

Part one: Hardware of the 3D Surface Magnetic Field Distribution Testing Apparatus (Hardware Instruction)

1 Configuration

1.1 Function Overview

The magnetic field distribution testing apparatus is a multifunctional on-line detecting device which can provide measuring and analyzing of surface magnetic field distribution of the circular magnetic materials.

Combined with independently developed software, it can be used to measure the disc surface magnetic field distribution, the external and the internal surface of cylinder magnetic field distribution of the cirque magnet. It is especially suitable for the measurement of magnetic field distribution of the multi-pole magnetized magnet. Generally, it is a testing apparatus with relatively full functions and high automation.

1.2 Specifications

1) Product instruction: Magnetic Field Distribution Testing Apparatus

2) Volume: Main Control Cabinet 800(L)×600(W)×1600(H)

Testing Estrade 1020(L)×620(W)×700(H)

Testing Set 620(L)×260(W)×625(H)

3) Hardware Configuration

Industrial Computer 1

Printer 1

B&H Transducer Amplifier 1

DCD Motor Driving Power 1

Test Device 1

Control Cabinet 1

Test Estrade 1

Hall Probe 1

Test Coil 1

4) Power Supply

Power: 220V±10% 50HZ ≤550W

5) Technical Parameters

Z axes travel: $\leq 110\text{mm}$

Y axes travel: $\leq 100\text{mm}$

Maximal testing diameter of external circle $\Phi 80\text{mm}$

Minimal testing diameter of internal circle $\Phi 8\text{mm}$

Maximal testing diameter of internal circle $\Phi 80\text{mm}$

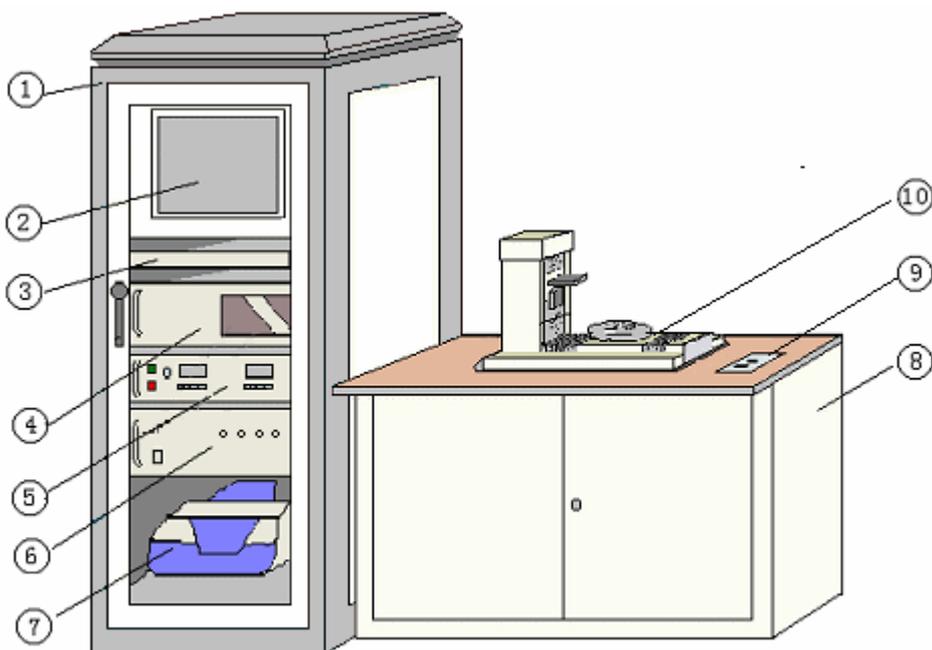
Minimal testing period: 5s (external surface of cylinder testing in 2D testing mode)

2 Machinery and Function

The system is composed of main control cabinet and testing estrade (Fig.1).The main control cabinet, which contains industrial computer, B&H transducer amplifier, power supply etc, can be used for the procedure running, the data detecting, processing and analyzing, and the test set driving etc. The test set is a multifunctional automatic testing device, which can realize rectilinear motion in X, Y axes and rotary motion in principal axis. It is mainly used to measure magnetic products by way that can meet fixture assembly and other measuring requirements.

Regarding to the functions and item name for each part, pls refer to Fig.1, Fig2, Fig3, Fig4, Fig5, since inner installation for the general equipment (industrial computer) is slightly different, before installation, please be careful checking whether the interface and direction for the industrial computer is right or not, accompanied with this manual is wire connection drawing for the system.

Fig.1 Front View



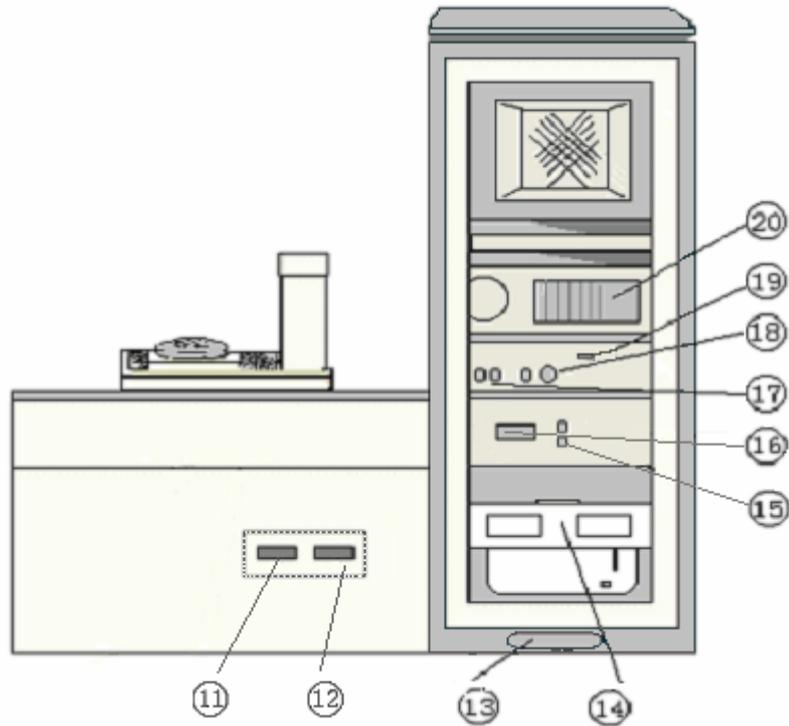


Fig.2 Back View

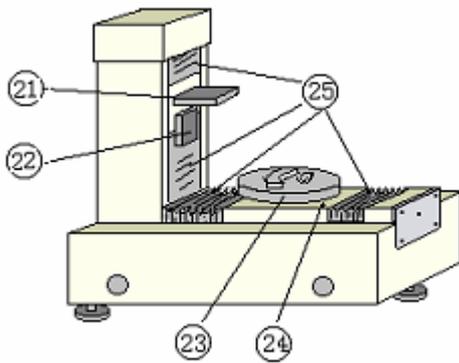


Fig3. Testing Set

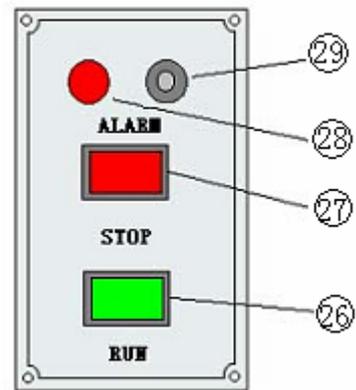


Fig4. Control Panel

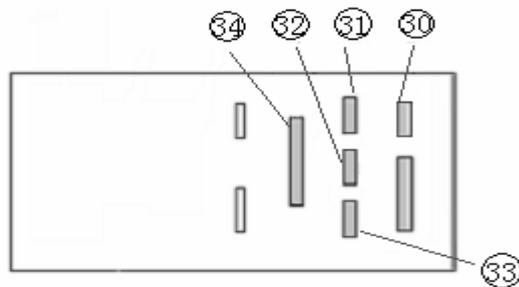


Fig5. Industrial Computer Interfaces

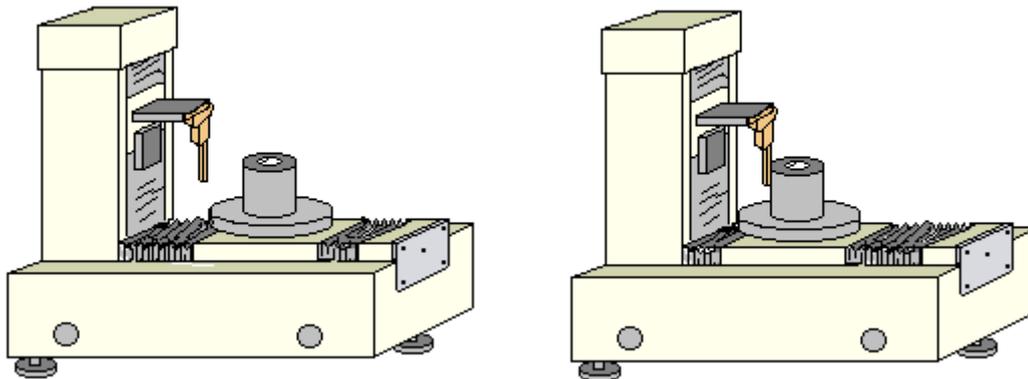
- ① Main control cabinet : To install the industrial computer and other accessorial devices
- ② Display: Screen of the industrial computer
- ③ Keyboard and its holder, mouse and keyboard tray: Keyboard holder is used to hold operational keyboard and mouse for the Industrial computer; customer only needs to pull it out for use.
- ④ Mainframe of Industrial Computer: To run programs, receive and issue orders, etc.
- ⑤ B&H Transducer Amplifier: Used to measure the surface magnetic field intensity and flux of the magnet, and send the testing signals to the computer
- ⑥ Drive Box : Drive Box : Designed mostly to drive the motors of the test set, including the Y axis motor, the Z axis motor and the principal axis rotary motor
- ⑦ Printer: To print the data
- ⑧ Test Estrade: To fix the testing set
- ⑨ Test Set: Used to test the magnetic field characteristic of the component, with testing instruction included.
- ⑩ Control Panel: For large batch on-line testing of the instruments of the same type. User can stop program running, give sound and visible alarm when fault occurs. For detailed information, pls just refer to the instruction for control panel.
- ⑪ Test Estrade Control Interface: A 20 cores aviation receptacle for connecting the control and drive wire (thus control the input and output of signal)
- ⑫ Input interface of motor drive : A 14 cores aviation receptacle for connecting the motor drive wire.
- ⑬ Outlet Hole: To let the power wire, the test estrade control wire and the motor drive wire pass out from the control cabinet.
- ⑭ Interior Combination Power Receptacle: To supply power for the apparatus within the control cabinet.
- ⑮ Control Interface of the Drive Cabinet: 5 and 6 cores aviation receptacles for connecting with control wire of industrial computer and thus executing the running command signals to the

motor.

- ⑩ Output Interface of Motor Drive: A 14 cores rectangular aviation receptacle for connecting the motor drive wire.
- ⑪ I/O Interface of Magnetic Flux Testing: Both are Q9 receptacles, for Input/output of the flux testing signals. The end that marked “INPUT” links to the flux testing coil, while the end marked “OUTPUT” connects to magnetic flux input wire of the testing bus.
- ⑫ I/O Interface of Magnetic Field Intensity Testing: 4 cores and Q9 aviation receptacles for input and output of the magnetic intensity testing signals respectively. The one marked with “INPUT” should be connected to the hall probe, while the one with “OUTPUT” should be connected to the field intensity input wire of the testing bus.
- ⑬ Zero clearing control Interface: A DB9 receptacle for connecting the clearing signal of the flux meter in flux testing mode before test to slake the zero drift error.
- ⑭ Industrial Computer Interface: The input/output interface between the industrial computer and the external signals and commands.
- ⑮ Horizontal Probe Tray: Where to fix the probe when carrying out testing on internal and external surface of cylinder magnet.
- ⑯ Vertical Probe Tray: To fix the probe when carrying out testing on the flat surfaces.
- ⑰ Principal Axis Rotary Tray. To fix the magnet on and do rotary motion when testing.
- ⑱ Two Oiling holes for the Y axis Pulley. There is one on front and one on back for inpouring lubricant.
- ⑲ Leather cover: To make it maintained and good-looking of the mechanical part.
- ⑳ Run Button. Press to start when parameters are set, mostly for fast on-line testing.
- ㉑ Stop Button: Pressed to stop or intermit the test and mainly used to stop the program of which the parameters are set inappropriately. It will respond only when running.
- ㉒ Visible/light Alarm: Triggered when the test results are not in the set tolerance boundary or protection film of probe runs out of its service life.
- ㉓ Sound Alarm Buzzer: Triggered when the test results are not in the set tolerance boundary

B&H Transducer Amplifier respectively. Zero calibration has a great influence to the measuring accuracy. In south of China, this equipment can run 24 hours continuously.

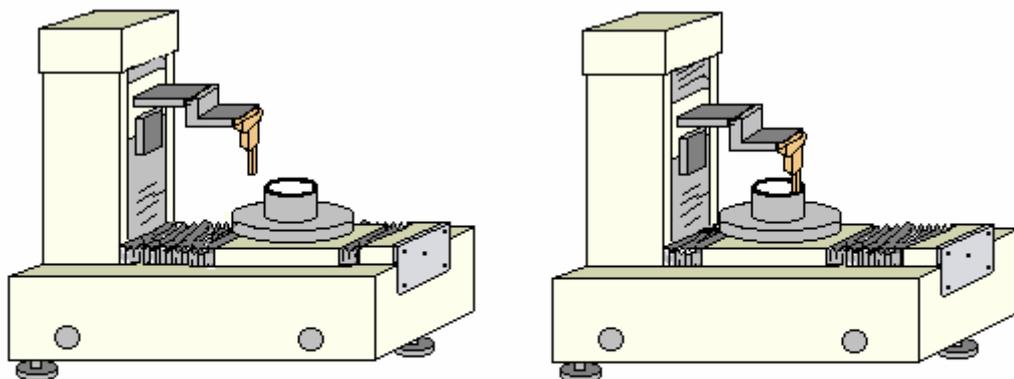
- 3) Open programs to go testing. The movements of the test set in different testing modes are as shown in Fig.6, Fig.7 and Fig.8.
- 4) When the diameter of internal circle is large or the diameter of disc surface is small, use the probe assembly to lengthen the testing distance.
- 5) When taking the repeated batch testing of the same magnets, please use the run button on the control panel of the test estrade.



Pending test position

test position

Fig.7 External Surface of cylinder Testing



待测位

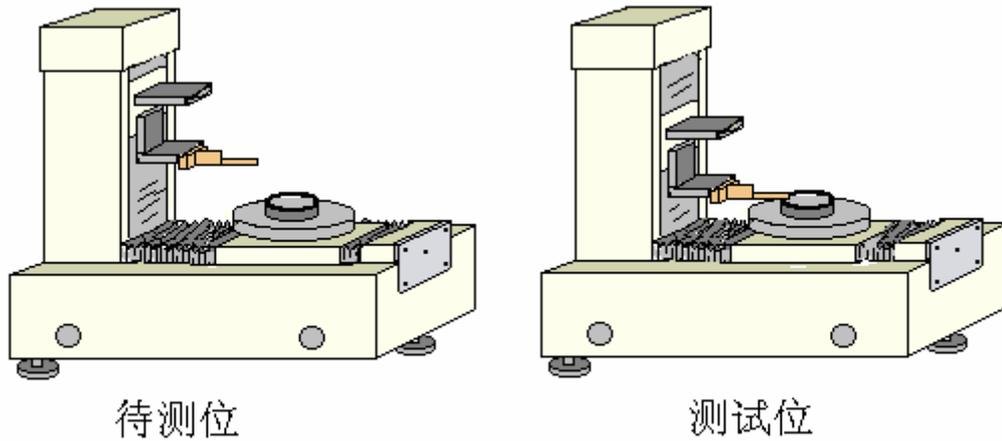
测试位

图七 内圆测试

Pending test position

test position

Fig.8 Internal Surface of cylinder Testing



图八 端面测试

Pending test position

test position

Fig.9 Disc surface Testing

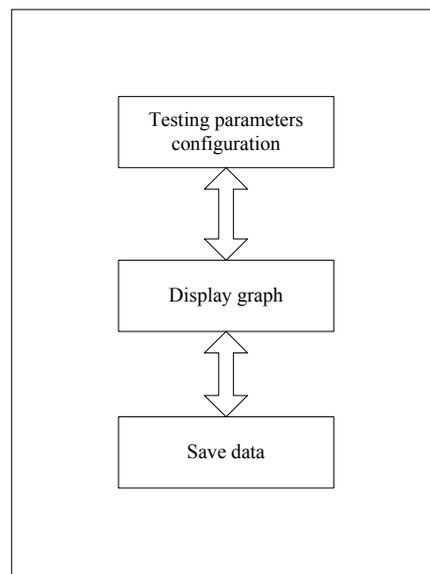
5 Caution

- 1) Add oil frequently. In condition of longtime full load operation, add it once every two days (30# pure oil will be OK). Y axis oiling can be done through the oiling hole. For Z axis oiling, the cover should be opened first. The oil-needed parts include the slideway on both sides, the feed screw rods and nuts. Clean the lead rail surface with 120# gasoline every month (depending on the use frequency).
- 2) The probe tray is ball sliding action (and there are two such trays, one is horizontal, one vertical). When fixing and replacing the probe, please don't overexert to ensure the testing accuracy, or the mechanical precision of the probe tray will probably fall (thus will influence the testing accuracy as a result).
- 3) The vertical tray and horizontal tray are universal for the probe. In disc surface testing, replace the vertical tray by the horizontal tray first, then fix the probe on to get ready.
- 4) In flux testing, all you need to do is to fix the probe to the front of the tray and fasten it with M4 bolt.
- 5) To ensure the security for equipments, there is a limit urgent stop switch at the back of the probe tray. When parameters are set inappropriately and wrong movement of the equipment occurs, it should be pressed to avoid damage to the probe and the apparatus. The probe tray must be hold with hand during installation or when replacing testing probe, and do not overexert to break the control switch.

Part two: User Manual of the 3D Surface Magnet Distribution Testing Program

6 The Program frame

6.1 The program is composed of the following three parts.



Configuration of testing parameters

Overview: To control the testing device and set the needed parameters for testing.

Functions: set working mode, testing mode and testing type

- Set range of the measuring meter

- The action of testing device is controllable

- Save / load the above information of a certain product as reference

Chart display

Overview: display the main testing interface, testing data, the result of data analysis, etc.

Functions: display the testing graphics

- Display the testing data table

- Display the graphics after data processing

- Save related information of the testing product

- Save testing graphics as picture format

- Print graphics

Data storage:

Overview: save data of each point in testing graphic automatically

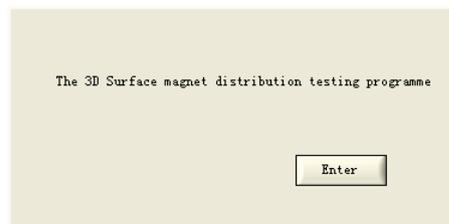
Function: save data of each point in testing graphic

- Save related information of the testing product before exiting.

6.2 Start and exit the program

6.2.1 Start

- Connect the outer cable between the testing set and the control cabinet
- start the industrial computer
- turn on the B&H meter. (A 30-min preheating is recommended)
- turn on the driving power supply
- run the 3D Surface Magnet Distribution Testing Programme
method 1: double click the **csy3d.exe** shortcut on the desktop.
method 2: Enter the installation path(default is d:\xiandaco) of the program, double click the **csy3d.exe**
- enter the start menu



- click Enter, hardware system reset(Y、 Z axis return to zero), enter the parameter click Enter, reset the hardware system (Y, Z axis return to zero), enter the parameter configuration interface, load and display the testing information of the workpiece last time.

Note: If Y, Z axis can't work because of hardware malfunction, the software will not work normally. The program should be ended by task manager, then check the hardware. The possible reasons include power supply has not been turned on and outer control cable is loose, etc.

6.2.2 Exit

- Click File---Exit Program to exit and return to Windows.
- Note: When exiting, the related information of workpiece (such as testing number, testing mode and testing type, etc.) is being saved automatically. It will be loaded when the program starts next time.
- Closing the Windows operating system
 - Turn off all the peripheral devices (such as B&H meter, driving power supply and printer, etc.
 - Turn off the main power supply

7 Testing Program

Enter the parameter configuration interface, set correct parameters.

Enter the main interface of 2D/3D testing, click the "Start Testing" button.

Interface, Menu, button function and display of the testing results

Interfaces:

7.1 Configuration of parameters

referenced data				
type of referenced data				
Testing Type	Y-axis Testing Point	Y-axis Pending Testing Point	Z-axis Testing Point	Z-axis Pending Testing Point
external	0	0	0	0

Reference of testing parameters

■ Product information

Input the information related to the product, such as name, serial number, testing number, material, temperature, magnetizing condition, testing person, date, probe number, coil, magnetizer, magnetometer, pole number and remarks etc.

■ Motion parameters

Overview: adjust the testing point position of the sensor on Z, Y direction.

Set the pending testing point position of the sensor on Z, Y direction, namely the space between testing point and pending testing point.

The object of setting the pending testing point is that to set appropriate moving path can get and place the workpiece conveniently for different types of product.

Function for each button:

- 1) Z-axis Zero: return Z axis to zero.

If Z axis motor can't return to zero at the given pulse number because of other reasons, error message will be shown.

Note: The action takes effect whenever to enter the interface of parameter configuration.

- 2) Z-axis testing point: display the pulse number of Z-axis testing point.(100 pulses matches 1mm), it can be set by rough adjustment and tiny adjustment.



Rough adjustment (up): decrease 500 each step

Note: It is invalid when Z-axis is at the top zero.



Rough adjustment (down): increase 500 each step

Note: It is invalid when Z-axis is at the bottom limit.

Rough adjustment: means the required pulse number when the axis motor moves from zero to testing point. Increase or decrease every 500 of this number, the motor drives the testing device to go forward (Z-axis is down) or back (Z-axis is up) for 500 steps (the minimum step is 500).



Tiny adjustment (up): decrease 50 each step

Note: It is invalid when Z-axis is at the upper zero.



Tiny adjustment (down): increase 50 each step

Note: It is invalid when Z-axis is at the bottom limit.

Tiny adjustment: The required pulse number when the axis motor moves from zero to testing point. Increase or decrease every 50 of this number, the motor drives the testing set to go forward (Z-axis down) or backward (Z-axis up) for 50 steps (the minimum step is 50).

- 3) Z-axis pending testing point: the pulse number needed by the step motor for Z-axis moving from testing point to pending testing point. The set rule depends on practical requirement.

- 4) Y-axis Zero: return Y axis to zero.

If Y-axis motor can't return to zero at the given pulse number due to other reasons, error message will be shown.

Note: The action takes effect whenever to enter the interface of parameter configuration.

- 5) Y-axis testing point: display the pulse number of Y-axis testing point.(200 pulses matches 1mm), It can be set by rough adjustment and tiny adjustment.



Rough adjustment (right): decrease 500 each step

Note: It is invalid when Y-axis is at the right zero.



Rough adjustment (left): increase 500 each step

Note: It is invalid when Y-axis is at the left limit.

Rough adjustment: means the required pulse number when the axis motor moves from zero to testing point. Increase or decrease every 500 of this number, the motor drives the testing device to go forward (Y-axis to left) or backward (Y-axis to right) for 500 steps (the minimum step is 500).



Tiny adjustment (right): decrease 50 each step

Note: It is invalid when Y-axis is at the right zero.



Tiny adjustment (left): decrease 50 each step

Note: It is invalid when Y-axis is at the left limit.

Tiny adjustment: means the required pulse number when the axis motor moves from zero to testing point. Increase or decrease every 50 of this number, the motor drives the testing device to go forward (Y-axis to left) or backward (Y-axis to right) for 50 steps (the minimum step is 50).

- 6) Y-axis pending testing point: the pulse number needed by the step motor for Y-axis moving from testing point to pending testing point. The set rule depends on practical requirement.

For product with new serial number, the parameters above should be adjusted manually. For the product which has testing record, it can be loaded from the database and displayed in the referenced column.

If the workpiece serial number has not been recorded in the database, it is necessary to adjust Y, Z axis testing point before testing and find out the best testing position (the space between workpiece and probe is no more than 0.5mm). Then click "Save Configuration" to save the data to database. When doing next testing, input the serial number of the product and click "Load Configuration", the parameters above of the workpiece with certain serial number can be taken out for reference.

■ Other testing parameters

- 1) Working mode: H measurement and B measurement. The default is H measurement.
- 2) Testing mode: two dimensional measurement and three dimensional measurement. The default is 2D measurement.
- 3) Range (H): the same as the range(H) of B&H Transducer Amplifier
The option takes effect in H measurement mode.
- 4) Range (B):the same as the range(B) of B&H Transducer Amplifier
The option takes effect in B measurement mode.
- 5) Testing type: three optional types
The testing set supports three testing types: external circle testing, disc surface testing and internal circle testing. Probe track varies with testing types.
- 6) Database name: For inputting the database name in 2D measurement. It is recommended to name the database with the sample number. Change the database name periodically, in case to save all the testing data to the same database, which will bring inconvenience to data search and system maintenance.

■ Command button

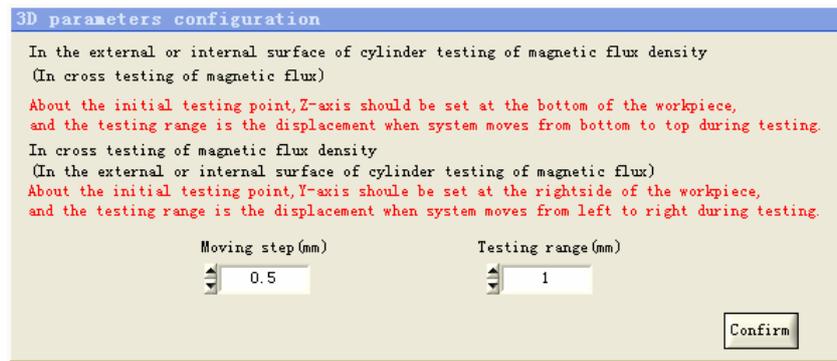
- 1) Load configuration: search by "product serial number" and load the parameter configuration of the product if already recorded. Message will be shown if there is no data record.
- 2) Save configuration: save testing parameters into database by "product serial number". If the testing parameters of the product already exist, it will be overwritten.
- 3) Recall: press this button can lead to the main testing interface to review the records without setting the testing point.
- 4) Pending testing point: Y、Z axis motors drive testing workpiece from current location to pending testing point.
- 5) Testing point: Y、Z axis motors drive testing workpiece from current location to testing

point.

Note: do not click “Pending testing point” or “Testing point” if it is not sure whether the testing position is appropriate.

- 6) Test: enter the main testing interface , Y、 Z axis run to the pending testing point at the same time, get ready for test.
- 7) Exit: exit the testing program.

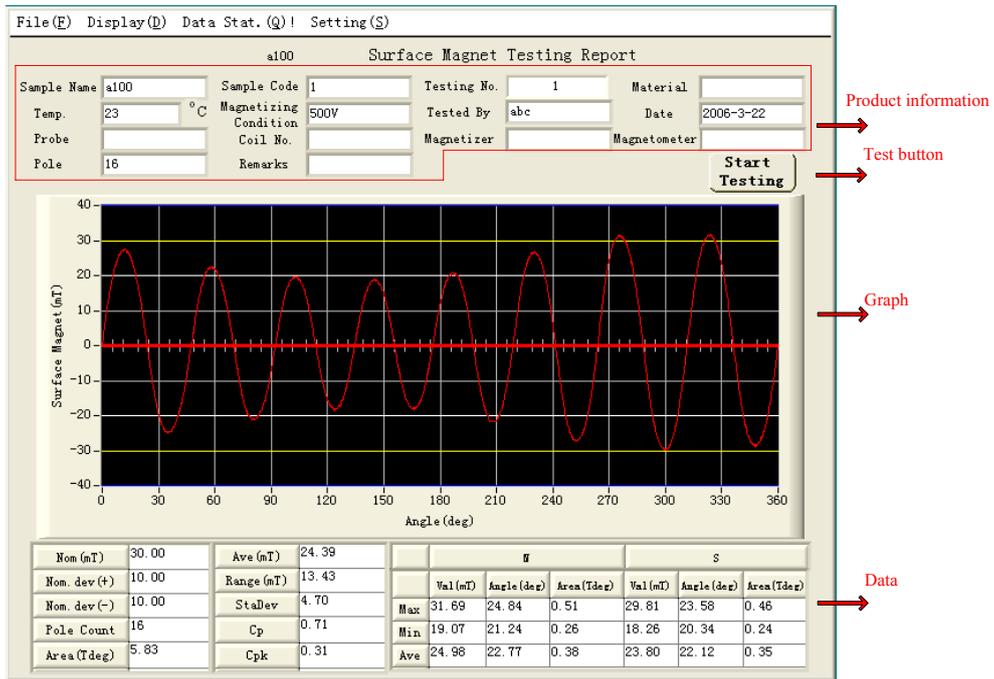
7.2 3D parameters configuration



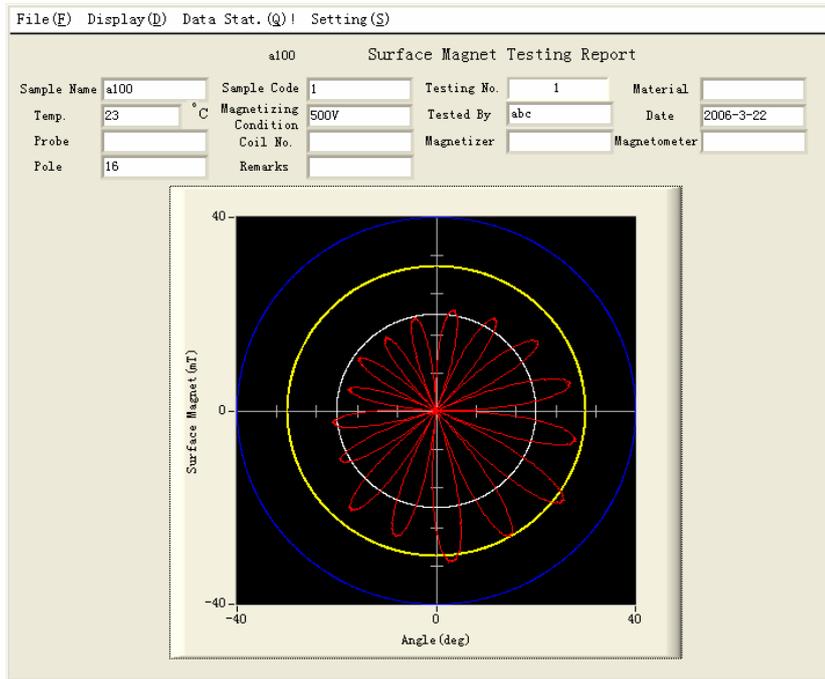
- Moving step:0-20mm,Default:0.5mm.
- Testing range:1-100mm,Default:1mm.
- In the external or internal surface of cylinder testing of magnetic flux density (In cross testing of magnetic flux):
About the initial testing point, Z-axis should be set at the bottom of the workpiece, and the testing travel is the displacement when system moves from bottom to top during testing.
- In cross testing of magnetic flux density (In the external or internal surface of cylinder testing of magnetic flux):
About the initial testing point, Y-axis should be set at the rightward of the workpiece, and the testing range is the displacement when system moves from left to right during testing.

7.3 Two dimensional testing panel

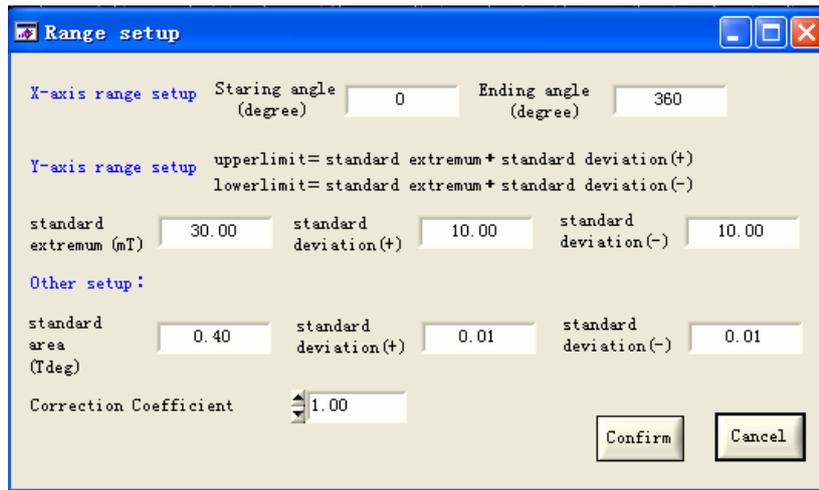
When select 2D testing mode, and click **Test** button, it leads to the main testing interface. When click **Start Testing** button, the sensor will move to the appointed testing point and begin testing.



XY Plane Testing Interface



Polar coordinate interface



range setup interface

- By changing the x-axis range, to enlarge or diminish a portion of the plot displayed by the graph. For example, if you zoom in a section of a plot, the graph displays a smaller portion of the plot in the same amount of display area, which enlarges the detail of that section. <Menu Structure>

File

Open: recall the saved data in the specified directory

Default save path of the wave:

Two dimensional wave (flux density): program installation path (d:\xiandaco)\cqsavewave

Two dimensional wave (flux): program installation path (d:\xiandaco)\ctsavewave

Refresh: drawing new graph from zero-crossing in positive direction.

Restore: restore the graph to initial testing state.

Print: print graph in the active interface.

Return Config: return to the Config. interface..

Exit program: exit the program.

Display

Display data: display data interface.

Display graph: display XY Plane Testing interface.

Display polar: display polar coordinates interface.

Data Stat.

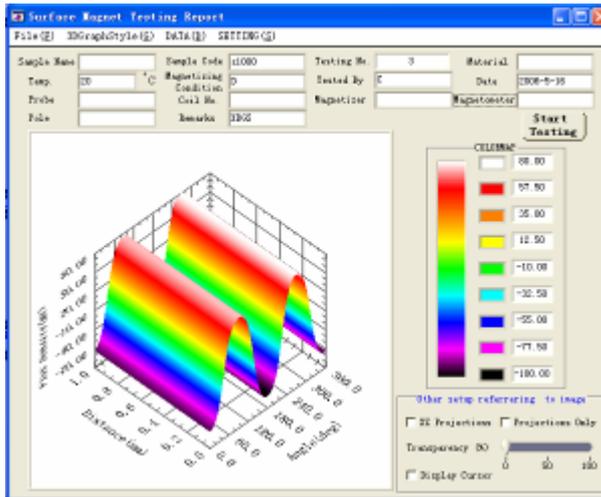
Display data stat. panel

Setting

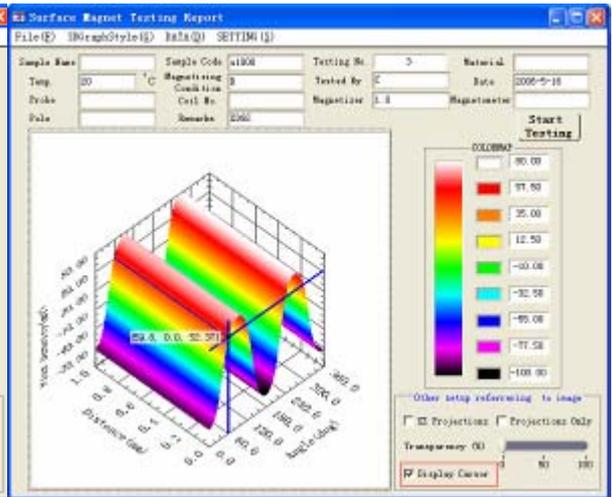
Range: Coordinate range setup interface

7.4 Three dimensional testing panel

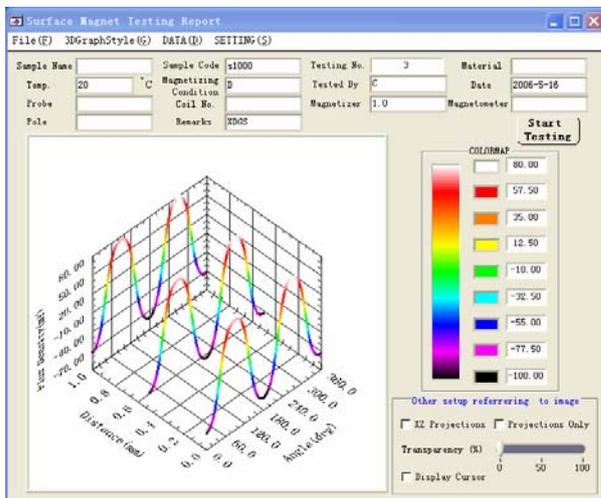
When select three dimensional testing mode, and click **Test** button, it leads to the main testing interface. When click **Start Testing** button, the sensor will move to the appointed testing point and according the specified route ,begin testing.



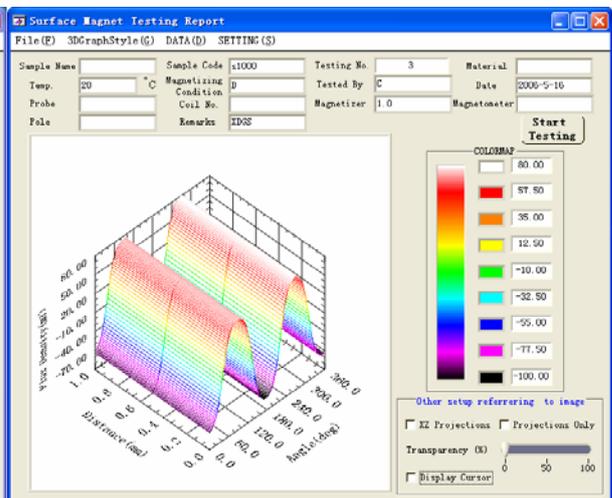
Three dimensional surface plots



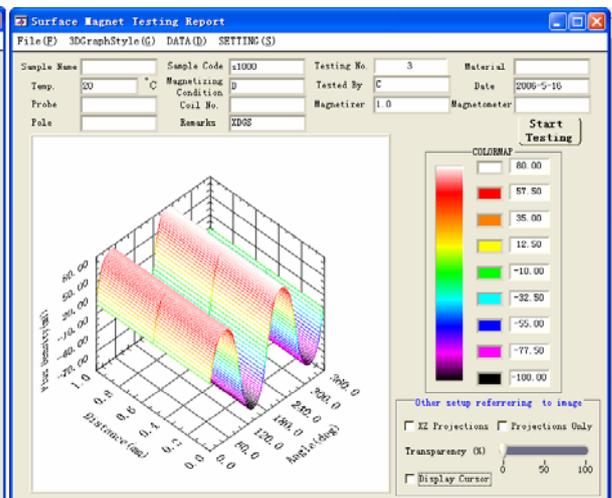
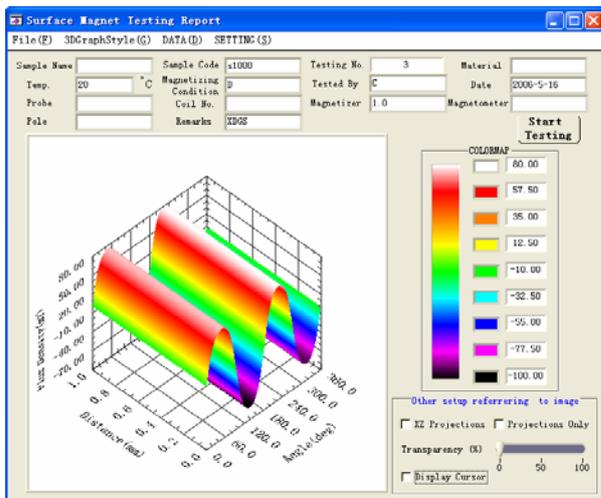
Display cursor on plots



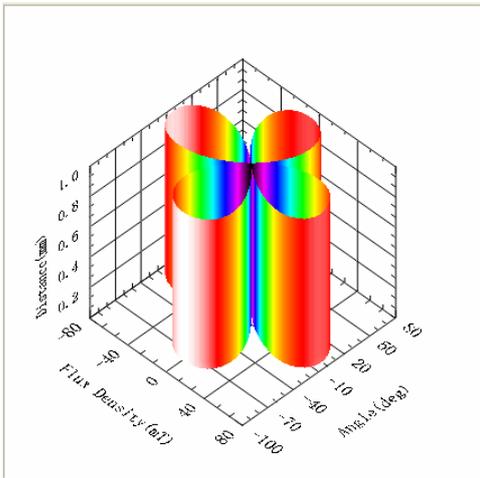
Three dimensional mesh plots



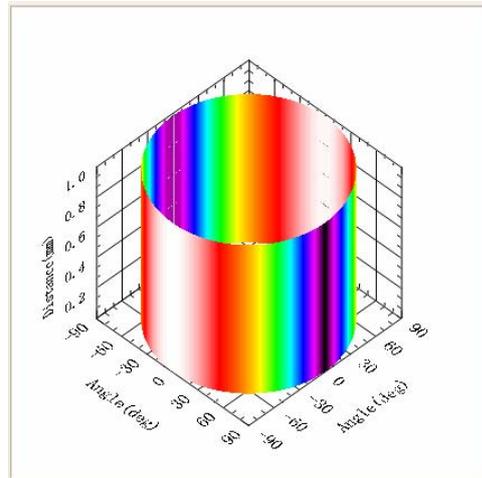
Three dimensional curve plots



Refreshed plots (new data of forward direction toward zero)

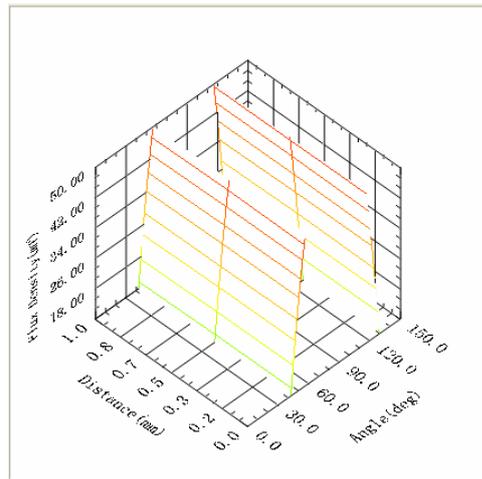
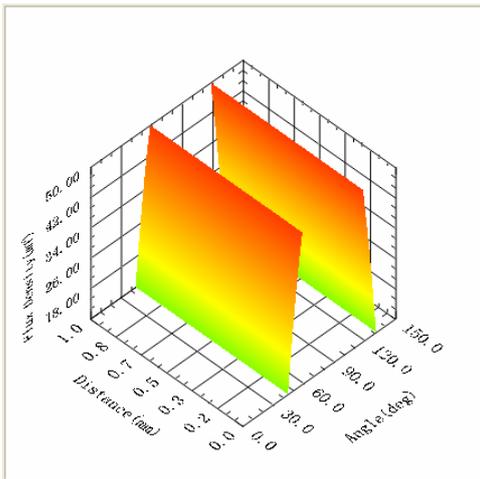


Three dimensional polar coordinates



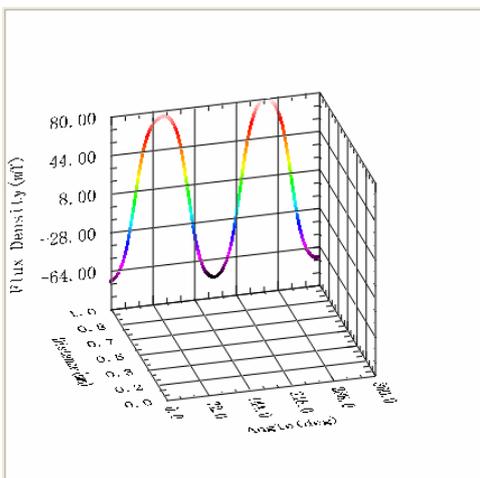
Three dimensional cylindrical coordinate system

By setup x-axis and z-axis range, to enlarge or diminish a portion of the plot displayed by the graph. For example, if you zoom on a section of a plot, the graph displays a smaller portion of the plot in the same amount of display area, which enlarges the detail of that section.



Three dimensional section of plots

When checking the XZ projections radio button, and projections only button, it draws all the projections that are currently enabled, but does not draw the plot.



File(E) 3DGraphStyle(G) DATA(D) SETTING(S)

Sample Name: Sample Code: s1000 Testing No. 3 Material:
 Temp. 20 °C Magnetizing Condition: Tested By: C Date: 2006-5-16
 Probe: Coil No.: Magnetizer: Magnetometer:
 Pole: Remarks: XDGS Datasheet: Sheet1

Data	1	2	3	4	5	6	7	8	9	10
Pole count	4	4	4	0	0	0	0	0	0	0
Peak value N Max	79.49	79.22	79.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min	74.93	74.66	74.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ave	77.21	76.94	77.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
relative error	0.06	0.06	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S Max	81.10	81.10	81.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min	74.39	74.12	73.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ave	77.75	77.61	77.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00
relative error	0.09	0.09	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
QH(S)/2	77.48	77.28	77.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
zero distance N Max	92.16	92.16	91.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min	88.74	88.92	88.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ave	90.45	90.54	90.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
relative error	0.04	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S Max	90.00	90.00	89.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min	88.92	88.92	88.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ave	89.46	89.46	89.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00
relative error	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Area N Max	4.95	4.95	4.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min	4.90	4.90	4.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ave	4.93	4.92	4.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00
total	9.85	9.84	9.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S Max	5.09	5.09	5.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min	4.63	4.61	4.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ave	4.86	4.85	4.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
total	9.72	9.70	9.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00

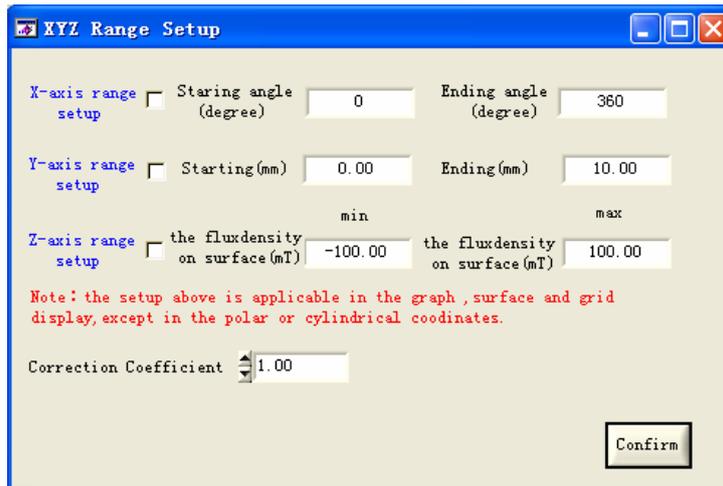
Three dimensional datasheet 1

File(E) 3DGraphStyle(G) DATA(D) SETTING(S)

Sample Name: Sample Code: s1000 Testing No. 3 Material:
 Temp. 20 °C Magnetizing Condition: Tested By: C Date: 2006-5-16
 Probe: Coil No.: Magnetizer: Magnetometer:
 Pole: Remarks: XDGS Datasheet: Sheet2

Data	1	2	3	4	5	6	7	8	9	10	11	12
1 + (N)	74.93	74.66	74.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
2 - (S)	81.10	81.10	81.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
3 + (N)	79.49	79.22	79.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
4 - (S)	74.39	74.12	73.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
5 + (N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
6 - (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
7 + (N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
8 - (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
9 + (N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
10 - (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
11 + (N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
12 - (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
13 + (N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
14 - (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
15 + (N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
16 - (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
17 + (N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
18 - (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
19 + (N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
20 - (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
21 + (N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
22 - (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
23 + (N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
24 - (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
25 + (N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
26 - (S)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

Three dimensional datasheet 2



Range setup interface



Color Map Style Setting

<Menu Structure>

File

Open: recall the saved data in the specified directory

Default save path of the wave

Three dimensional wave (flux density): program installation path (d:\xiandaco)\cqsavewave3d

Three dimensional wave (flux): program installation path (d:\xiandaco)\ctsavewave3d

Save as image: saving current panel as bitmap.

Refresh Graph: drawing new graph from zero-crossing in positive direction.

Refresh Data: refresh data.

Restore Graph: restore the graph to initial testing state.

Note when changing the range of axes, click this item to restore.

Print: print graph in the active interface.

Return Config: return to the Config. interface.

Exit program: exit the program.

3DGraphStyle

Line: display three dimensional curve plots

Surface: display three dimensional surface plots

Mesh: display three dimensional mesh plots

Polar: display three dimensional polar coordinates

Cylinder: display three dimensional cylindrical coordinate system

Rotating, Panning, and Zooming 3D Graphs in an application that is running

- **Zooming:** To zoom on the graph, press and hold the <Alt> key and the left mouse button while dragging the mouse forward and backward. If your mouse has a wheel, you also can zoom on the graph by rotating the wheel.
- **Rotating:** To rotate the graph, press and hold the left mouse button and drag.
- **Panning:** To pan the graph, press and hold the <Shift> key and the left mouse button while dragging the mouse.

Operating graph cursors

Click and hold the left mouse button and drag the cursor to activate the cursor, and shape is hand shape.

You can use the keyboard to operate a graph with cursors, as described in the following table.

Keyboard Actions for Cursors

left arrow key	Down to the closest point in the y direction on the current plot. (per unit of y-axis is the previous set step)
right arrow key	Up to the closest point in the y direction on the current plot. (per unit of y-axis is the previous set step)
up arrow key	Left to the closest point in the x direction on the current plot. (per unit of x-axis is zero point two degree)
down arrow key	Right to the closest point in the x direction on the current plot. (per unit of x-axis is zero point two degree)

DATA

DATA: display datasheet

By click the datasheet button and select item 1 or 2, display datasheet 1 or datasheet2.

Note

When first click the menu item, display datasheet, and next click, hide datasheet.

SETTING

Range: Coordinate range setup interface

When checking the X, Y and Z square button, by setup x-axis, y-axis and z-axis range, to enlarge or diminish a portion of the plot displayed by the graph. For example, if you zoom on a section of a plot, the graph displays a smaller portion of the plot in the same amount of display area, which enlarges the detail of that section. Click File menu and select restore item

to restore initial range.

Colormap: display color map style setting panel. Specify the color map style that is used by the plot.

You can use the following constants with this data type:

- ColorSpectrum–The color map is a color spectrum.
- Custom–The color map is custom-defined.
- Grayscale–The color map is grayscale.
- None–No color map is applied.
- Shaded–The color map is shaded.

Note:

The color map is applied to data points by mapping the magnitude value of each data point to a color in the color map. If magnitude data is not specified for the plot, the Z data is used for the magnitude data.

8 Data save

8.1 Parameters of configuration file

- Flux density : d:\xiandaco\cqconfig.dbf
- Flux : d:\xiandaco\ctconfig.dbf
Above Parameters are saved by user.
- Configuration parameters of last test: lastconfig.txt, these parameters are autosaved.

8.2 Database file for stat. File (Two dimensional test)

- Flux density: in the d:\xiandaco\cqsavedata directory, name is previous setting.
- Flux : in the d:\xiandaco\ctsavedata directory, name is previous setting.
Above parameters are autosaved.

8.3 Wave data

Flux density

Two dimensional test: in the d:\xiandaco\cqsavewave directory.

Three dimensional test: in the d:\xiandaco\cqsavewave3d directory.

Flux

Two dimensional test: in the d:\xiandaco\ctsavewave directory.

Three dimensional test: in the d:\xiandaco\ctsavewave3d directory.

The file is named by sample code and testing number, it is autosaved.

8.4 Images (Three dimensional test)

Flux density: in the directory d:\xiandaco\cqimage

Flux : in the directory d:\xiandaco\ctimage

The file is named by sample code and testing number, it is autosaved.

9 Software installation, uninstall, reinstall and setting instructions

9.1 Software Install

The software installation process involves a number of installation utilities. Some familiarity with Windows is assumed.

- Start installing program by invoking the file **Setup.exe** in the \volume1 hierarchy (on the CDROM or harddisk). This will start the installation procedure. Note that if you have the autorun feature enabled, Windows will run **Setup.exe** automatically.
- You will be prompted for a path in which to install the program. The default will be in the c:\xiandaco hierarchy, you should change the path is d:\xiandaco, and make sure that you have enough disk space available on that partition

Note: The path decides data sources setting. Make it is a fixed path for easily setting the data sources. But if the path is not d:\xiandao, the program will run normally, only the stat. Data function (two dimensional test) is invalid.

9.2 Software Uninstall

Start uninstalling program, should enter control panel, select add/remove programs, select csy3d.exe to uninstall. According to customer's inquirement, backup the following files such as cqconfig.dbf , ctconfig.dbf and special wave data in wave directory.

9.3 Software Reinstall

Make sure your current program is completely removed from the computer, and run the setup file to reinstall.

Note: Backup files can copy to program reinstall path.

9.4 Other setting

The SQL Toolkit for the program on the CDROM is used for reinstall operating system. By invoking the file **setup.exe** in the SQL\setup.exe hierarchy, choose Microsoft Visual C++ 2.x, 4.x.

- Data sources setting: when you reinstall operating system, it should be setting, and used for associated with stat. Database file. (two dimensional test)
- Start--Settings--Control Panel--Administrative Tools--Data Sources(ODBC)--User DSN—add--LW/CVI 32BIT dBASEFile (*.dbf), referring the following figure.

