Transformer Analyzer

5235/5236/5237

User Manual

1. SAFETY

1.1 General

This equipment has been designed to meet the requirements of EN61010-1 safety requirements for electrical equipment for measurement control & laboratory use ,and has left the factory in a safe condition .

This product is not intended for use in atmospheres that are explosive corrosive or adversely polluted (e.g. containing conductive or excessive dust). This equipment is only used in the manner specified .If it is not used in such a manner the protection provided by the equipment may be leak electricity

If the equipment is damaged, do not use it and have it marked.

Microtest Electronics and the associated sales organizations accept no responsibility for personal or material damage , or for any consequential damage that results from irresponsible or unspecified operation or misuse .

1.2 AC power supply

Power cable and connector requirements vary between countries, always use a cable that conforms to local regulations, terminated in an IEC 320connector at the instrument end .If the plug is fused, a 3-amp fuse should be fitted .If the power cable electrical connection to AC power plug is through screw terminals, then adjusted the rear panel 115v\230v on or off button ensure that is set to voltage of the local AC power supply.

WARNING!

Any interruption of the protective ground conductor inside or outside the equipment or disconnection of the protective ground terminal is likely to make the equipment dangerous intentional interruption is prohibited.

1.3 Adjustment, Maintenance and Repair

WARNING!

The equipment must be disconnected from all voltage sources before it is opened for and adjustment, maintenance or repair.

When the equipment is connected to the local AC power supply internal terminals may be live and the opening of the covers or removal of parts (except those to which access can be gained by hand) is likely to expose live parts. Capacitors inside the equipment many still be charged even if the equipment has been disconnected from all voltage sources.

Any adjustment, maintenance or repair of the opened equipment under voltage must be carried out by skilled person who is aware of the hazards involved service personnel should be trained against unexpected hazards.

1.4 Static electricity

The unit supplied uses static-sensitive devices.

1) The work surface should be a conductive grounded mat
2) Soldering irons must be grounded and tools must be in contact with a conductive surface to ground when not in use.
3) Any person handling static-sensitive parts must wear a wrist strap which provides a leaky path to ground impedance not greater than 1M.
4) Components or circuit board assemblies must be stored in or on conductive foam or mat while work is in progress.

2. INTRODUCTION

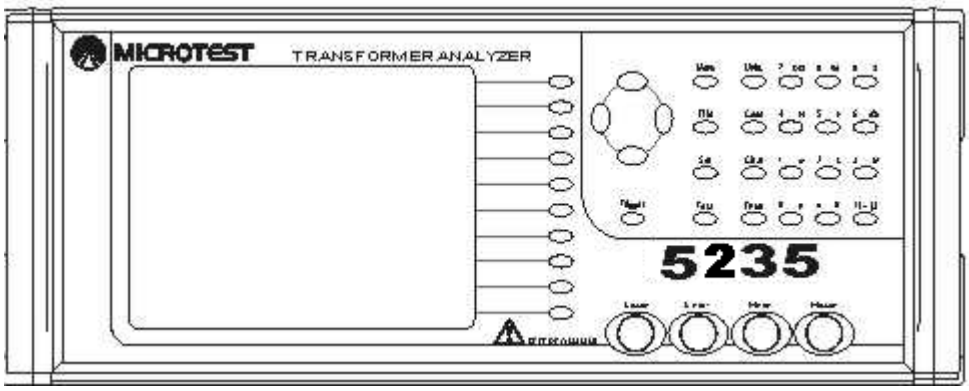


Figure 5235 Transfomer Analyzer

523x series provides 4-terminal comprehensive analyze of transformer, including DC measurement and AC measurement over frequency range 20 Hz to 200kHz/500kHz/1MHz. Impedance measurement are perform at drive level between 10mV to 2V rms, while measuring turns ratio, can be up to 10Vrms

Display and control

- Transformer Fixture Setting
- Winding Mapping and Learning
- Fixture Pin Short Setting
- Fixture Open and Short Correction
- Balance
- Font Selection for Measurement Results
- Automatic measurement function
- Timely Statistics function
- Link to the computer

3. INSTALLATION

3.1 AC line connections

The unit is provided with a power cable capable of carrying the input current for both 115V and 230V operation. This cable should be connected via a suitable connector to the local mains power supply. Terminated in an IEC 320connector at the instrument end, the use must ensure the connective is fine. If the plug is fused, a 3-amp fuse should be fitted .If the power cable electrical connection to AC power plug is through screw terminals, then adjusted the rear panel 115v\230v on or off button ensure that is set to voltage of the local AC power supply.

Accumulator and DC power unsuitable this unit

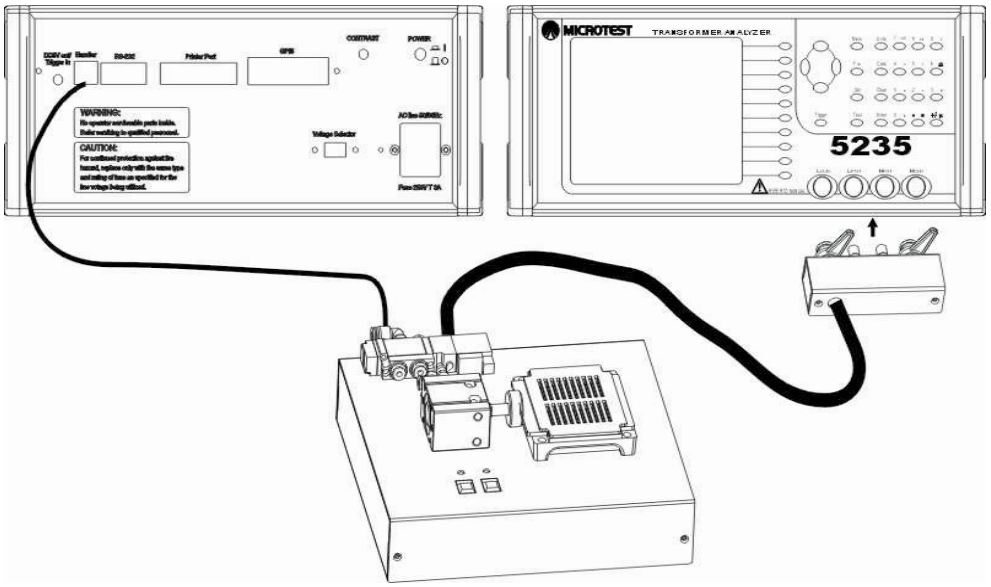
The switch of power and select on rear panel

3.2 Accessories

523x can be used with any Microtest Electronics leads or fixtures, only use qualified accessories to ensure accuracy of measurement.

Auto Scanning BOX model F5220, Part No. 5235-J1

3.3 Measurement connection



4. OPERATION

WARNING!

This equipment is intended for use by suitably trained and competent persons.

This product can cause hazard if it is not used in accordance with these instructions (connective ground or touch the part component unmoral)Read them carefully and follow them in all respects .Double check connections to the unit and accessories before use.

Do not use this equipment if it damaged

4.1 THE REAR PANEL

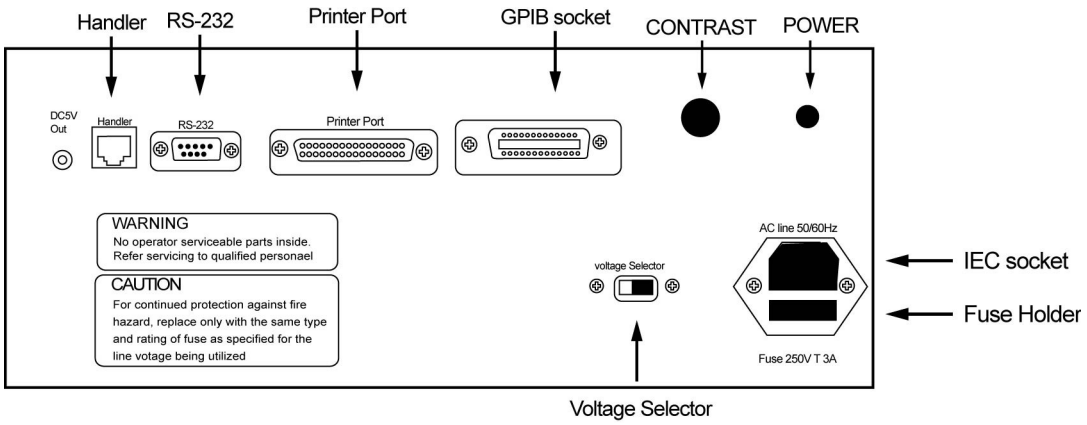


Figure The5235 Series Rear Panel

4.1.1 Voltage Selector

The instrument can be operated from an AC power source of either 115V or 230V. Before applying AC power to the IEC socket, ensure that the voltage selector is set to the voltage of the local AC power supply.

4.1.2 IEC Socket and FUSE Holder

Please read section 1.2 - AC Power supply before connecting the IEC socket to the AC power source.

4.1.3 Rear panel control connections

Label	Type	Use	Reference
GPIB	Standard GPIB	For remote operation.	Sections 4.1.6 and 6
DC 5V out	Stereo phone jack	1. Duplicates action of front panel trigger key. 2. DC 5V output	Section 4.1.4
RS-232	9-way D-type (male)	Reserved	
PRINTER Port	25-way D-type (female)	Reserved	
Handler	RJ45 connector	OPTIONAL - to interface to PASS /FAIL signal	

4.1.4 DC 5V Out

4.1.4.1 External Trigger (A-B)

Function same as front panel control,use TTL compatible singnal. While connected to low level, function as Trigger.

4.1.4.2 DC 5V Output (A-C)

DC 5V output terminal is designed for user to output DC, the terminal supply DC 5V with maximum current of 1.5A .

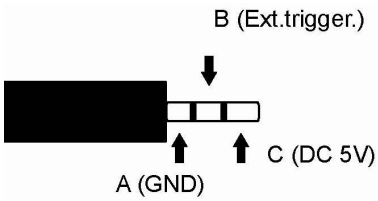


Figure 4-2 the contact assignment of the phone jack

4.1.5 GPIB Connector

The instrument supplied with GPIB interface, which allows easy connection between instrument and PC for fast and remote controlled measurement.

4.1.5.1 GPIB connector Pin Assignment

Pin	Description	Pin	Description
1	Data Line 1	13	Data Line 5
2	Data Line 2	14	Data Line 6
3	Data Line 3	15	Data Line 7
4	Data Line 4	16	Data Line 8
5	EOI (End or Identify)	17	REN (Remote Enable)
6	DAV (Data Valid)	18	Ground
7	NRFD (Not Ready For Data)	19	Ground
8	NDAC (Not Data Accepted)	20	Ground
9	IFC (Interface Clear)	21	Ground
10	SRQ (Service Request)	22	Ground
11	ATN (Attention)	23	Ground
12	Screen	24	Signal Ground

4.1.6 Switch the instrument on

Press the **POWER** switch located on the rear panel, the instrument model will display and then the instrument will display the mode and settings when the instrument was last switched off.

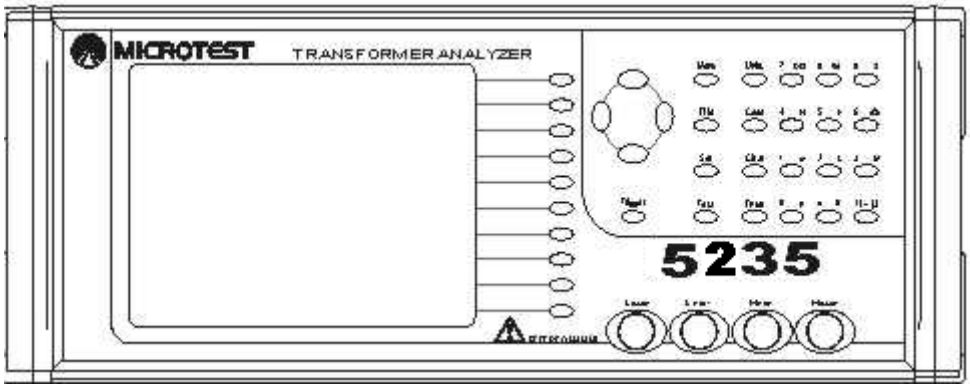
If the display is too bright or too dark, use the **CONTRAST** control on the rear panel to set the contrast level.

To return to the **MAIN MANU** press the **Menu** control key.

4.1.7 Switch the instrument off

The power can be switched **OFF** at any time without damage to the instrument, but to avoid losing trim and calibration data, the instrument should be switched **OFF** when it is in a quiescent state rather than when is running a routine, e.g. trimming, calibration.

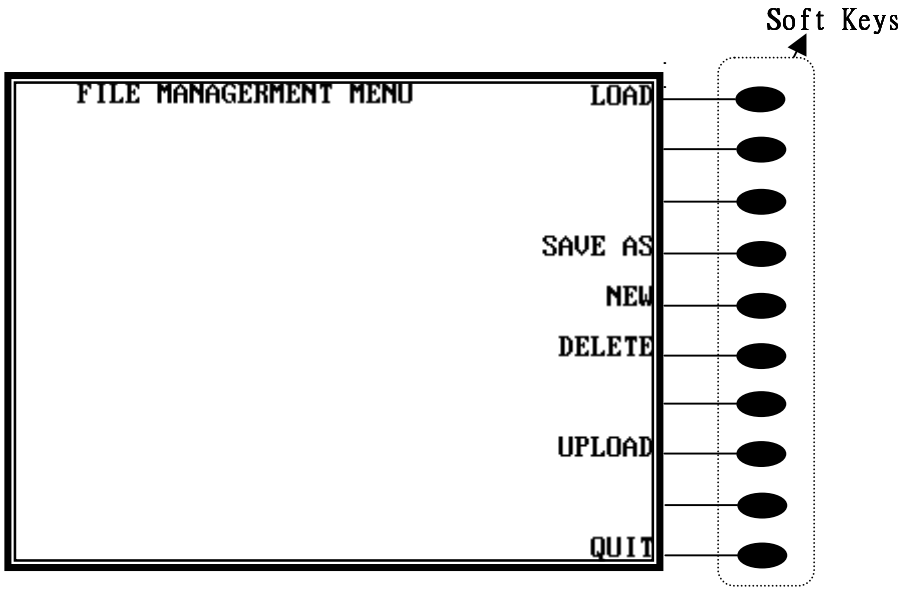
4.2 The front panel



The 5235 Series Front Panel

4.2.1 The Soft Keys

523x series instrument has 10 soft keys, the functions of the soft keys change according to the mode selected, soft keys are located on the right side of display, used to select corresponding function on the display.



Soft Keys

4.2.2 The Navigation Keys

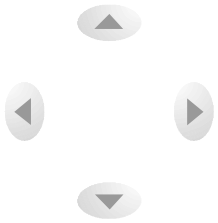


Figure The Navigation Keys

Press the to set parameter on screen, press the to set Comp.

4.2.3The control keys

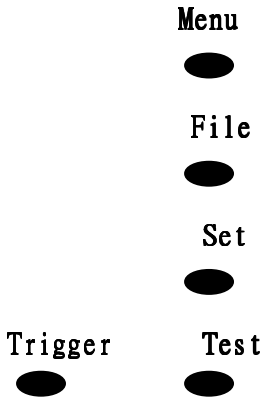
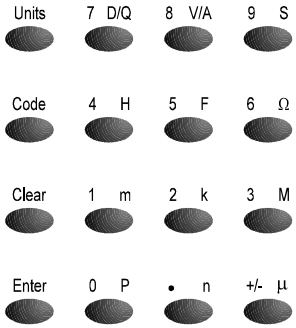


Figure The Control Keys

4.2.4 The Data Entry Keypad



e Data Entry Keypad

The Data Entry Keypad is a multifunction key set permitting manual entry of data values, measurement units and control codes,

The Units key must be used prior to keying a unit. Where more than one unit is available on a key, e.g. D/Q or V/A, pressing the key will display the first unit, press the key again will display the second unit. Terminate the units mode with **Enter** to accept the key sequence.

An invalid keypad entry may cause the entry line to be cleared and an error message as shown in Figure below, in which case the existing settings will be preserved.

Units mismatched

The **+/-** key may be used before or after a value to change its sign. Keep pressing the key will toggle the value between positive and negative, For numbers which are positive only, the key is disbled.

4.2.5 Keypad Codes

A number of special functions are available by press **Code** followed by a valid code number and terminated with **Enter.** The code

4.2.6 System

```
      Transformer Analyzer 5237
   Ver 1.10 Oct 01 2005, 1MHz 20-CH

Line frequency   : 50Hz              Prog
Beep             : OFF
Trigger mode     : Single

Trigger delay    : 0   mS
Display test data: All steps
Display font     : Small
Inverse LCD      : No
Print test data  : By key
Upload test data : No
Lock edit key    : No

                                     EXIT
```

Table 1

Press **Menu**, menu display on the screen, press **System** to enter system set up, use ▲ ▼ to shift the items.

1) **Line frequency:** **50Hz** or **60Hz**

2) **Beep:** Use ◀ ▶ to choose test success beep, failure beep or mute.

3) **Trigger mode:**

a. Single: single trigger single test。

b. Repebtive: single trigger repeptive test

4) **Trigger delay:** Trigger time

5) **Display test data:** Display test result. Can chose to display All steps or Fail steps only

6) **Display font:** Display font size

7) **Inverse LCD:** LCD back light

8) **Print test data:** Automatic print of test result, or press the print key for printing.

9) **Upload test data:** pass the test result to computer via RS-232 (Figure 2)

RS-232:

a. Tester ID number:

b. Baud rate:

c. Character length:

d. Stop bits:

e. Parity:

f. Terminator:

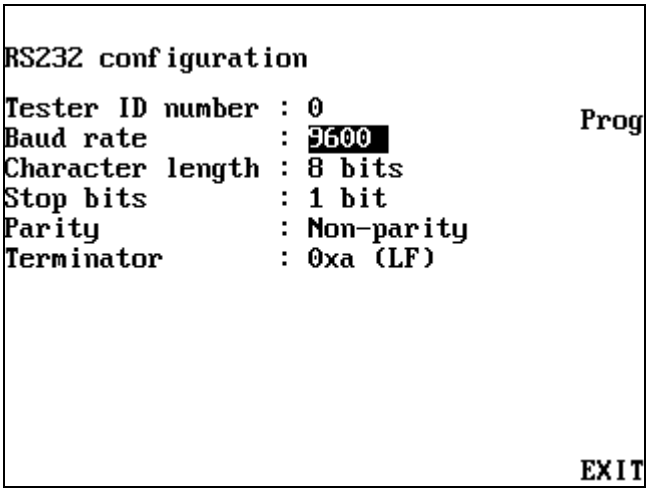
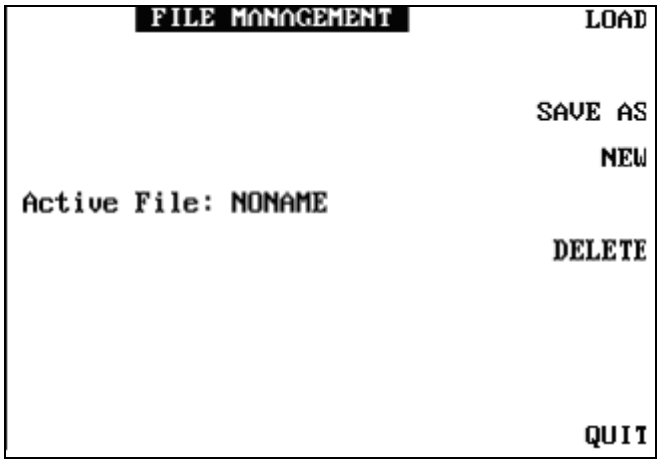


Figure 2

4.3 File Catalogue



1) **LOAD:** Load saved file
2) **SAVE AS:** Save as new file
3) **NEW:** Set up new file
4) **DELETE:** Delete file
5) **QUIT:** Return to the previous display

4.4 Transformer, Fixture Test Set

Switch the instrument on. Connect leads or fixture to BNC connectors on front panel. Every time while there is lead or fixture change, make correction according to

Following are the practice order of measurement

4.4.1 WINDING/FIXTURE

1) Press the **Set** key, **the menu will display**

2) Press the soft key **FIXTURE** to enter measurement mode, set the transformer Pin to corresponding fixture channel。(Figure 1)

3) Mapping: Use the Mapping to set channels automatically, it can also be set manually.

4) Clear: clear current setting。

5) Clear all: clear all current settings。

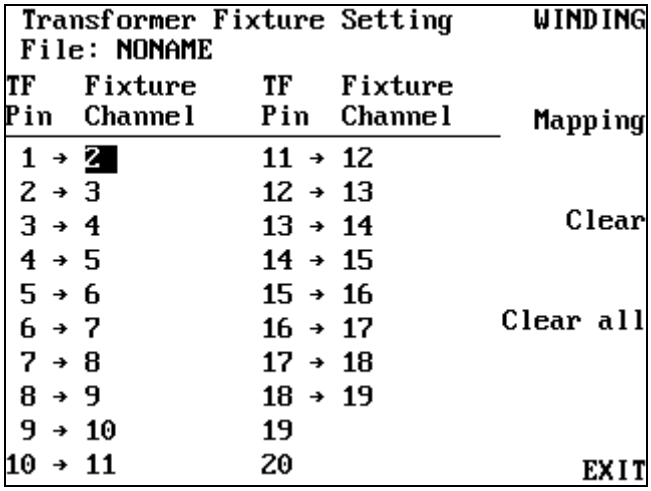


Figure 1

6) Press **WINDING** key to enter winding setting。(Figure 2)

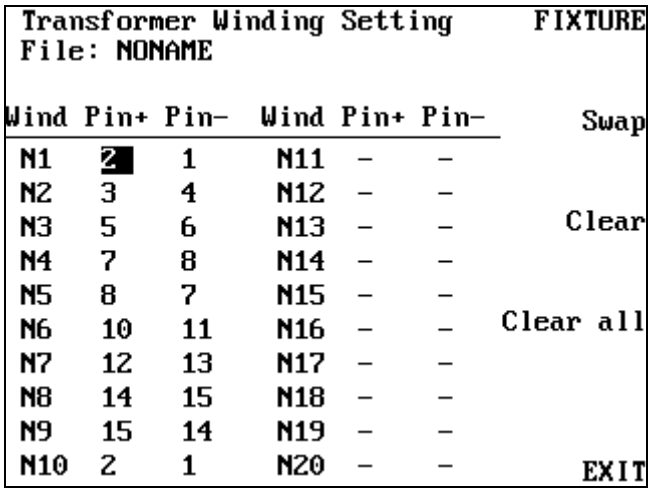


Figure 2

7) Clear: single clear

8) Clear all: to clear all settings

9) Exit: return to main menu

4.4.2 L/LK/Q/Rac/Z/D/Ø/X/Y measurement parameters

Press **L/LK/Q/Rac/Z/D/Ø/X/Y** on the main menu to enter setup menu (Figure 1)

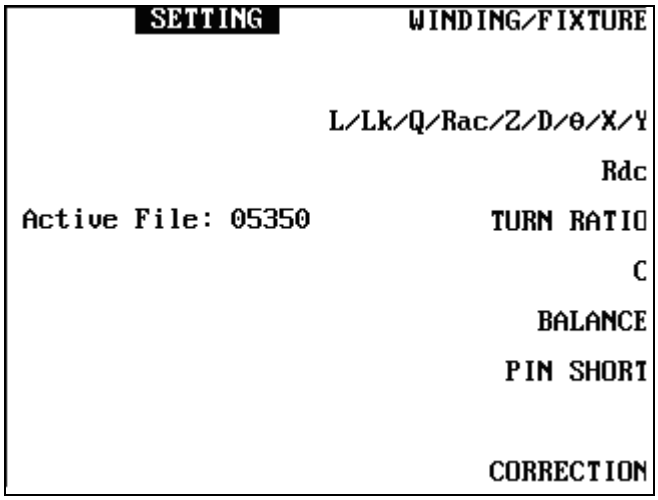


Figure 1

1) Set wind:

1 **Wind:** to set winding to be tested (Figure 2)

2 **Meas:** start measurement

3 **Copy:** copy previous setting

4 **Delete:** delete current settings

5 **PIN SHORT:** fixture relay short setting, press **Short** key to set up

6 **%:** Set the maximum and minimum values

7 **Exit:** return to main menu

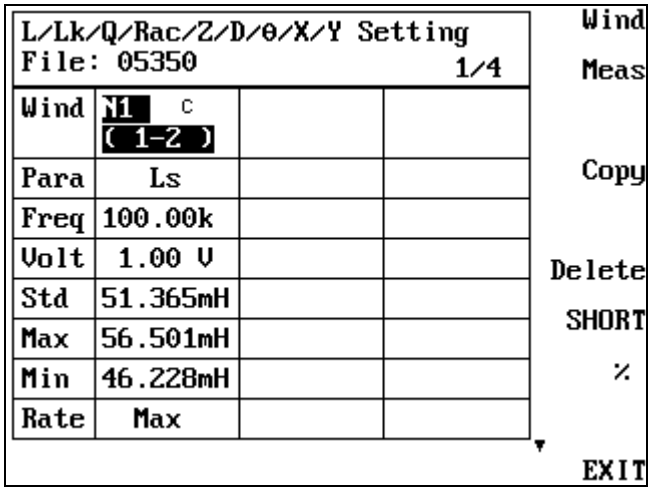


Figure 2

2) Para: to select the parameters, press **Para** to select parameter to be tested (Figure 3)

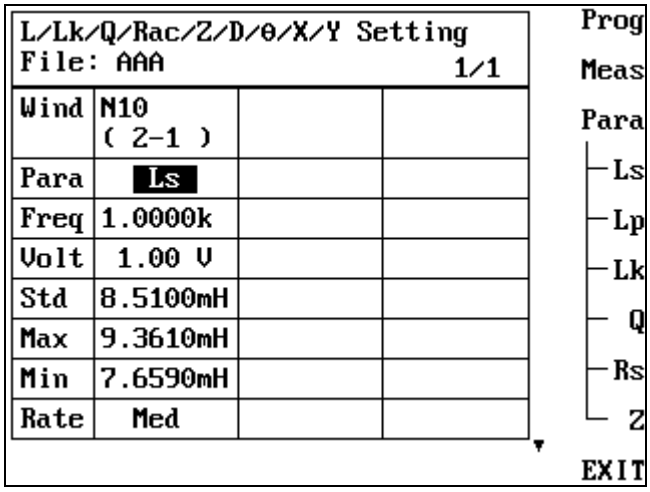


Figure 3

3) Freq: measurement frequency,

Ranges: 5235: 20Hz~200KHz ; 5236:20Hz~500KHz ; 5237:20Hz~1MHz。(Figure 4)

4) Volt: set voltage : 10mV~2V。

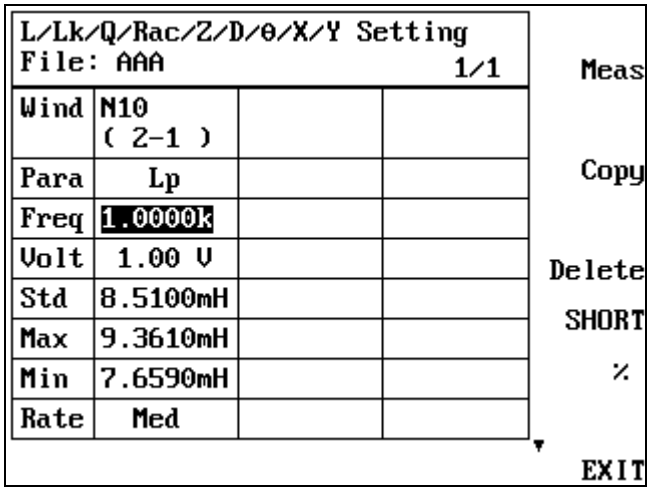


Figure 4

5) Std: setup standard values, press **Meas** key to start measurement, press **Accept** to accept the value (figure 5)

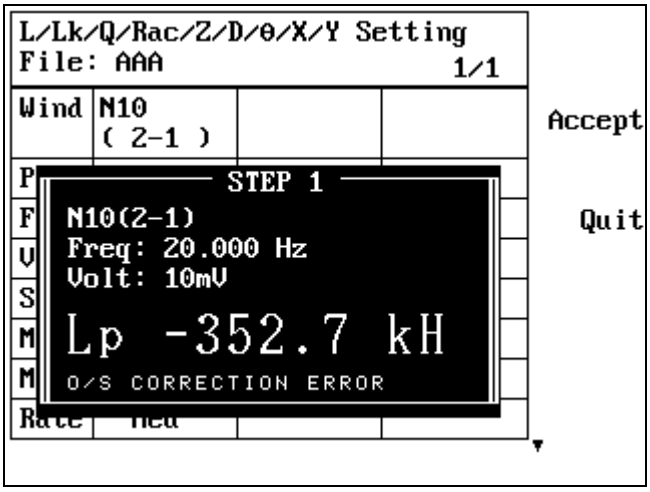


Figure 5

6) **Max:** to set Maximum value **Min:** to set Minimum value, press key **%** to setup (Figure 6)

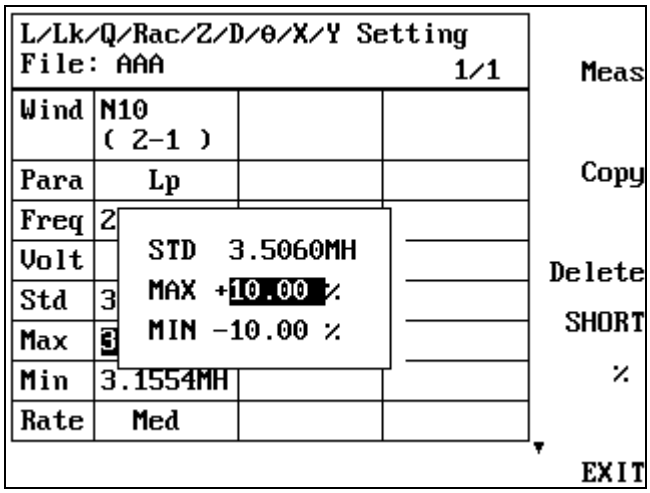


Figure 6

4.4.3 DCR

1) **Wind:** to set winding to be tested
2) **Meas:** start measurement
3) **Copy:** copy previous setting
4) **Delete:** delete setting
5) **%:** Set the maximum and minimum values
6) **Exit:** return to main menu
7) **Std:** setup standard values, press **Meas** key to start measurement, press **Accept** to accept the value
8) **Max:** to set Maximum value **Min:** to set Minimum value, press key **%** to setup
9) **Rate:** setup measurement speed rate
10) **Dly:** set delay time

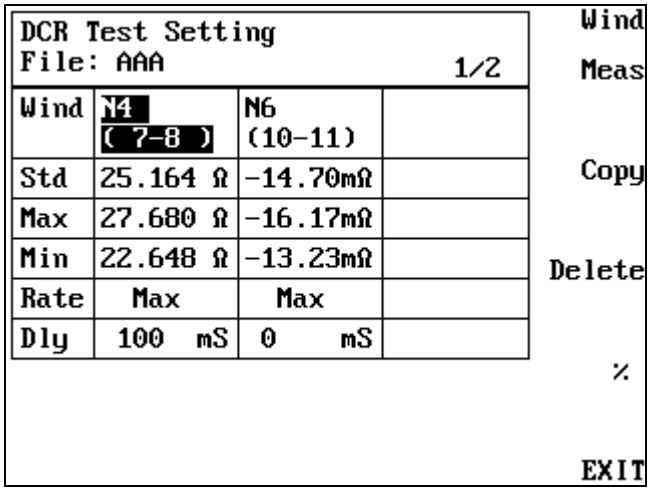


Figure 1

4.4.4 TURN RATIO

1) **WIND:** to set winding to be tested (FIGURE 1)
2) **Meas:** start measurement
3) **Copy:** copy previous setting
4) **Delete:** delete setting
5) **%:** Set the maximum and minimum standard value
6) **Exit:** exit setup menu

7) **Pri:** setup primary winding, press **Wind** to select
8) **Sec:** setup secondary winding
9) **Freq:** measurement frequency 5235:20Hz~200KHz; 5236:20Hz~500KHz; 5237:20Hz~1MHz。
10) **Volt:** set voltage : 10mV~2V。
11) **Std:** setup standard values, press **Meas** key to start measurement, press **Accept** to accept the value
12) **Max:** to set Maximum value **Min:** to set Minimum value, press key **%** to setup

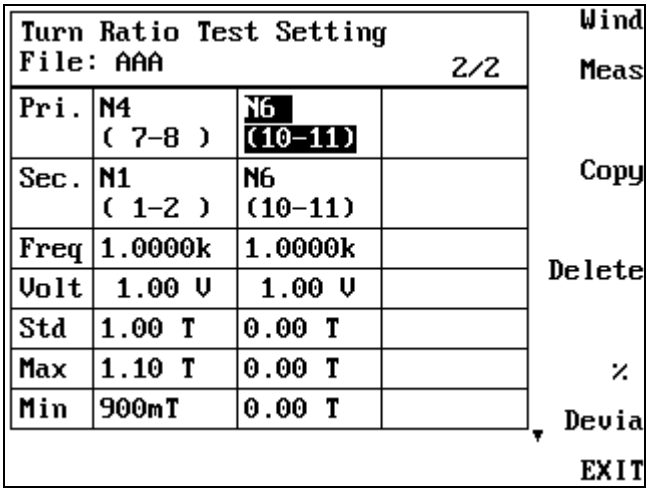


Figure 1

4.4.5 C lose capacitance measurement item

Press **C** to enter (figure 1)

1) **Meas**: start masurement
2) **Copy**: copy previous setting
3) **Delete**: delete setting
4) **%**: Set the maximum and minimum standard value
5) **Exit**: exit this menu
6) **Pin+**: Define the transformer pin as pin+
7) **Pin-**: Define the transformer pin as pin-
8) **Freq** : test Frequency 5235:20Hz~200KHz ; 5236:20Hz~500KHz ; 5237:20Hz~1MHz。
9) **Volt**: set voltage: 10Mv~2v。
10) **Std**: setup standard values, press **Meas** key to start measurement, press **Accept** to accept the value
11) **Max**: to set Maximum value **Min**: to set Minimum value, press key **%** to setup
12) **Rate**: setup measurement speed rate
13) **Dly**: setup delay time

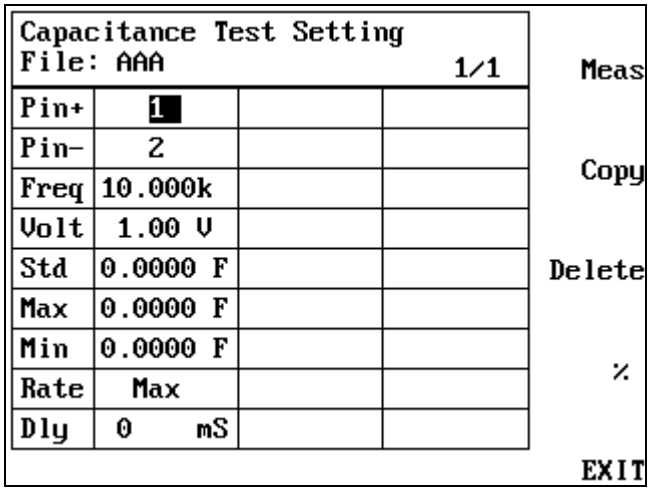
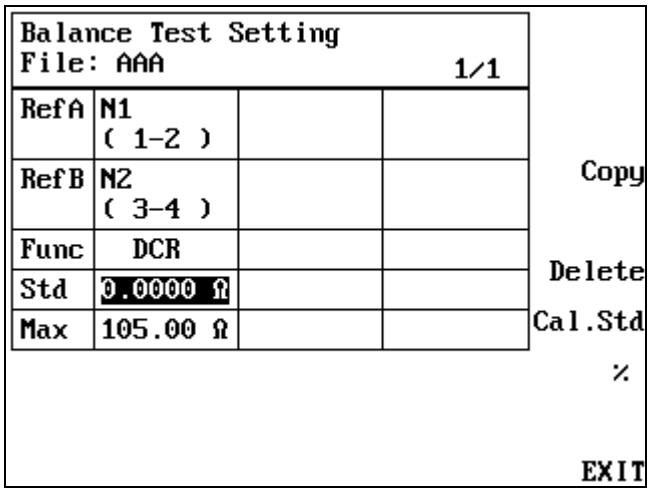


Figure 1

※enter pin+ display other function

4.4.6 BALANCE



1) **RefA:** Reference winding A

2) **RefB:** Reference winding B

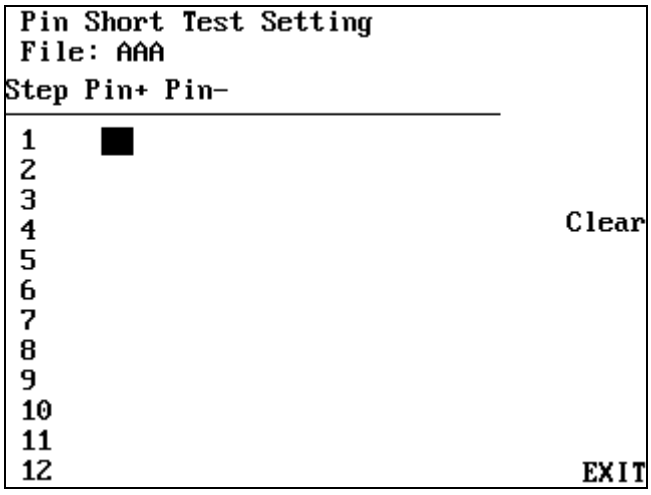
3) **Func:** Comparatively item

4) **Std:** Set standard value

5) **Max:** Set the maximum standard value

4.4.7 PIN SHORT

Pin short test setting

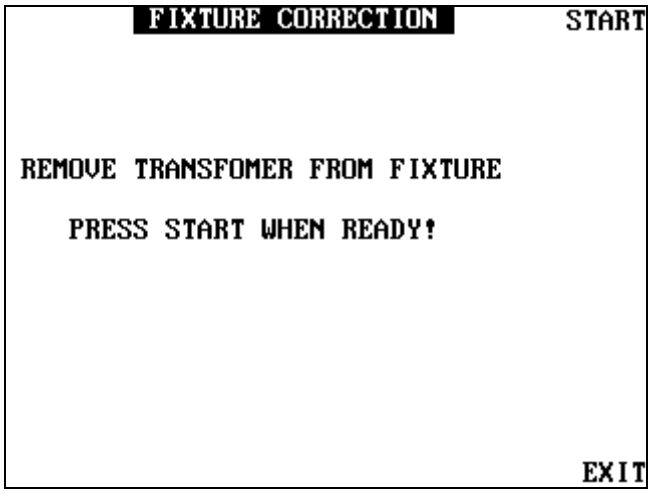


4.4.8 CORRECTION

The purpose of correction is to eliminate the effects of stray capacitance or series impedance in the connecting leads or fixtures.

The correction values are held in non-volatile memory within the instrument, and will not be lost even after switching the instrument off. To ensure accuracy of measurement, frequent correction is recommended. While drive level or test frequency changed, a correction is a must. (Please remove the transformer from the fixture before performing of correction)

Connect test fixture of WK5220 transformer, press START to start correction. (Manual test fixture must be pushed entirly)



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