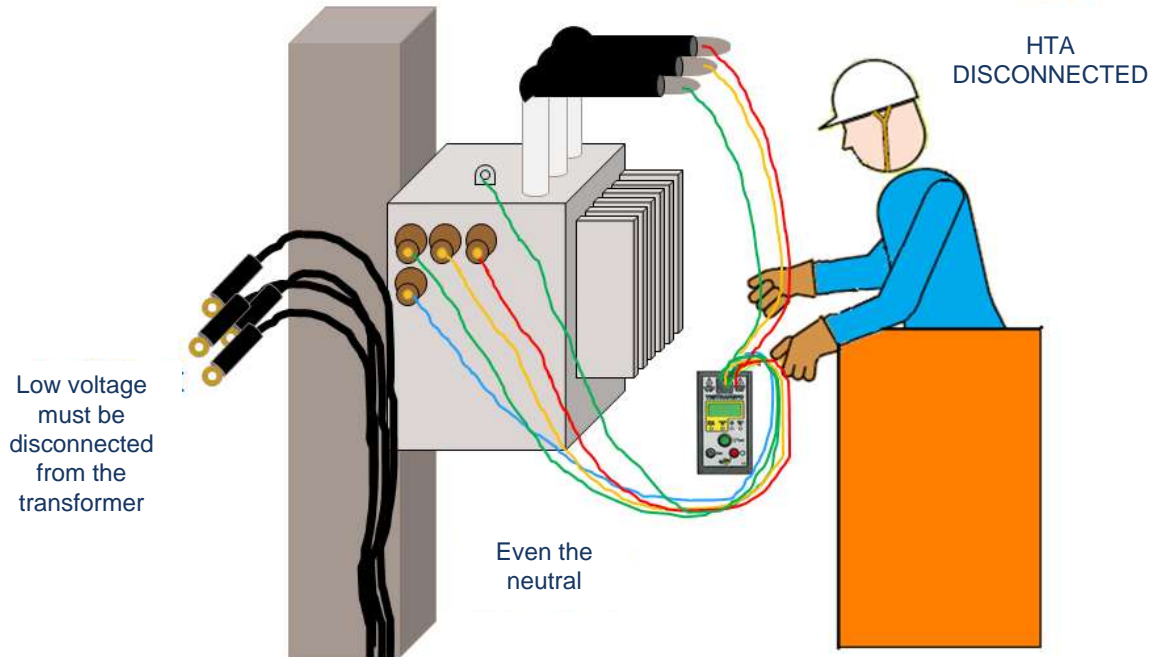Phase c: Red   Phase C: Red
Neutral: Blue   Ground: Yellow/Green

4   OPERATION

4.1   Method of Operation

4.1.1   Connection

Disconnect all HV and LV connections from the transformer, including the earth (it is not sufficient to only disconnect the LV).

Connect the tester correctly to all the terminals of the transformer with the 8 cables according to the colour code.

Always check the good quality of the contacts between the crocodile clamps and the transformer connectors.
Remove the dirt or the paint if necessary to make sure the connection is good.

On the high voltage side, you can also use the small adapters supplied with TesTransfo. See the illustration on the right.

4.1.2   Start-Up

Press the green button, and the **TESTRANSFO2** will initialise:

Press the green button again, and the system starts automatically.

After the audible signal, **press the green button again** to launch the series of tests.
TesTransfo automatically tests the 18 different internal connections.

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4.1.3   Choice of the transformer input range

TESTRANSFO2 adapts to the transformer input voltage rating in order to obtain the best results possible for the transformers under test. The three ranges of input voltages are : 5-9KV / 10-19KvV / 20-33KV

The range must be chosen using the black button before starting the test :

The correct choice of range before initiating the measurements is imperative for the best final result. The default range is 20/33 KV.

Between each change of range, there is a pause while the instrument re-calibrates itself appropriately :

The 3 ranges are :

Range 20KV – 33KV   Range 10KV –193KV   Range 05KV –09KV

Select the range according to the transformer under test.

4.1.4   Test

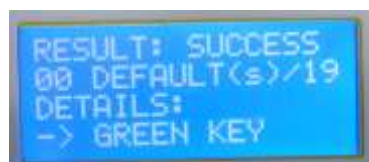Press the green button once again to start the 19 automatic measurements :

4.1.5   Interpretation of the results

The result is shown directly on the display

TESTRANSFO2 displays : « RESULT : CORRECT » or « RESULT : FAULT. »

It is essential that the 19 tests are seen as correct for the transformer to be considered functional.

Transfo correct   Transfo faulty

4.2   Test Sequence

Important reminder: all connections to the transformer, MV and LV, must be disconnected during the test.

TESTRANSFO2 automatically runs a sequence of direct current tests for each of the 13 bipolar combinations formed, while checking conformity with the expected result for each case : Open Circuit, Short Circuit, impedance.

The type of fault found is shown at the end of the test by scrolling all the combinations using the green button, and is summarised according to 3 criteria :

> Short-circuit (SC),
> Open Circuit (OC),
> Out of Norm (impedance fault, incoherent response curve, ..)

6 complementary alternating current measurements are used to check the transformation ratios on the three phases: **TESTRANSFO2** compares the values between each phase from the HV side and the LV side as well as the coherence of the ratio HV/LV of each phase .

The measurement precision is 5 % : 2% of the measurement + 3% due to the tolerance inherent to the transformer

Note :

TESTRANSFO2 does not check the insulation.

- Always ensure good contact by the croc clips : Scrape off paint or dirt if necessary. Use the adapters if necessary for the HV connections.

4.3   Recording the Results of a Measurement Program

To record a set of results, scroll through the result details (cf § 4.2). The following screen is displayed :

Record the results by pressing the black button :

 The recorded results can be transferred later to a PC with the software package supplied (cf §5). The instrument can store ten sets of results on a FIFO basis. After the 10th recording, the first is overwritten and so on.
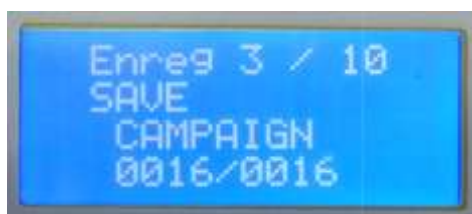
4.4 Turning Off

The red button is used to turn off the instrument.

After 5 minutes of inactivity, the instrument turns off automatically

4.5 Changing the batteries

TESTRANSFO2 is powered by 2 x 9V Type LR61 batteries

Inserting the batteries in the back of the instrument :

5 TESTRANSFO2 SOFTWARE

5.1 Loading the Software

TESTRANSFO2 is delivered with a USB memory stick holding the PC software package.

TESTRANSFO2 is connected to a PC via a USB cable.

If the drivers are not recognised, the certificates are located in :
- « USBkey »:\TESTRANSFO2\driver usb\USB FTDI.

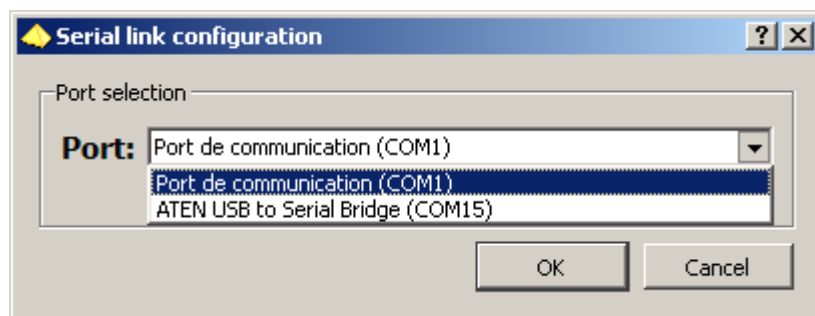It is possible to installe the software on a PC by copying the directory « USBkey »:\TESTRANSFO2 onto the hard disk.

5.2 Opening the Software

Connect the **TESTRANSFO 2** to the PC with the USB cable, and turn it on with the green button.

The software is opened by selecting : « TESTRANSFO2\TTRANSFO2.exe »

5.3 Selection of the COM port

In the menu « Series Configuration »

Select the appropriate COM port in the list shown

5.4 Filling in the worksheet

Before carrying out the data transfer, fill in the fields below :

Enter the name of the operator or the company :

Enter the date on which the measurement is taken :

Enter the name of the sub-station :

Enter the identifying code:

Select the manufacturer :

Select the transformer power :

Select the transformer operating voltage :
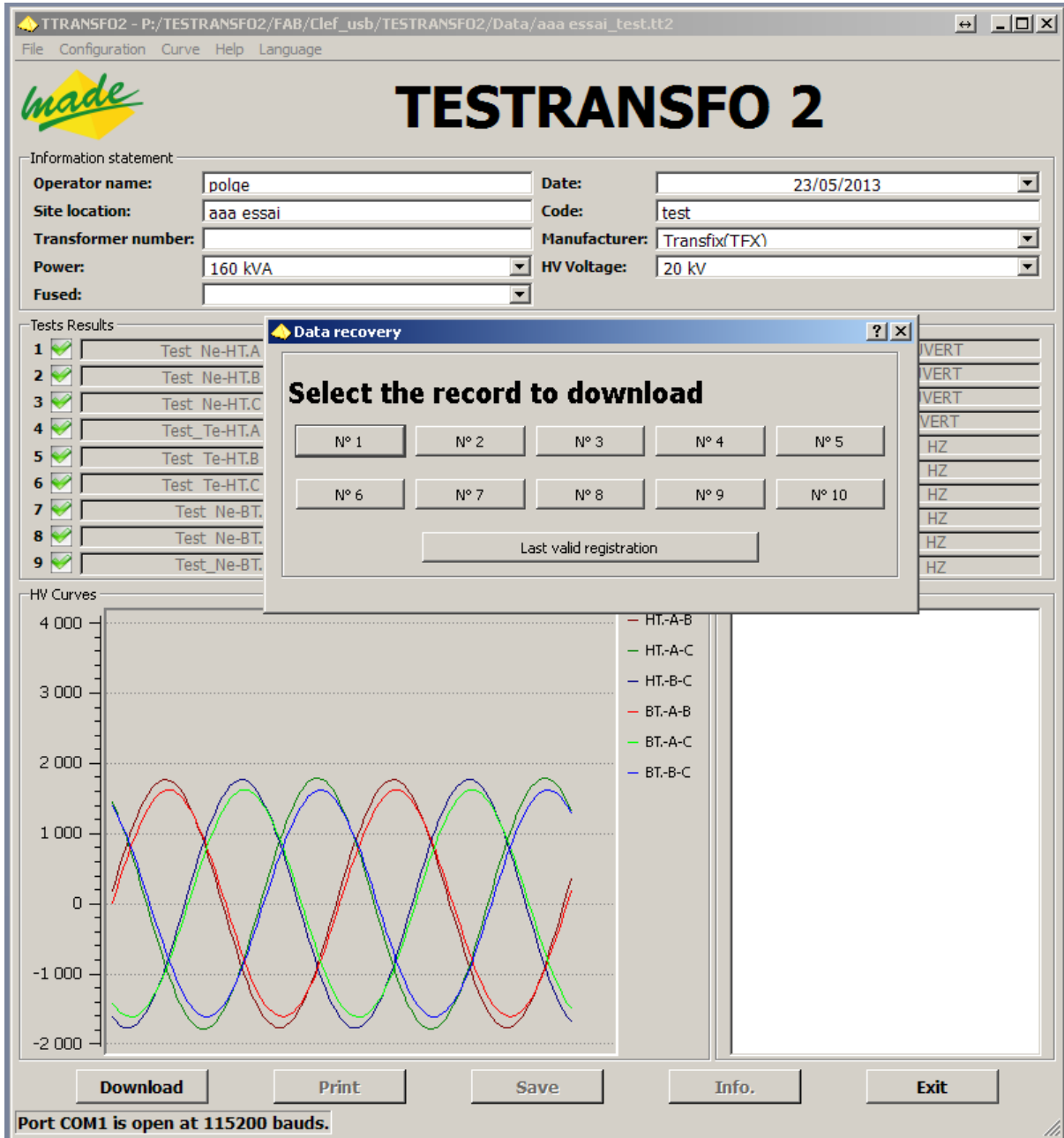
Declare the presence or not of the HV fuses (TPC transformer) :
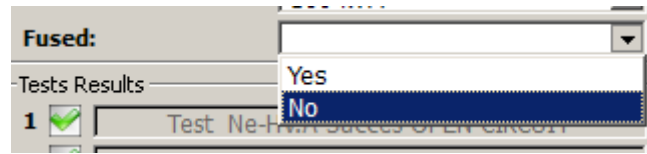
5.5 Data Transfer

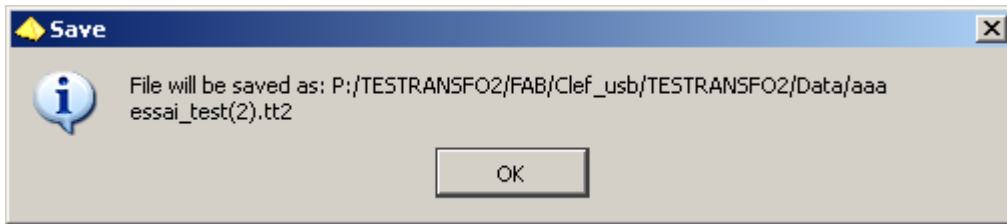Once these fields are completed, click on the « d » button:

Choose the recording required, or simply the last recording in the instrument

The name of the file is made up from the fields « sub-stations name » and «identifying Code », separated by the character « _ ».


File will be saved as: P:/TESTRANSFO2/FAB/Clef_usb/TESTRANSFO2/Data/aaa essai_test(2).tt2
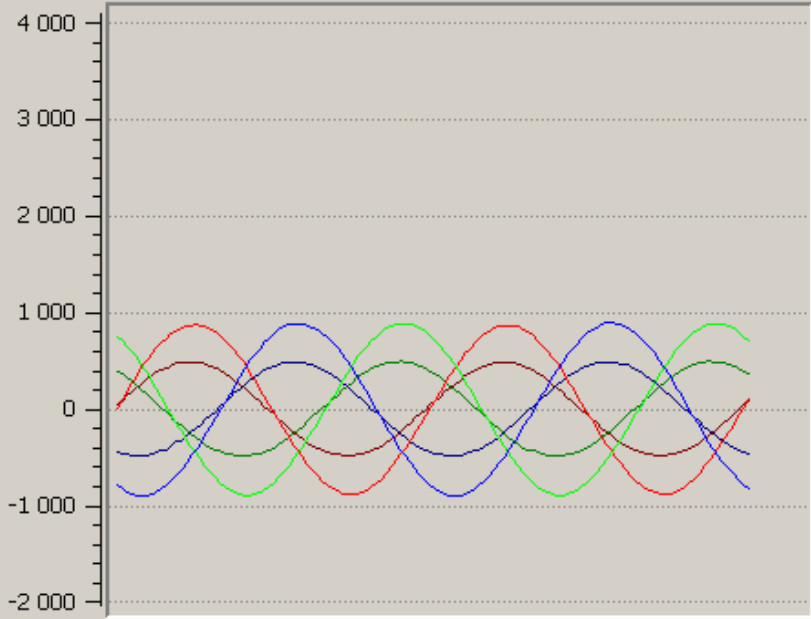
OK

Results of the 19 tests : continuity and transformer ratio

Tests Results

1	Test Ne-HV.A Succes OPEN CIRCUIT	10	Test Ea-LV.A Succes OPEN CIRCUIT
2	Test Ne-HV.B Succes OPEN CIRCUIT	11	Test Ea-LV.B Succes OPEN CIRCUIT
3	Test Ne-HV.C Succes OPEN CIRCUIT	12	Test Ea-LV.C Succes OPEN CIRCUIT
4	Test_Ea-HV.A Succes OPEN CIRCUIT	13	Test Ea-Ne- Succes OPEN CIRCUIT
5	Test Ea-HV.B Succes OPEN CIRCUIT	14	Test HV.A Succes RANGE OK
6	Test Ea-HV.C Succes OPEN CIRCUIT	15	Test HV.B Succes RANGE OK
7	Test Ne-LV.A Succes CIRCUIT OK	16	Test HV.C Succes RANGE OK
8	Test Ne-LV.B Succes CIRCUIT OK	17	Test LV.A Succes RANGE OK
9	Test_Ne-LV.C Succes CIRCUIT OK	18	Test LV.B Succes RANGE OK
		19	Test LV.C Succes RANGE OK

For confirmation of the function of the transformer by the instrument, all these tests must be correct.
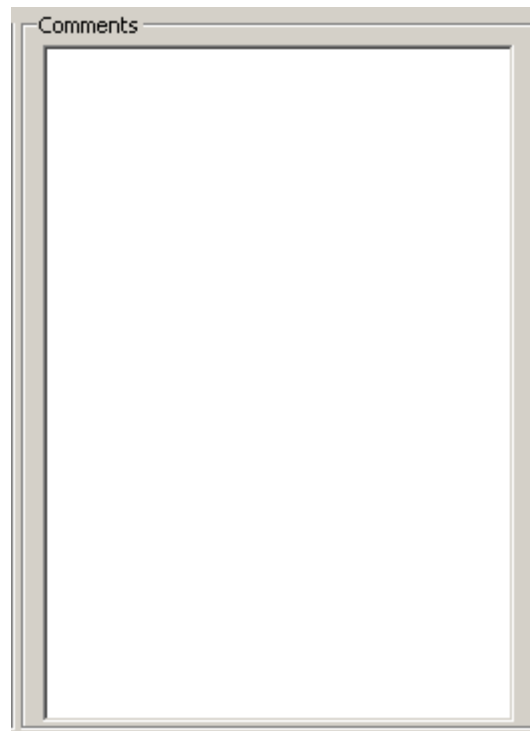
5.6 Transformer Ratio

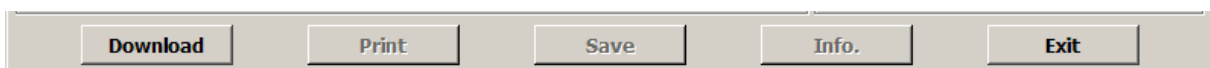The transformer ratios, as well as the form of the phases are shown graphically :
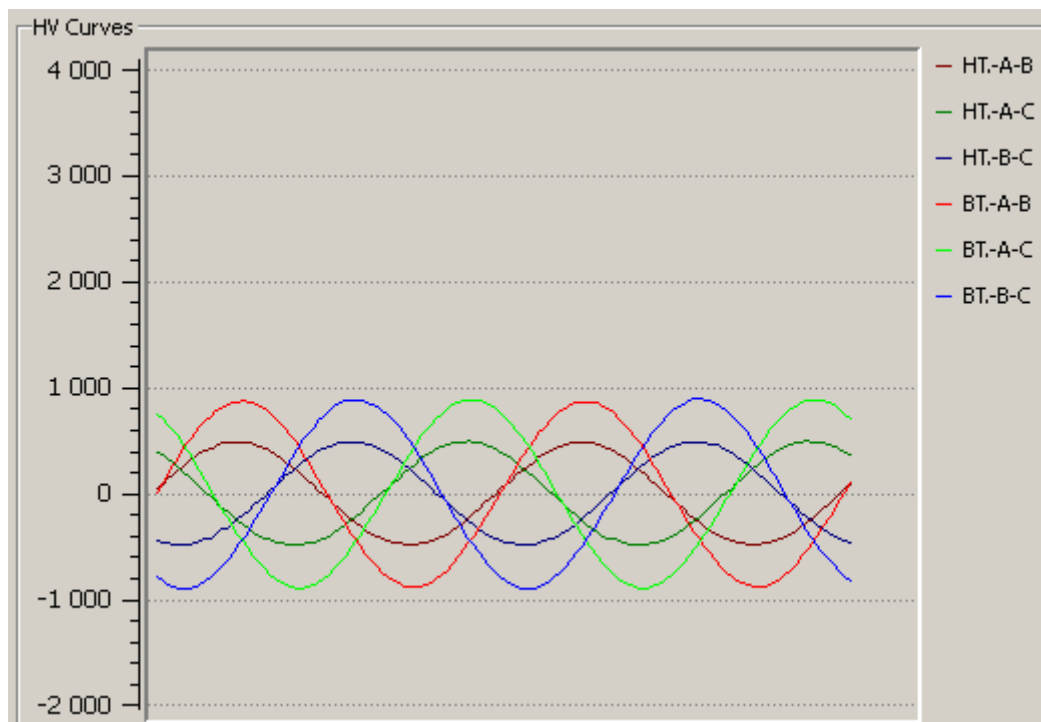
5.7 The comments field

This field recapitulates the **TESTRANSFO2** data and contains some comments :

It is a text field left to the discretion of the user.
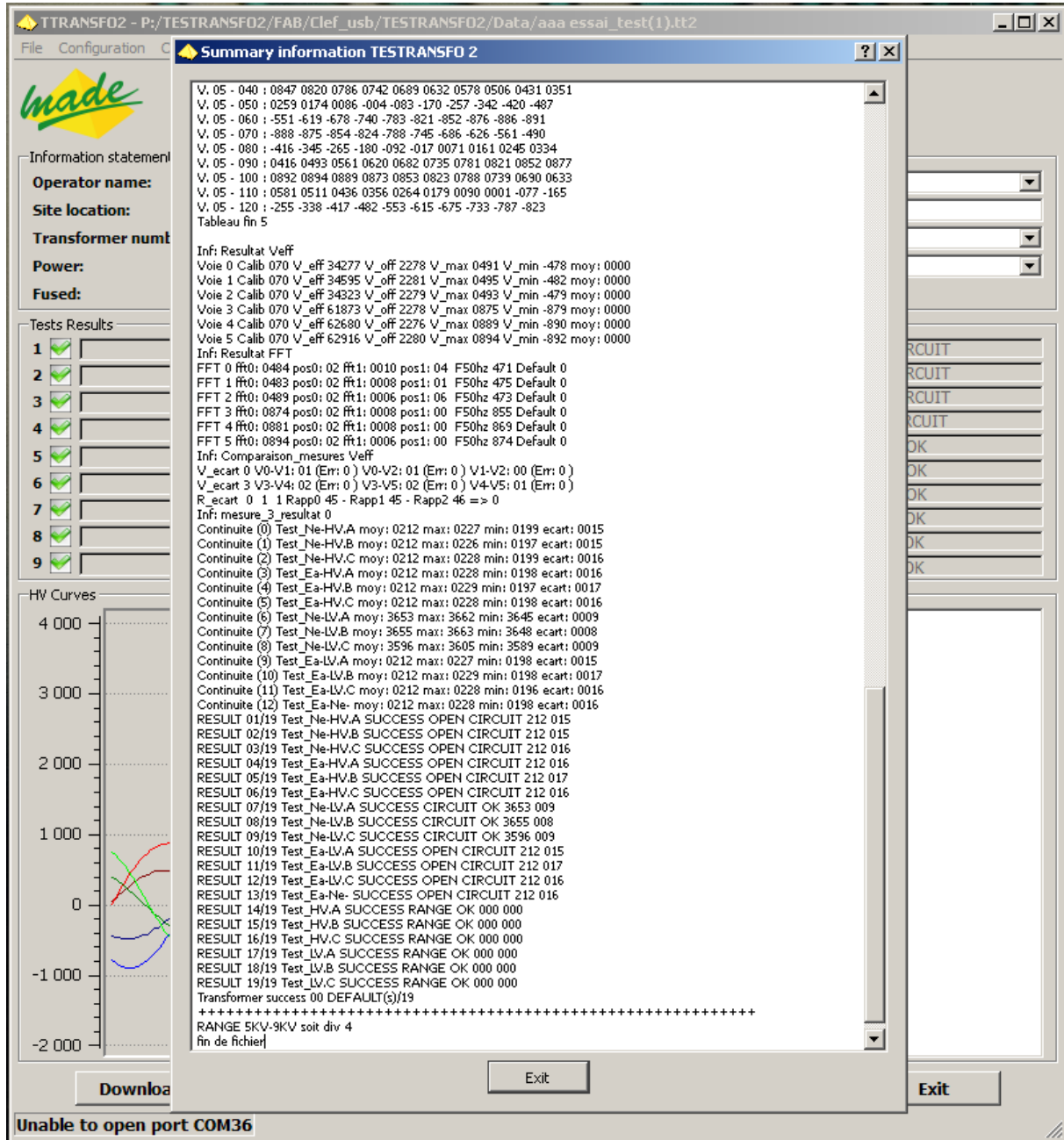

5.8 The « Save » Button

The « Download » button enables saving all of the file in a directory, this can be useful when it is required to add further comments.

5.9 The « INFO » button

The « INFO » button displays a page which summarises the **TESTRANSFO2** data:

5.10 Printing

The « Print » button gives access to system printers to print the page :

Print example
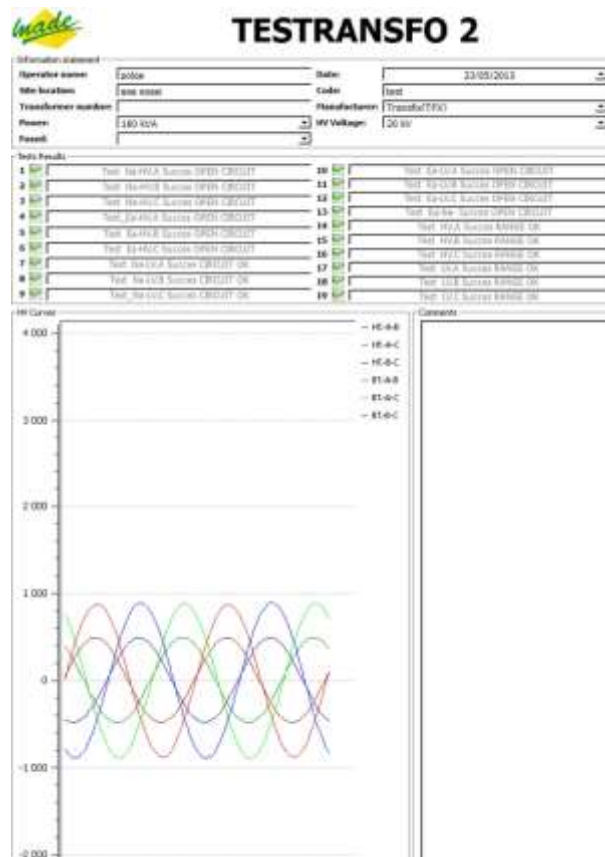
6   **TESTRANSFO2** TECHNICAL CHARACTERISTICS

Power supply	9 volts battery , type LR61
Dimensions	440 x 280 x 320 mm
Composition	Plastic case
Weight	0.3 Kg
Display :	LCD screen 4 lines + led

<u>Standard :</u>   C E
<u>NF EN 50082-1</u> : CEM
<u>NF EN 61010-1</u> : Electric safety.
<u>Protection class :</u> IP 32 – IK 07

CAUTION : Utilization of TESTRANSFO is forbidden with a live transformer.
Disconnect the transformer with all safety procedures required.

7 MAINTENANCE

Opening the TESTRANSFO is not allowed, except by personnel qualified and agreed by MADE.

An annual inspection can be carried out in our workshops

The instrument should only be cleaned with a soft dry cloth.

Never use solvent or a solvent based product , on the instrument or its accessories.

8 RECYCLAGE

In accordance with the decree n° 2005-829 of July 20, 2005 relating to the waste disposal of electrical equipment and electronic (WEEE), the user ensures and takes responsibility for the collection and the elimination of the WEEE under the conditions of the articles 21 and 22 of this decree.

9   GUARANTEE

MADE guarantees this product, to the initial purchaser, against any material or operational fault for one year from the date of delivery, unless otherwise indicated in the product manual. If such a fault is discovered during the guarantee period, MADE can decide to repair or replace the faulty product, excluding transport and handling costs. Any product repared or replaced in the terms of this agreement will only be guaranteed for the remainder of the initial guarantee period of the instrument.

9.1   Limitations

This guarantee does not cover:

• Damage caused by a "cause beyond control", natural disasters, strikes, wars (declared or not), terrorism, social conflicts or any acts under governmental jurisdiction
• Damage due to misuse, to carelessness, to any accident or an unsuitable application or installation
• Damage caused by a repair or an attempted repair not authorized by MADE
• Any product that is not used in accordance with the instructions provided by MADE
• Cost of transport back to MADE
• Cost of transport by express delivery of parts or products under guarantee
• Cost travel for a repair on site under guarantee
This guarantee constitutes the unique explicit guarantee established by MADE for its products. All implied guarantees, including, but not limited to, guarantees on the commercial value of the product and its suitability for a particular use are positively rejected.
The present guarantee confers certain rights : the legislation of the country or jurisdiction can grant others. This guarantee constitutes the final declaration, complete and exclusive, of the terms of the guarantee and no body is allowed to give other guarantees or promises on MADE's account.

9.2   Claims Limitations

Claims having for object repair or replacement are the only allowable claims in case of the breaking of this guarantee. The MADE Company cannot be held responsible, whether on the basis of strict responsibility or any other legal basis, of any incidental or consecutive damage resulting from a violation of the guarantee or from carelessness.

10 COPYRIGHT

11 ANNEXE

11.1 déclaration of conformity CE

déclaration of conformity $C\epsilon$

Déclaration : **CE_TesTransfo2 / 09 / 2013**

The manufacturer:

MADE SA

167, Impasse de la Garrigue
F 83210 LA FARLEDE

Declares the product:

TesTransfo2

Has been designed and manufactured to conform to :

The EU directives and specifications listed

- CEM 2004/108/CE relative au « Marquage CE»
- 2006/95/CE relative à la sécurité des matériels électriques destinés à être employés dans certaines limites de tension.

Standards and / or technical specifications referenced in this manual have been applied and the device referenced above is in conformity with the Directive 2004/104/EC.

In addition, the product described above has been designed, manufactured and tested as part of a Quality Assurance System certified according to EN ISO 9001/2008, by the French Association for Quality Assurance - AFAQ certificate: QUAL / 2005 / the 24473B: 05/05/2011.

Signed at La Farlède, the 3rd September, 2013

Directeur Général	Directeur Technique	Responsable Qualité
Marc Rivasseau	Laurent Zomerg	Jean Yves Creste