TH2818XB

OPERATION MANUAL

☞: **You should read manual operation of TH2818/19 carefully before you use the instrument.**

▶: **SCANNER interface is strictly prohibited to insert and pull when the instrument is power on ，and notice direction of interface.**

1 Introduction

1.1 Product introduction

TH1801 Transformer scanning box must be used by assembled with TH2818XA/XB automatic components tester series products that are manufactured by our company. TH2818XA/XB-20 channel Transformer automatic testing system is formed with TH1801 Transformer scanning box and TH2818XA/XB automatic components tester together. Problems caused manual efficiency and qualities of product are resolved by TH2818XA/XB.At the same time, TH2818XA/XB provides testing items included such as, Inductance Lx, Leakage inductance LK, Quality Q, Turn, Phase, Capacitance Cx, DC impedance DCR, AC impedance ACR, Impedance Zx, Dc impedance balance DCR-BALANCE, Short test　PIN-SHORT and Current bias DCI-BASIC, and so on.

Notice: User may use LCRZ function of TH2818XA/XB automatic Transformer testing system by referring to manual description of TH2818/2819, and test function of TH2818XA/XB Transformer and simple operation are introduced mainly in this manual description.

Test function of TH2818XA/XB Transformer included automatic conversion for Pins of Transformer and fixture, automatic test setup time, multi-group primary testing, multi-group leakage inductance testing, testing value bias compensation, count to testing results of better product and inferior product , saving test parameter and calling function, repeat testing setup inferior product.

1.2 Considerations

- It is necessary to make cable connect correctly before using TH1801.
- TH1801L 6-terminals fixture box is connected to corresponding testing terminals on the front panel of the host, and perform unlocking.
- SCANNER socket on the rear panel of TH1801 and SCANNER socket on the rear panel of TH2818XA/XB are connected by cable with 36 PINS double connector(TH26016 Transformer test control cable).
  Notice: the control cable is strictly prohibited to pull or insert when the instrument is power on, at the same time, you should care for direction of the cable.
- If user need foot switch, the switch should be connected to FOOT C on the rear panel of TH1801.
  Notice: START key front the panel of TH1801 is disenable, and only foot switch is enable, after foot switch is closed.

2 Panel description

2.1 Up panel frame map

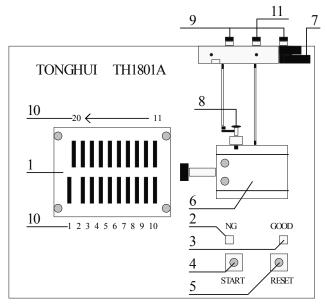Up panel frame map is described as figure 2-1

Figure 2-1

2.2 Up panel description

1. Transformer Test Fixture: This fixture can be exchanged.

2. NG indicating light: bad products indicating; the light is lighted when one or more items within the testing results which are not proper with setup.

3. GOOD indicating light: better products indicating; the light is lighted when one or more items within the testing results which are proper with setup.

4.START: testing control key; Press the key to perform testing.

5.RESET: reset control key; Press the key to end testing and return to preliminary testing status.

6. Cylinder： The main power to impel the TH1801A test fixture;But impels TH1801B is the manual throwout lever

7. Air valve controller (solenoid valve)： In order to control the TH1801A test fixture to impel the controllingswitch which the air cylinder turnover was mad,Uses the power

source is DC24V. (Note:Please adds a filtered water installment in front of the air valve airintake port by to enhance the air cylinder and the air valve life.)But TH1801B test fixture not this controller.

8. Velocity modulation knob：This knob for adjusts the speed which the air cylinder advances,May make the cushion to prevent the vibration slightly,But the time cannot excessively be long. In the plastic screw movestightly when then the speed slows down,Otherwise then changes quickly,But exterior the made of iron screw for fixedly uses. (TH1801B notthis knob)

9. Damper：This knob mainly is uses in the deafen and dustproof (TH1801B not this knob)

10. Fixture foot position sign,Like attempts the 1~20 expression correspondence fixture foot position is1~20. This flag bit is but supposes for the convenience user operation.

11. Trachea import：This import holds together the pipe fatigue for outside (TH1801B not this import)

2.3 Rear panel **frame map**
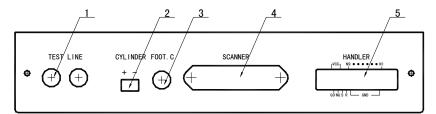
Rear panel frame map is described as figure 2-3

Figure   2-3

2.4 Rear panel description

1. **TEST LINE:** Test line input port
2. **CYLINDER:** 24V DC voltage input which provide for working voltage of electromagnetic valve.
3. **FOOT C:** Foot switch inserting port which is applied to connect foot switch.
4. **SCANNER:** Signal control port, control cable of TH26016 is connected to SCANNER port on the rear panel of TH2818XA/XB. TH1801L 6-terminals is connected interior of TH1801.
5. **HANDLER:** HANDLER interface. The port description refer to sub section 2.3.

2.5 HANDLER port description

Pins of HANDLER port is described as figure 2-4-1

Figure 2-4-1

Pins of HANDLER port is described and usage as figure 2-4-2

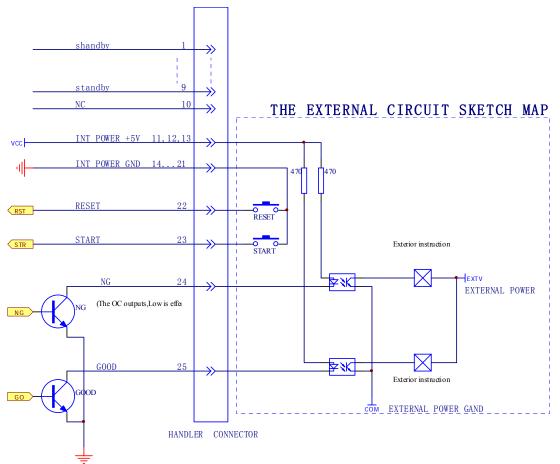
Figure 2-4-2

Attached information: There is a pinhole on the left side panel of TH1801, where there is a adjustable resistor applied to adjust volume of beeper alarm.

Notice: The fixture of the instrument is used very often, so user should often take good care of the instrument in order to ensure veracity of measuring.

3 Operation description

It is necessary firstly to introduce using operation procedure in order to make user familiar with outline of TH2818XA/XB Transformer scanning test function.

3.1 Transformer scanning test procedure

1. Press **[TRANS]** key on the host panel of TH2818XA/XB to enter into(Transformer test) menu included 2 group function which respectively is single test and scanning test of Transformer. Single test may be refer to manual description of TH2818/2819.
2. Press **[scan test]** corresponding soft-key to enter into function menu of Transformer scanning test function menu.
3. Transformer under test is fixed to TH1801 test fixture, and connected to test terminals and control line to wait for test.
4. Here, TH2818XA/XB LCD will display (Transformer ID)menu, that is to say, it is menu of setup Transformer number.
5. Press **(Transformer ID)**menu screen soft-key area and enter into(Transformer PIN SET)menu which perform conversion between primary/secondary Pins of Transformer, Pins of Transformer and Pins of test fixture.
6. Press soft-key area corresponding soft-key**[test condi.]** to enter into (test condition)setup menu
7. Press **[Scan meas]** sub-menu under **<Test condition>** top menu to enter into Transformer scanning measuring menu after user have achieved setup testing conditions requested. Then menu is applied to show measuring results of Transformer' parameters, and distinguish whether the product is up to grade or not, at the same time, it will perform bias calibration and nominal value load, etc.
8. Press **[Stat.]** sub-menu under **<Transformer ID>** top menu to enter into **<Scan test: STAT.>**function menu. The menu is mainly applied to count measuring times of Transformer' parameter and good or inferior product. At the same time, the menu finish checking and measuring during batch testing. That is do say, user can get counter of Transformer from the menu, Totals of better or inferior product
9. Press **[TRANS]** key on the front panel of host to return to **<Transformer ID>**page layout. Enter into **[File]** function item to save all setup of the current Transformer so that it is called next time.

3.2 Transformer scanning setup and measuring

In this manual, tell user how to operate the instrument TH2818XA/XB by detailed example in order to make user understand easily, etc.

Note: During perform Transformer scanning test, because o denote clear function, it is possible to use 0 when setup limit is operated, please replace with 0.001p or less value.

3.2.1 Enter into Transformer test paper layout

- Connect whole sets of Transformer test system refer to considerations of section 2.1
- Transformer under test is installed on the proper Pins of TH1801 test fixture.
- Press **[TRANS]** key on the front panel of host to enter into **<Transformer test>**, refer to figure 3-2-1.

Figure 3-2-1

- Press corresponding soft-key in the soft-key area to enter into **<Transformer ID>** menu face as showed figure3-2-2-1.（Transformer single test has been introduced in the manual of TH2818/19, please refer to manual description of TH2818/19 if you need.

3.2.2 Transformer ID page layout

<Transformer ID> page layout include parameter:：Transformer ID, primary，secondary, auto-test time , Whole Judgment, Reset Number, DCR test delay, current bias delay, Test For … , Face setup for parameter to be saved and called up, etc.

<Transformer ID> page layout is showed as figure 3-2-2-1

Figure 3-2-2-1

8

Description to above figure 3-2-2-1 as following:

- **Transformer ID:_____** input Transformer ID in this position(Transformer parameter will be saved based on the ID).
- **Primary:_____** input primary groups amount of Transformer in this position.
  Rang covers 1-10.
- **Secondary:_____** input secondary groups amount of Transformer in this position.
  Rang covers 1-9.
- **Auto-test Time:_____** input automatic continuously time interval.
  Notes:（s /10）denote 1/10 secondary, it is the same as the following.
- **Whole Judgment:_____** the whole judgment display switch.
  ON：denote open judgment display; **OFF:** denote close judgment display.
- **Reset Number:_____ ORDER** the test time of the failure production.
  Range covers 0~9.
- **DCR Test Delay:_____** setup DC resistance test delay.
  Test range: 0~99；0 denote have no delay.
  Notes:（* 10ms）is delay double rates, for example, it denote 20ms when 2 is inputted.
- **Cur BIAS Delay:_____** add current bias test delay setup.
  Delay time range: 0~99；0 denote have no delay.
  Notes:（* 10ms）is delay double rates, for example, it denote 20ms when 2 is inputted.
- **TEST FOR … :_____** measuring switch is applied to weather or not perform measuring if nominal value of parameters under test are not set.
  ON：only setup Pins of windings resistance, and perform measuring to the parameter under test of the windings resistance.
  OFF(Default setup): It denote setup Pins of windings resistance, but not setup the nominal value of parameter under test, so do not perform measuring to the parameter during test procedure.
- **Trig Delay:_____** setup Transformer scanning test trigger measuring delay time.
  Range: 0~99；0 denote have no delay.
  Notes:（* 10ms）is delay double rates
- **WHEN TEST FAIL:_____** weather or not perform test setup after setup test FAIL.
  Continue ： continue test.
  Stop ： halt test.
  Furthermore, **[Tools]** function item under **<Transformer ID>**menu included **[BOX TEST]** and**[CLEAR RAM]**.
  Operation as following:

- In **<Transformer ID>**menu, move reverse white light strip to "TOOLS"
- Press**[BOX TEST]** corresponding soft-key to display Scan/exit on the soft-key area, at the same time, the instrument perform all delays of checking scanning box which is normal working or not; Only press **[exit]** soft-key in the soft-key area if self-check is not requested. Otherwise, self-check can be performed to single delay by pressing up and down direction key on the panel
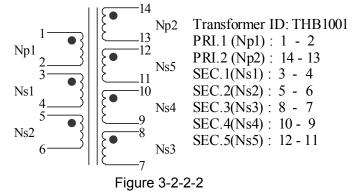
of host.(**Note:** do not using this the function in generally).

■ Press**[Clear RAM]**: all page layout of setup under **<SCAN TEST>** are cleared, and return to default setup.

Notes: [Files]function is not description in the manual, User may refer to manual operation of TH2818/19

10 groups scanning test files are only saved in TH2818XA/XB-48CH, and the others files is saved into external memory.

In order to tell user how to operate easily, by examples to explain how to setup and operate the instrument,. Example of Transformer is showed as following figure 3-2-2-2.

Transformer ID: THB1001
PRI.1 (Np1) : 1 - 2
PRI.2 (Np2) : 14 - 13
SEC.1(Ns1) : 3 - 4
SEC.2(Ns2) : 5 - 6
SEC.3(Ns3) : 8 - 7
SEC.4(Ns4) : 10 - 9
SEC.5(Ns5) : 12 - 11

Figure 3-2-2-2

〈**Transformer ID**〉 **page layout setup operation as following:**

● Firstly, enter into **<Transformer ID>** menu.
● Press direction key on the **<Transformer ID>** page layout to make reverse white light strip move to **[Transformer ID:_____]** position, and choose THB on the right side soft-key area of screen, press **[MORE 1/7~7/7]** soft-key on the soft-key area to enter into next character string option for letter desired if letter is not exist on the current page layout, in succession input 1001 by digital key on the panel, in the end, press **[ENTER]** key to acknowledge.
● Move down reverse white light strip to**[PRI:_____SET(S)]**position, input 2, then press **[ENTER]** to acknowledge.
● Move down reverse white light strip to**[SEC:_____SET(S)]**position, input 5, then press **[ENTER]** to acknowledge.
● Move down reverse white light strip to**[Whole Judgment:_OFF]**position, select ON perform holistic distinguishing display; others parameter hold origin value.
● Press **[PIN SET]**soft-key in the soft-key area to enter into **<Transformer Pin set>**page layout.
Operations are finished by refer to above steps, **<Transformer ID>**page layout is showed as following figure 3-2-2-3.
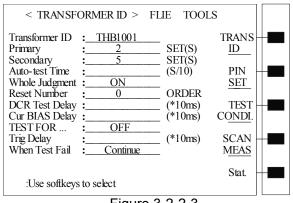
```
< TRANSFORMER ID >   FLIE   TOOLS

Transformer ID  :   THB1001              TRANS
Primary         :      2         SET(S)    ID
Secondary       :      5         SET(S)
Auto-test Time  :                (S/10)   PIN
Whole Judgment  :     ON                  SET
Reset Number    :      0         ORDER
DCR Test Delay  :                (*10ms)  TEST
Cur BIAS Delay  :                (*10ms)  CONDI.
TEST FOR ...    :     OFF
Trig Delay      :                (*10ms)  SCAN
When Test Fail  :   Continue              MEAS

                                          Stat.
   :Use softkeys to select
```

Figure 3-2-2-3

3.2.3 Transformer Pin set page layout

Press **< Pin set>** soft-key to enter into **< Transformer Pin set >** page layout.

The function is mainly applied to set Pins of Transformer under test and corresponding fixture pins; At the same time, the face include series SH pin, append SH pin and primary group switch function. Please refer to figure 3-2-3-1

```
< TRANSFORMER PIN SET >

PRI: 1  | TRANSFORMER | FIXTURE         Series
PHASING |   +    -    |  +    -         SH PIN
PRIMARY |            |
SEC.1   |            |                  Append
SEC.2   |            |                  SH PIN
SEC.3   |            |
SEC.4   |            |                  PIN TO
SEC.5   |            |                  FIXTURE
SEC.6   |            |
SEC.7   |            |                  PRI:1
SEC.8   |            |
SEC.9   |            |                  TEST
   :Enter value or select               CONDI.
```

Figure 3-2-3-1

Introduce all parameter function setup and usage by the Transformer is described as figure 3-2-2-2.

Pins corresponding table of primary and secondary are described as table 3-2-3-1:

PINS	PRI : 1(PRIMARY 1)	PRI : 2(PRIMARY 2)
PRI	1 – 2	14 – 13
SEC.1	3 – 4	3 – 6（3-4 and 5-6 2 groups series）
SEC.2	5 – 6	8 – 9（8-7 and 10-9groups series）
SEC.3	8 – 7	1 – 2（1-2 and 12-112 groups parallel）
SEC.4	10 – 9	
SEC.5	12 - 11	

Table 3-2-3-1

Transformer Pins and fixture pins are strictly assembled in Table3-2-3-1

For example:

- Enter into **<Transformer pin set>** page layout.
- Input first group primary group Transformer corresponding pins by table 3-2-3-1
- Press**[PIN TO FIXTURE]**soft-key to enter into **<Transformer pin SET>**page layout which is described as figure 3-2-3-2:
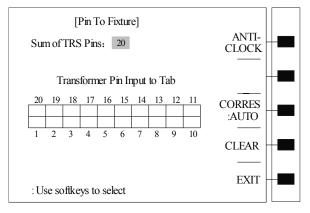

Figure 3-2-3-2

Description for all parameters described as Figure 3-2-3-2:

I. **[Sum of TRS Pins： ___]** ： input totals of Transformer pins.

II. **[Transformer Pin Input to Tab]** ： not only as for input Transformer Pins, but also input Pins is corresponded with fixture Pins in the table, or else test error will happen.

III. **[ANTI-CLOCK]/[CLOCK-WISE]**：it is multi-function key which is composed reverse clock and normal clock；The parameter is work in **[CORRES：AUTO]**, at the same time，the others Pins are inputted automatically by reverse or normal clock when user input pin 1 of Transformer according to position in the**[Transformer Pin Input to Tab]**.

IV. **[CORRES：AUTO/MAN]**：It is multi-function which is composed of AUTO and MANUAL；AUTO function is operated work in section III operation description. when MANUAL function is selected, the others parameter is invalid, and user may input Transformer Pins in the corresponding position in the [**Transformer Pin Input to Tab**].

V. **[Clear]**：The function is applied to clear all pins of input form of Transformer pins.

VI. **[Exit]**：Return to 〈**Transformer pin set**〉 page layout button.

Notices: If Pins is inputted incorrectly, and need clearing Pins, when it is in[CORRES: AUTO] status, please press digital 0 key, then press [ENTER] to clear all Pins; when it is in [CORRES:MAN] status, please press digital 0 key, then press [ENTER] to clear pin position of the current cursor; when it is in [CORRES：MAN] status, if user input directly digital over again, the current cursor pin position will be changed.

- Input 20 At **[Sum of TRS Pins： __]**position，press **[ENTER]** to acknowledge.
- Input 1 at the corresponding form which is 1 pin of **[Transformer Pin input to Tab]**, then, press**[ENTER]** to acknowledge.

● Press**[Exit]**soft-key to return to **<Transformer pin set>**page layout, here, **<Transformer pin set>**page layout showed as figure3-2-3-3:
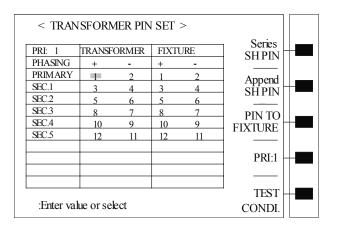
```
< TRANSFORMER PIN SET >

PRI: 1      TRANSFORMER    FIXTURE
PHASING      +      -       +      -
PRIMARY      ▪      2       1      2
SEC.1        3      4       3      4
SEC.2        5      6       5      6
SEC.3        8      7       8      7
SEC.4       10      9      10      9
SEC.5       12     11      12     11




   :Enter value or select
```

Series SH PIN ■

Append SH PIN ■

PIN TO FIXTURE ■

PRI:1 ■

TEST CONDI. ■

Figure 3-2-3-3

● Press **[PRI:1]** corresponding soft-key to switch to**[PRI:2]**, perform the secondary group primary Pins setup.
● Input Transformer Pins refer to the corresponding secondary Transformer Pins in table 3-2-3-1.
● Press**[Series SH PIN]**corresponding soft-key to enter into**<Series Short Pin Set>**page layout which is showed as following figure 3-2-3-4.

```
[ Series Short Pin Set ]

PRI: 1      TRANSFORMER    FIXTURE
PIN SET      +      -       +      -
   -         ▪
   -
   -










  : Use softkeys to select
```

PRI:2 ■

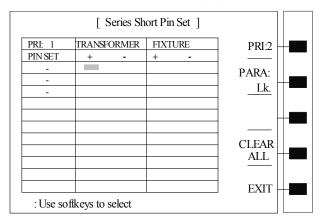PARA: Lk. ■

■

CLEAR ALL ■

EXIT ■

Figure 3-2-3-4

Description for all parameter in the face as figure 3-2-3-4:

I. **[PRI : 2]** ：It is primary group switch the parameter.
II. **[PARA ： Lk.]** ：It is multi-function parameter, it can be switched between Lk./Lx/TURN/ACR/Zx/DCR by repeating press corresponding soft-key. Input group of

data in form, perform measuring to current display **[PARA:]** during test procedure.

III.   **[Clear ALL]** ：The data in the form showed by current **[PARA:]** which is showed on the face is cleared by pressing the soft-key.
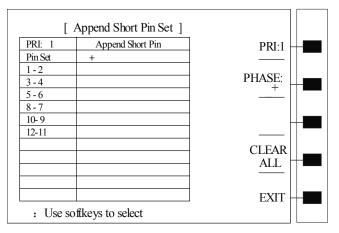
IV.   **[Exit]**：return to **<Transformer Pin set>** button on the page layout.

Press **[PARA：Lk.]** soft-key to**[PARA：Lx]**, input data according to Transformer Pins corresponding position in the form refer to table .3-2-3-1, which are showed as figure 3-2-3-2.

PRI:2	TRANSFORMER		FIXTURE	
phasing	+	-	+	-
SEC.1	4	5		
SEC.2	7	10		

Table 3-2-3-2

- Press**[PARA：Lx]**soft-key to**[PARA：TURN]**，input data as same as the data showed as table 3-2-3-2.
- Press**[PARA：TURN]**soft-key **[PARA: DCR]**，input data as same as table 3-2-3-2 showed.
- Press **[Exit]** soft-key return to **<Transformer pin SET>**page layout.
- Press**[Append SH PIN]**soft-key to enter into**<Append Short Pin set>**page layout which is showed as figure 3-2-3-5.

Figure 3-2-3-5

All parameters on **<Append Short Pin Set>**page layout showed as figure 3-2-3-5 are described as following:

I.   **[PRI.2]** ：It is primary group switch parameter.

II.   **[Phase：+]** ：Multi-function soft-key; Phase is switched between +/- when user press corresponding soft-key.

III.   **[Clear ALL]** ：Press the sot-key, and data in form of the page layout are cleared.

IV.   **[Exit]** ：Return to **<Transformer pin set>** button on the page layout.

14

- Input data in the corresponding form on the**<Append Short Pin Set>**page layout according to Transformer append sh Pins described as table, input status is described as table 3-2-3-3：

PRI.2	SEC.3	
Phase：+	1	12
Phase ：-	2	11

Table 3-2-3-3

- Press **[Exit]** soft-key to return to**<Transformer Pin set>**page layout. To this, **< Transformer Pin set>** page layout setup are fulfilled. 〈
- Here, press**[Test condi.]** enter into**< Test condition>** page layout which is described as figure3-2-4-1.

3.2.4 Transformer test condition page layout

The page layout is applied to setup all parameters of Transformer under test. Parameters can be measured include: Turn-Ratio TURN, Inductance Lx, Quality factor Q, Leakage inductance L.K., capacitance(between windings)Cx, Impedance Zx, AC resistance ACR, AC resistance DCR, Pins short PS and Balance test BL, etc.

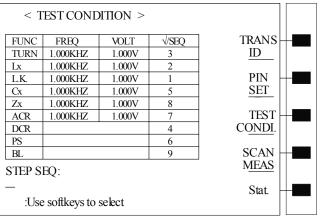**<Test condition>**page layout is described as figure3-2-4-1.

< TEST CONDITION >					
FUNC	FREQ	VOLT	√/SEQ	TRANS ID	■
TURN	1.000KHZ	1.000V	3		
Lx	1.000KHZ	1.000V	2		
L.K.	1.000KHZ	1.000V	1	PIN SET	■
Cx	1.000KHZ	1.000V	5		
Zx	1.000KHZ	1.000V	8		
ACR	1.000KHZ	1.000V	7	TEST CONDI.	■
DCR			4		
PS			6	SCAN MEAS	■
BL			9		
STEP SEQ:				Stat.	■
—					
:Use softkeys to select					

Figure 3-2-4-1

All parameter are described as followed:

I. **[FREQ]**：The data inputted into corresponding form is the current test frequency of the corresponding measuring parameter.

Input method: Move cursor to corresponding frequency form of parameter under test, and input data by digital key, press**[ENTER]** to acknowledge, or Select Hz/kHz/MHz unit and perform inputting on the soft-key area.

II. **[VOLT]**：The data inputted into corresponding form is the current test voltage of the corresponding measuring parameter.

Input method: Move cursor to corresponding voltage form of parameter under test, and input data by digital key, **press[ENTER]** to acknowledge, or Select mV/V unit

and perform inputting on the soft-key area.

III. **[√SEQ]**：Enable Parameter under test switch and test sequence. √, means ON, denote enable corresponding parameter measuring. OFF ， denote disenable corresponding parameter measuring.

Input method: Move cursor to parameter under test corresponding measuring form, and select ON corresponding soft-key to enable measuring current parameter; select OFF corresponding soft-key to disenable measuring current parameter.

Notes：[Frequency]range:20HZ~300KHZ,default unit: HZ; [Voltage]Range：[TURN]corresponding range:5mV~4V, others parameters corresponding parameters range:5mV~2V.

Description for all parameters setup according to Transformer described as figure 3-2-2-2.

● On**<Test condition>**page layout, move cursor to[**TURN_V**] form position, here, screen status display as following figure.

FUNC	FREQ	VOLT	√SEQ
TURN	1.000KHZ	1.000V	3
Lx	1.000KHZ	1.000V	2
L.K.	1.000KHZ	1.000V	1
Cx	1.000KHZ	1.000V	5
Zx	1.000KHZ	1.000V	8
ACR	1.000KHZ	1.000V	7
DCR			4
PS			6
BL			9

< TEST CONDITION >

STEP SEQ:

—

 :Use softkeys to select

TURN_V

INT R：30Ω

LIMIT SET

SCAN MEAS

● Here, Press**[TURN_V]** corresponding soft-key on the **<Test condition>**page layout soft-key area, select Transformer Turn-Ratio test mode:**[TURN]**denote measuring display turns,**[VOLT]**denote measuring display voltage,**[NS:NP]**denote measuring display Turn-Ratio,**[VS:VP]**denote measuring display voltage ratio, **[TURN_V]**denote voltage mode Turn-Ratio. Select parameter **[TURN]**. **[Source resistance：100Ω]**soft-key is applied to change source resistance of the instrument which is used to test Turn-Ratio currently. Selected source resistance are included: 10Ω,30Ωand100Ω。

● Press**[Limit set]** on the soft-key area to enter into **< Turn-Ratio Limit set>**page layout which is described as figure3-2-4-2：
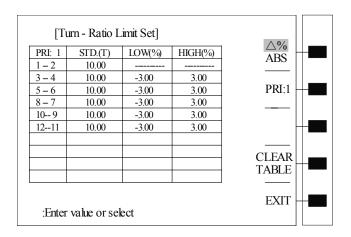
Figure 3-2-4-2

All parameters are described on the soft-key area showed as figure 3-2-4-2 page layout：

  I. **[Δ% / ABS]**：Limit error mode: Δ% is relative error mode；ABS is absolute error mode. Press corresponding soft-key to select, here, reverse white light strip is moved to the parameter selected which denote a limit error mode is chosen.

  II. **[PRI:1]**：Primary group select mode. The current data in the form are the corresponding data of primary group. Press corresponding soft-key of the parameter to enter into others primary group setup.

  III. **[Clear TABLE]**：Clear all data in the current form.

  IV. **[Exit]**：Return to above layer page layout button.

● All parameters under test of Transformer showed figure 3-2-2-2 are described as table3-2-4-1：

Table 3-2-4-1

	TURN	Lx	L.K.	DCR	Cx	BL
1 – 2	10	2.02mH	20uH	223mΩ	10pF	inductance balance by Comparing 1-2With3-4. requirement: ABS(L1-L2)< 100uH
3 – 4	10	2.02mH	3,4,5, 6,7,8, 9,10, 11,12short circuit, and upper value is 40uH	223mΩ	10pF	
5 – 6	10	2.02mH		223mΩ		
8 – 7	10	2.02mH		223mΩ		
10 – 9	10	2.02mH		223mΩ		
12 – 11	10	2.02mH		223mΩ		
14 – 13	10	1.5mH(add 8mA bias current)		223mΩ		
3 – 6	20	7.72 mH		450mΩ		
8 – 9	20	7.72 mH		450mΩ		
1 – 2				115mΩ		
Note：Error of all parameter range are ±3%，test frequency and voltage is1kHz 和 1V respectively.						

- Input all Turn-Ratio nominal upper and lower value of the first primary group under **< Turn-Ratio limit set>**menu according to the data showed as table 3-2-4-1. Menu is showed as figure3-2-4-2 after inputting has been achieved.

Note：The current unit applied input digital is continued to next forms because the instrument have memory function. In order to make unit return to direct input data under ignore unit, please press [%] soft-key after perform input digital. If user select other unit, perform selecting on the soft-key area.

- Press**[PRI:1]** corresponding soft-key to enter into**[PRI:2]**, perform setup to Turn-Ratio nominal upper and lower value of the secondary primary group, Menu is showed as figure3-2-4-3 after inputting has been achieved.
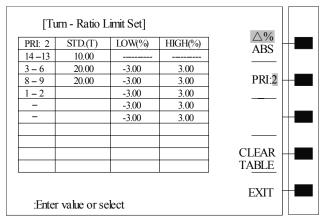

Figure 3-2-4-3

- Press**[Exit]** corresponding soft-key to return to **<Test condition>**page layout.
- Move cursor to Turn-Ratio corresponding form **[√SEQ]**. select **[ON]** on the soft-key area, switch of Turn-Ratio   is enabled.
- Move cursor to form**[Lx]**, all the parameters on the soft-key area are described as following:：
  - I. **[√series/paral.]**：It denote measuring inductance is series measuring Ls, and parallel measuring Lp is switch soft-key.
  - II.   **[Bias set]**：Enter into inductance**<bias test set: Lx>**page layout soft-key.
  - III. **[Limit：Lx]**：Enter into**<inductance limit set >** page layout soft-key.
  - IV. Press**[Bias set]**soft-key to enter into**<bias test set: Lx>** page layout whose parameter function of soft-key area is as same as the parameters on **< Turn-Ratio limit set>** menu soft-key area.
- Press**[PRI:1]**soft-key to switch to**[PRI:2],** input bias current value in the corresponding groups correspond to form according to table 3-2-4-1.

Note: Default unit: mA；Input 0, it denote OFF，that it to say, do not input bias current.

Page layout is showed as figure 3-2-4-4 after setup has been achieved.

[Bias Test Set：Lx]		
PRI:2	Current Bias	PRI:2
14 - 13	8.0mA	
3 - 6	OFF	
8 - 9	OFF	
1 - 2	OFF	
-	OFF	
-	OFF	
		CLEAR ALL
		EXIT
:Enter value or select		

Figure 3-2-4-4

Notes：[Bias source] must be ensure OPT on the <system setup>page layout when user add bias current, and [ISO] must be ON status on the <measuring setup>page layout.

- Press**[Exit]**soft-key return to**<Test condition>**page layout.
- Press**[Limit：Lx]**soft-key to enter into **<Inductance limit setup>**page layout. Then the parameters function on the soft-key area are as same as corresponding parameters on the **<Turn-Ratio limit set>** menu soft-key area; Otherwise, parameter [QX]is soft-key for entering into **<Inductance(Q) Limit set>**page layout which is described as following:

  - I.   Press[QX]soft-key on the**<Inductance limit set>**page layout to enter into **<Inductance(Q) Limit set >** page layout,showed as figure3-2-4-5：

[Inductance(Q) Limit Set]

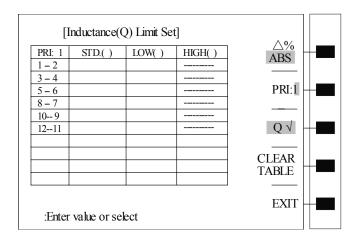| PRI: 1	STD.( )	LOW( )	HIGH( )
1 – 2			--------
3 – 4			--------
5 – 6			--------
8 – 7			--------
10-- 9			--------
12--11			--------

△%
ABS

PRI:1

Q √

CLEAR
TABLE

EXIT

:Enter value or select

Figure 3-2-4-5

II. Press **[QX]**soft-key on the page layout to switch to**[Q √]** mode, which denote perform measuring to Q value of Inductance in the current form, contrarily, do not perform measuring.

III. Input nominal vale and lower limit in each corresponding form of the page layout. Note：here, lower limit have only **<absolute value error>**mode ABS.

IV. Other parameters on the soft-key are same as the corresponding parameter on **<Turn-Ratio limit set>**menu soft-key area.

V. Press **[Exit]**soft-key to return to**<Inductance limit set>**page layout.

● Perform switching**[PRI:1]**soft-key between the different primary groups, Input nominal value and upper and lower limit in each wingding corresponding to the form according to data listed in table 3-2-4-1, Page layout is showed as figure 3-2-4-6 and figure 3-2-4-7 after setup has been achieved:
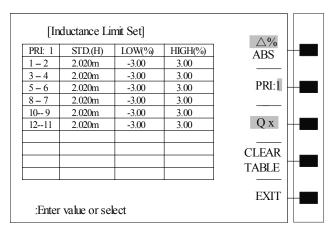

[Inductance Limit Set]

PRI: 1	STD.(H)	LOW(%)	HIGH(%)
1 – 2	2.020m	-3.00	3.00
3 – 4	2.020m	-3.00	3.00
5 – 6	2.020m	-3.00	3.00
8 – 7	2.020m	-3.00	3.00
10-- 9	2.020m	-3.00	3.00
12--11	2.020m	-3.00	3.00

△%
ABS

PRI:1

Q x

CLEAR
TABLE

EXIT

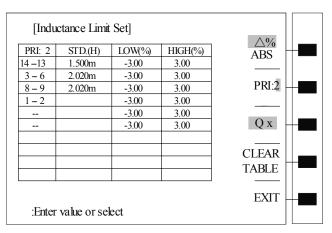:Enter value or select

Figure 3-2-4-6

Figure 3-2-4-7

- Press **[Exit]**soft-key to return to **<Test condition>**page layout.
- Move cursor to Inductance **[FREQ]** corresponding form, perform setup each windings test frequency. **Description as followed:**
  Inductance test frequency included single frequency test and Multi-frequency test.
  Single frequency test, namely test frequency of all windings, such as 1KHz, input 1KHz in the corresponding frequency form.
  Multi-frequency test, namely test frequency of each windings are all different, or not partly different. MULTI is showed in Inductance corresponding frequency form on the <Transformer test conditions>page layout after setup has been achieved, which denote the current Inductance test frequency is Multi-frequency test mode. Operation of Multi-frequency test is showed as followed.

I. Move cursor to Inductance corresponding **[FREQ]** form..
II. Press **[Multi-freq]**soft-key to enter into **< Multi freq test set: Lx>**page layout which is showed as figure 3-2-4-8：
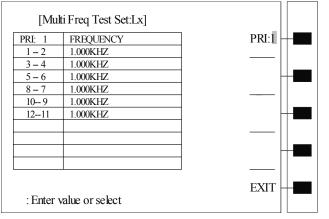

Figure 3-2-4-8

III. Input test frequency in each winding corresponding frequency form according to needs of user, perform switching by pressing **[PRI:1]**soft-key to setup of the other primary winding group.

IV. Press**[Exit]**soft-key to return to**<Transformer test conditions>**page layout after setup has been achieved.

- User may skip setup to test frequency and voltage of Inductance because each parameter test frequency and test voltage in figure 3-2-4-1 are 1kHz and 1V respectively.
- Move cursor to Inductance**[√SEQ]** corresponding form, and enable test switch.
- Move cursor to **[L.K.]**form, **[√Series/Paral.]** function on the soft-key area is as same as corresponding parameters [Lx]soft-key area..
- Press**[Test set]** to enter into 〈**Leakage Inductance test set**〉 page layout showed as figure3-2-4-9：
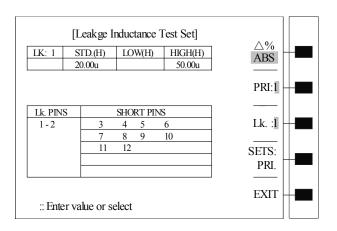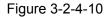
```
          [Leakge Inductance Test Set]
                                              △%
  LK: 1    STD.(H)   LOW(H)    HIGH(H)         ABS
           20.00u               50.00u

                                              PRI:1

  Lk. PINS        SHORT PINS
  1 - 2         3    4    5    6               Lk. :1
                7    8    9   10
               11   12                         SETS:
                                                PRI.

                                              EXIT

     :: Enter value or select
```

Figure 3-2-4-9

EXA/XBept **[Lk. :1]** and**[SETS：PRI.]** on the soft-key area, else all parameters are the same as above.

[Lk. :1]：It is Multi-function key, press LK soft-key to switch from 1 to 9, which denote which group leakage inductance are under the current primary group.

[SETS：PRI.]：It is Multi-function key. Press the soft-key to change pins of the current leakage inductance. The function is shortcut key of input**[Leakage pins]**.

[Lk. pins]：Move cursor to**[Lk. pins]**corresponding form, input Leakage windings under test.

[Short pins]：Move to cursor**[Short pins]** corresponding form, input Pins needed short in Leakage inductance windings under test.

[Nominal and upper and lower Limit]： The setup is as same as the other setup limit.

- Input data in **<Leakage Inductance test set >**page layout corresponding form according to table 3-2-4-1 described to Leakage Inductance and short status. After Setup has been achieved, page layout is showed as figure 3-2-4-9.
- Press**[Exit]**soft-key to return t**o<Test condition>**page layout.
- Move cursor to Leakage Inductance**[√SEQ]**corresponding form, and enable test switch.
- Move cursor to **[Cx]** corresponding form, The parameter **[√ Series/Paral.]** on the soft-key area are described as followed:
  [Series]：denote equivalent series test Cs.
  [Paral.]：denote equivalent parallel test Cp

- Press**[Test set]** to enter into**<Capacitance test set>** page layout showed as figure3-2-4-10：

```
        [Capacitance Test Set]
                                          △%
 Cx  1      STD.(F)   LOW(%)   HIGH(%)     ABS
            10.00p    -3.00    3.00

                                          PRI:1

 PINS(HI   +) :
 1                                        Cx :1

 PINS(LO   -) :
 2                                        CLEAR
                                          TABLE


                                          EXIT
    : Enter value or select
```

Figure 3-2-4-10

Description for the page layout as followed:
EXA/XBept **[Cx: 1]**, else all parameters on the soft-key area are the same as above.

  [Pins（HI +）:]：Move cursor to the corresponding form，Input positive terminal pins number of Cx under test.
  [Pins（Lo -）:]：Move cursor to the corresponding form，Input negative terminal pins number of Cx under test.
  [Nominal and upper and lower limit]：The setup is as same as the other setup limit.
- Input data in **<Capacitance test set >**page layout according to table 3-2-4-1 described to Cx under test status. After Setup has been achieved, page layout is showed as figure 3-2-4-10.
- Press**[Exit]**soft-key to return to**<Test condition>**page layout.
- Move cursor to Cx**[√SEQ]**corresponding form, and enable test switch.
- Move cursor to **[Zx]**corresponding form, soft-key area   composed of **[bias set]** and **[limit set]**, Description to it is as followed:
  [bias set]：Press the soft-key to enter into**<Bias test set:Zx>**page layout. The page layout is applied to add bias current to Impedance test, the

23

operation is the same as **<Bias test set:Lx>** page layout. Here, ignore introduction again.
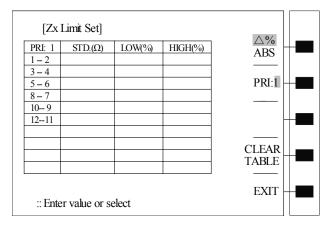
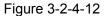**<Bias test set：Zx>** page layout showed as figure3-2-4-11：

Figure 3-2-4-11

[Limit set]：Press the soft-key to enter into <Zx limit set>page layou， all the parameters and data input mode are the same as others, ignore introduction again.

<Zx limit setup> page layout showed as figure3-2-4-12：

Figure 3-2-4-12

● Impedance test need not to be performed in the all parameters under test of Transformer showed as table 3-2-4-1.
● Move cursor to**[ACR]**corresponding form, Pres**s [limit set]** soft-key to enter into**<ACR limit set>**page layout. Each parameter and setup mode are the same as above, here ignore introduction again.

<ACR limit set >page layout showed as figure3-2-4-13：

[ACR Limit Set]			
PRI: 1	STD.(Ω)	LOW(%)	HIGH(%)
1 – 2			
3 – 4			
5 – 6			
8 – 7			
10-- 9			
12--11			

△%
ABS
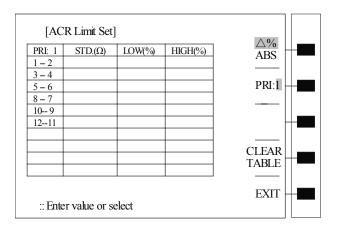
PRI:1

CLEAR
TABLE

EXIT

:: Enter value or select

Figure3-2-4-13

- Because AC resistance test of the all parameters under test of Transformer need not be performed, each setup of **[ACR]** is skiped.
- Move cursor to**[DCR]**corresponding form, display**[INT R：100Ω]and[Limit set]** on the soft-key area.
  [INT R：100Ω]soft-key is applied to change source resisstance of the instrument curently used as Trun-Ratio test, Included 10Ω,30Ωand100Ω.
- Press**[Limit set]**soft-key to enter into<DCR limit set>page layout showed as figurer3-2-4-14：

[DCR Limit Set]			
PRI: 1	STD.(Ω)	LOW(%)	HIGH(%)
1 – 2			
3 – 4			
5 – 6			
8 – 7			
10-- 9			
12--11			

△%
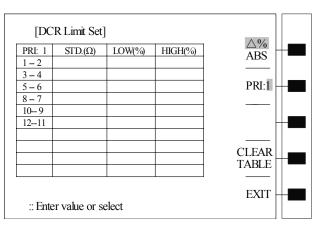ABS

PRI:1

CLEAR
TABLE

EXIT

:: Enter value or select

Figure 3-2-4-14

- Input corresponding data in the current page layout corresponding form based on each DCR nominal value and limit of Transformer showed as table 3-2-4-1, the operation is the same as above, After setup has been achieved , the page layout is showed as figure3-2-4-15 and figure3-2-4-16
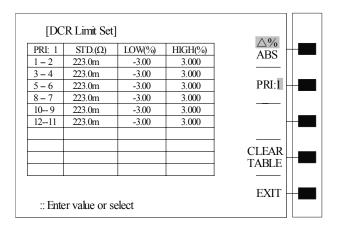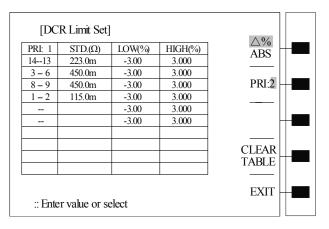
Figure 3-2-4-15

[DCR Limit Set]

PRI: 1	STD.(Ω)	LOW(%)	HIGH(%)
1 – 2	223.0m	-3.00	3.000
3 – 4	223.0m	-3.00	3.000
5 – 6	223.0m	-3.00	3.000
8 – 7	223.0m	-3.00	3.000
10-- 9	223.0m	-3.00	3.000
12--11	223.0m	-3.00	3.000

△% ABS   PRI:1   CLEAR TABLE   EXIT

:: Enter value or select

Figure3-2-4-16

[DCR Limit Set]

PRI: 1	STD.(Ω)	LOW(%)	HIGH(%)
14--13	223.0m	-3.00	3.000
3 – 6	450.0m	-3.00	3.000
8 – 9	450.0m	-3.00	3.000
1 – 2	115.0m	-3.00	3.000
--		-3.00	3.000
--		-3.00	3.000

△% ABS   PRI:2   CLEAR TABLE   EXIT

:: Enter value or select

- Press **[Exit]**soft-key to return to **<Test condition>**page layout.
- Move cursor to DC resistance**[√SEQ]**corresponding form, and enable DC resistance measuring switch.
- Move cursor to**[PS]**form, perform test pins short of Transformer, or not. Description as followed :
  [PS]corresponding soft-key area is composed of **[Limit set]**and**[Test set :PS]**.
  [Limit set]：Press the soft-key to enter into **<Pin short limit set>**page layout.
  <Pin short limit set>page layout showed as figure3-2-4-17：

```
[Pin Short Limit Set]


PS Low Limit :    10.000kΩ


                                                    ─────


                                                    ─────


                                                    ─────


                                                    ─────

                                            EXIT
    :: Enter value or select
```

Figure3-2-4-17

Defaullt pins short lower limit on the **< Pin short limit set >**page layout is 10kΩ.When test results of the corresponding pins is under setup value of **[pin short lower limit：   ]**, it can be disqualifacted, or 2 pins under test short .

[Test set:PS]： press the soft-key to enter into**<Pin short test set>**page layout.
< Pin short test set > page layout showed as figure 3-2-4-18：

```
[Pin Short Test Set]
```

PRI: 1	TRANSFORMER		FIXTURE	
PHASING	+	-	+	-
SHORT1	2	3	2	3
SHORT2	4	5	4	5
SHORT3				
SHORT4				
SHORT5				
SHORT6				
SHORT7				
SHORT8				
SHORT9				
SHORT10				

PRI:1

: Enter value or select

Figure3-2-4-18

To setup to all parameters on the **< Pin short test set >** page layout is the same as each parameter.   It denote performing 2 pins short testing showed as figure 3-2-4-18 : short circuit 0 (pin 2 and pin 3 of Transformer is short circuit or not, test result will display disqualification if it is short circuit), short circuit 1 (pin 4 and pin 5 of Transformer is short circuit or not, test result will display disqualification if it is short circuit).
Pins short**[PS]**setup described as following:

I. Enter into**<Test condition>**page layout.
II. Move cursor to[PS] form under **<Test condition>**page layout.
III. Press**[Limit set]**soft-key to enter into**<Pin short limit set>** page layout.
IV. Input short circuit lower limit Unde**r[PS low limit：10.00kΩ]**cursor position, input short circuit lower limit data by digital key, then press **[ENTER]** to acknowledge.
V. Press**[Exit]**to return to**<Test condition>**page layout.
VI. Press**[Test set:PS]**soft-key to enter into**<Pin short test Set>**page layout.
VII. Input Pins of Transformer under test or not in the corresponding form, Input operation mode is the same as other parameter.
VIII. Press**[Exit]**to return to**<Test condition>**page layout.
IX. Move cursor to **[PS]** corresponding **[√SEQ]** form, press **[ON]**soft-key and enable test switch.
X. Thus, setup to Pins short **[PS]** test has been achieved.
● Pins short test need not to be operated to Transformer showed as figure 3-2-4-1, so setup **[PS]** is skipped.
● Move cursor to[BL]form，press[test set:BL]soft-key to enter to**<Transformer:balance set>**page layout showed as figure3-2-4-19：

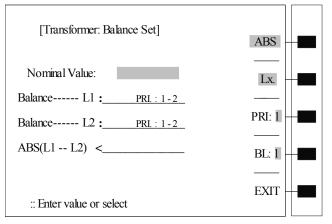
Figure3-2-4-19

Parameter function of **<Transformer: balance set>**page layout is described as following:

I. **[ABS]**：Balance comparing mode. Press the soft-key， to select between ABS and Δ％. ABS denote absolute comparing mode ; Δ％denote relative comparing mode.

II. **[Lx.]**：The current balance test parameter. Press the soft-key， to select between Lx. and DCR. Lx denote testing Inductance balance of 2 groups windings; DCR denote testing DC resistance of 2 groups windings.

III. **[PRI: 1]**：Primary switch soft-key. Switch to a primary group， if processing balance to primary and secondary groups within L1 and L2 is needed, the corresponding primary and secondary groups within L1 and L2 is chosen for primary group corresponding primary and secondary on the [PRI:]soft-key area.

IV. **[BL : 1]**：Balance groups number switch soft-key. Press the soft-key， BL will be switched from 1 to 5. Its means permit 5 group balance test under each primary group.

V.   **[Exit]**：Return<Test condition>page layout soft-key.
Parameter function of balance setup area are described as following:

I.   **[Nominal value:]**：Input 2 groups center value in this position, operation mode is the same as the parameter operation.
II.   **[Balance － L1:]**and[balance － L2:]：input 2 group windings under test at the positions. 0 denote primary, and 1~9 denote from secondary 1to secondary 9.
III.   **[ABS(L1-L2) <]**：Input regulated max error value of 2 parameters under test. When the test result will beyond the value, which means 2 windings do not balance.

● Input nominal value at〔**Nominal value：   **〕cursor position according to balance test described as table3-2-4-1, its unit can be selected on the soft-key. Cursor can be moved to next line〔**Balance－L1**〕position automatically after input has been achieved.
● Input 0 by pressing digital key, and press **[ENTER]** to acknowledge. Even if Balance L1 is primary（PRI: 1-2）, Cursor is moved to **[Balance－L2]** position automatically after input has been achieved.
● Input 1 by pressing digital key, and press **[ENTER]** to acknowledge. Even if Balance L2 is primary 1 （SEC1:3-4）, Cursor is moved to **[ABS(L1-L2)<**〕 position automatically after input has been achieved.
● Input error value at〔**ABS(L1-L2)<** 〕position, its unit can be selected on the soft-key. Thus, setup **<Transformer: balance set>**page layout has been achieved.
● Press**[Exit**〕soft-key to return to**<Test condition>**page layout.
● Move cursor to**[BL**〕corresponding〔√**SEQ**〕form, select soft-key**[ON**〕, enable test switch.
● Here, setup all parameters under test showed as table 3-2-4-1 has been achieved, and whole **<TEST Condition>**page layout setup has been achieved.
● Pres**s[Scan meas]** soft-key to enter into<Transformer scanning measuring display>page layout.

3.2.5 Transformer scanning measuring display page layout

The pager layout is mainly applied to display test results of each parameter of Transformer, and perform judging to nominal value so that user distinguish test results that will accord with standard or not; At the same time, soft-key area of the page layout provide calling test value for nominal value, each parameter of Transformer calibration, and measuring speed selection, etc.

<Transformer scanning measuring display>page layout showed as figure 3-2-5-1：

```
ID: THB1001                                              ┌ 1
                                                         └ 2
    PIN    LX       TURN    DCR      P  B │ LOAD STD.
0  1 - 2:  2.051mH  10.00T  223.2mΩ  +  Y │   OFF
1  3 - 4:  1.805mH  9.980T  220.2mΩ  +  N │  ────
2  5 - 6:  2.020mH  10.00T  223.8mΩ  +    │ DEVIATION
3  8 - 7:  2.031mH  9.998T  224.2mΩ  +    │   OFF
4  10 - 9: 2.025mH  10.03T  223.0mΩ  +    │  ────
5  12-11:  2.023mH  10.01T  222.9mΩ  +    │ SPEED:
                                          │  SLOW
                                          │  ────
                                          │  PRI.1
                                          │    +
LK. 1: 21.18 uH      BALANCE:  N Y Y Y    │  ────
PSHT:  00  01  02  03  04  05  06  07  08  09  10 │ PRI.1
       Use [ . ] key to FILE manage !     │    -
```

Figure3-2-5-1

Description for the page layout showed as figure 3-2-5-1：

■ **Pane 1**：[ID :THB1001]denote number of Transformer which is namely set number of <Transform number>page layout

■ **Pane 2**：Each parameter under test of Transformer.

■ **Pane** 3：It is used for display test results and distinguish area of each parameter under test of Transformer windings. When test result of a parameter is disqualified, it is used to using reverse white light strip display at the parameter of windings corresponding position.

    1. 3-4wingdings corresponding Lx(Inductance) is disqualified, which is showed as figure 3-2-5-1.

    2. Parameter **[P]** showed Pane 2 corresponding + or – showed in pane 3, + denote the primary phase and secondaryary phase are positive phase, and – denote negative phase.

    3. Parameter **[B]** showed Pane 2 corresponding Y or N showed in pane 3, Y denote balance parameter under test of the windings is qualified, N denote the test result is disqualified..

    4. If parameter under test is not on the current page layout, user may select by moving left and right key.

■ **Pane 4**：Single group Leakage Inductance, Balance test display, pins short display and distinguish area.

    1. **[LK. 1 :   ]** ：It is applied to display, measuring results of single group Leakage Inductance, if it is disqualified, and display by reverse white light.

    2. **[BANLANCE :   ]**：It is applied to distinguish that balance is qualified or not, qualified status is denoted by Y, disqualified status is denoted by N, and 5 Y or N from left to right denote 1~5 group balance.

    3. **[PSHT : 00 01 02 03 04 05 06 07 08 09 10]** ：It is applied to distinguish that each short pins is short or not, if 00~10 is showed by reverse white light, it

means corresponding pins is short which namely is disqualified.

- **Pane 5** ：Enter into files managing function shortcut key. Press "．" digital key on the front panel of the host in the current page layout, then, user directly enter into files managing page layout so that perform saving and operation to files.

Note: Files managing function operation described inTH2818/19 manual operation.

- **Pane 6**：Soft-key area. Description for the function as following:
    1. **[LOAD STD.OFF]** ：Load nominal value. Press the soft-key to switch to**[LOAD STD.ON]**, then perform measuring by pressing **[TRIGGER]**key on the front panel of host(or press **[START]**key on the panel of TH1801, or step on foot switch), so the system can be automatically performed loading measuring value of each windings into the corresponding nominal values of parameters of each windings

    Most important is the norminal value of the parameter under test has been set, or else measuring results wii not be written into limit setup menu of parameter under test.

    2. **[DEVIATION OFF]** ：Measuring calibration function key, usage and operation are introduced as following:
        I. Press**[DEVIATION OFF]** soft-key to enter into **<Transformer Deviation set>**page layout in the Transformer scanning measuring display page layout showed as figure3-2-5-2：
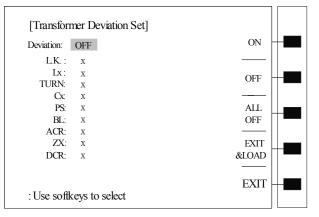

Figure3-2-5-2

Description for **<Transformer Deviation set>**page layout as following :

Deviation：OFF—each parameter calibration primary switch; default status: OFF, do not perform calibration to parameter L.K.~DCR, if calibration is needed, [Deviation] must be open firstly, it is namely ON. 。

L.K. : ——Leakage inductance calibration switch ;√ denote open calibration," " denote close calibration.

Lx : ——Inductance calibration switch ; √ denote open calibration," " denote close calibration.

TURN : ——Turn calibration switch；√ denote open calibration," " denote close

calibration.

Cx : ——Stray Capacitance calibration switch√ denote open calibration," " denote close calibration.

PS : ——Pins short calibration switch；√ denote open calibration," " denote close calibration.

BL : ——Inductance balance calibration switch；√ denote open calibration," " denote close calibration.

ACR : ——AC resistance calibration switch；√ denote open calibration," " denote close calibration.

ZX : ——Impedance calibration switch；√ denote open calibration," " denote close calibration.

DCR : ——DC Resistance calibration switch；√ denote open calibration," " denote close calibration.

Soft-key function area described as following:
Soft-key function area provide**[ON/OFF/ALL OFF]**function, move cursor to the parameter needed calibration by pressing ON soft-key, if not, perform pressing OFF soft-key. If it will make calibration valid,**[Deviation]** must be ON status; If user will perform closing calibration, only by pressing **[ALL OFF]**soft-key.

[EXIT&LOAD] on the soft-key not only is page layout of exit calibration, but also can be used as calibration key ; If press**[Exit]** soft-key , it will be returned to**<Transformer scanning measuring display>**page layout, but it will not perform calibration.

Transformer scanning each parameter calibration operation is described as following :

● Firstly, input nominal value and limit of parameter under test on the **<Test condition>**page layout ; If the step has been set above step, the step can be ignored;

● Press**[Scan meas]**soft-key to enter into **<Transformer scanning measuring display>**page layout;

● Transformer under test must be connected to socket of TH1801 EXT2 ;

● Press **[START]** of TH1801 test switch or perform several times stepping on foot switch so that achieving a stable test value;

● Press**[DEVITION OFF]**soft-key to enter into **<Transformer Deviation set>**;

● Setup**[Deviation]**switch for ON;

● Setup each parameter which is needed calibration switch for ON ;

● Press**[EXIT&LOAD]**soft-key to perform calibration and return to**<Transformer scanning measuring display>**page layout; Thus, Calibration has been achieved, user can perform normal test.;

● Press digita**l" . "** or return to **[Transformer ID]**page layout and enter into **[File]**function item, perform saving the files according to indication information of screen so that perform restarting measuring to the same type Transformer later.

3. **[SPEED : MED]** ：Measuring speed switch soft-key. Default test speed is medial speed(MED ） . Press the measuring speed soft-key to switch between SLOW/MED/FAST.

4. **[PRI .1 +]**：Primary group switch key. Press the key to view measuring results of parameters under different primary group. If the parameters do not display on the current page layout, user can move left and right key to view.

Note: move the soft-key to switch by rising sequence sorting.

5. **[PRI .1 -]**：Primary group switch key. Press the key to view measuring results of parameters under different primary group. If the parameters do not display on the current page layout, user can move left and right key to view.
Note: move the soft-key to switch by rising sequence sorting.

Here **<Transformer scanning measuring display>**page layout is introduced completely.
Operation of Transformer scanning test showed as following:
◆ Enter into**< Transformer scanning test >**page layout;
◆ Press **[START]** switch on the front panel of TH1801 or step on foot switch and perform measuring ;
◆ When all parameters test showed on the display screen are accomplished, front GO indicating light(Green light) on the panel of TH1801 is lighted and test page layout display PASS if results of parameters of Transformer is qualified; Front NG indicating light(Red light) on the panel of TH1801 is lighted and test page layout display FAIL if results of parameters of Transformer is disqualified.
◆ If user has achieved results of parameter required, and do not perform measuring to later each parameter, so user can return to status under test by pressing RESET switch on the panel of TH1801, that is to say, the measuring is halted forcibly.
◆ Test end.
◆ Press up key to return to**<Test condition>**page layout ; Press down key to return to **<Scan test : Stat.>** page layout .

3.2.6 Transformer Scan test: Stat. Page layout

User can enter into **<Scan test: Stat>**page layout by following methods:
I.   Press **[Stat.]**soft-key on the **<Transformer ID>**page layout to enter into**<Scan test: Stat>**page layout
II. Press down key on the**<Transformer scanning measuring display>**page layout to enter into**<Scan test: Stat>**page layout.
From Transformer**<Scan test: Stat.>**page layout, user can achieve measuring totals of each parameter of Transformer, qualified and disqualified situation.
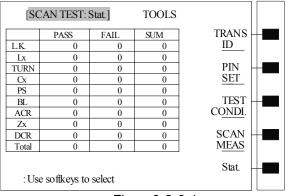Transformer**<Scan test: Stat.>**page layout is described as figure3-2-6-1：

[SCAN TEST: Stat.]			TOOLS		
	PASS	FAIL	SUM	TRANS ID	■
L.K.	0	0	0		
Lx	0	0	0		
TURN	0	0	0	PIN SET	■
Cx	0	0	0		
PS	0	0	0		
BL	0	0	0	TEST CONDI.	■
ACR	0	0	0		
Zx	0	0	0	SCAN MEAS	■
DCR	0	0	0		
Total	0	0	0		
				Stat.	■
: Use softkeys to select					

Figure3-2-6-1

Description for the page layout:

    [PASS] denote L.K.~DCR each parameter pass rates, it is namely qualified rates.

    [PASS]+[SUM]：All parameters within L.K.~DCR required measuring are qualified during a measuring, and **[PASS]** corresponding **[SUM]**(total qualified columns) value plus 1;

    [FAIL] Denote L.K.~DCR each parameter disqualified rates;

    [FAIL]+[SUM]：a parameter or more within L.K.~DCR required measuring are qualified during a measuring, and FAILURE] corresponding **[SUM]**(total disqualified columns) value plus 1;

    [TOTAL] Denote total measuring rates of a measuring parameter;

    [SUM]+[TOTAL]Denote total measuring rates which is equal to total qualified rates and total disqualified rate;

    [TOOLS] ：Move cursor to the parameter, **[Reset count]**function is displayed on the soft-key area. Press [Reset count]soft-key to make all data on the form of **<Scann test: Stat.>** page layout to return to zero.

Thus, description for Transformer scanning test operation is ended.

User can close the TH2818XA/XB host and power switch of TH1801.

    If the instrument is not used in a long time, user should make it packed well and keeping well done.

    Notes: Not all contents of this manual is the same as the instrument, Tong Hui has rights to improve and advance for features, function, architecture, physical show, accessories and wrappage etc. ,but it is possible make a other statement, so all problems which is resulting from above, you should have no hesitation to contact our company

annotations：Possible problem and resolving method are declared during using Transformer scanning tester

1. Upper and lower limit

Some measuring value which is Transformer under test are not satisfied with requirements seriously during test procedure. But, the parameters in judging table are still showed good.

Analyse: Nominal value is set, but not setup upper and lower limit or setup one of the upper and lower limit only.

Resolving method: Setup upper and lower limit under the parameter limit setup menu.

2．Dot not perform measuring

During test procedure, some parameter of Transformer under test, such as inductance, has been set for measuring status in the measuring conditions setup, but the parameter is not measured and no data on the LCD.

Analyse: Only [√╱Ⅹ] menu is set for√ during setup measuring conditions of the parameter, but not setup nominal value, at the same time, "ignore nominal value test"under [Transformer number]is set for OFF.

Resolving method: 1. "ignore nominal value test" under [Transformer number] is set for ON.

2. Setup nominal value under limit setup menu of the parameter.

1．Measuring halt

During test procedure, the parameter under test are only measured to front groups, but not measured to back groups.

Analyse: 1. It is because middle one or more groups have been ignored when Pins of front groups are set during performing Pins, so do not perform measuring to following groups.

Analyse:2. (WHEN TEST FAIL：————）column under [TRANSFORMER ID] menu is set for STOP, so do not perform measuring to following parameter when encounter a parameter is not up to grade during test procedure..

Resolving method: （WHEN TEST FAIL）column under [TRANSFORMER ID] menu is set for Continue, at the same time, Blank Pins under parameter limit setup menu is set over again, or "TEST FOR…" under [TRANSFORMER ID] menu is set for ON.

TH2818XA/XB accessories lists

Nu.	Item	Number
1	TH2818XA/XB HOST	1 bin
2	TH26011 Kelvin test clip leads	1 bin
3	TH26005 test fixture（TH2818XB no this fixture）	1 bin
4	TH26004B Transformer secondary voltage measuring cable	1 bin
5	TH26010 Gilded shorting plate（TH2818XB no this fixture）	1 bin
6	Three cord power lines	1 bin
7	1A FUSE	2 bin
8	TH1801B Transformer scanning test box	1 bin
9	TH1801A Transformer Automatic scanning test box	(options)
10	TH26016 Transformer test control cable	1 bin
11	Foot switch	1 bin
12	TH2818/19 manual description	1 bin
13	TH1801A/B Transformer scanning manual operation	1 bin
14	Product certification	1 bin
15	Test report	1 bin
16	Guarantee card	1 bin