Gaotiejian

GTJ-K Intelligent Foundation Coefficient Tester

Beijing Gaotiejian Technology Development Co.,Ltd.

Content

Chapter One Instrumental Functions and Operation Instructions

1. Reference Standard

Industry Standard "Code for Geotechnical Test of Railway Projects" of the People's Republic of China (TB10102-2010)

2. Functions of the Instrument

GTJ-K Intelligent Foundation Coefficient Tester is suitable for testing the foundation coefficients of subgrade after compacted by coarse and fine soil and soil fill. It can also be used to calculate the deformation modulus of uniform foundation soil, test the stress and deformation characteristics of foundation soil, determine the roadbed of highway and railway, as well as the foundation coefficient of base, etc.This product has the functions of testing K30, K40 and K60. In order to meet the requirements of railway informationization, the experts from the railway department of our company broke the traditional old test method and intelligentized the foundation coefficient tester, which greatly improved the accuracy and efficiency of the test.

Applicable specifications

TB10102-2010 "Code for Geotechnical Test of Railway Projects"

JTGE60-2008 "Code for On-site Testing of Highway Subgrade and Pavement"

Basic Functions

Test

Display 17 test values, and can measure the foundation coefficient.

Storage

Test data and analyze the processing results, can store 400 sets of data.

Printing

Print test data, test curves, etc. on a Bluetooth micro printer.

System setting

Modify the current clock and date.

3.Technical Parameters

Name		Technical indicators
model specification		GTJ-K Model
Test scope	Applicable soil type	Soil and rock mixed fillers with a diameter of less than 1/4 of the diameter of the load plate
	Test impact depth	0-500mm
	Working environment:	Temperature-10 ° C-40 ° C. Humidity <90% HR
Main unit parameter	Specifications	Screen size:3 inches
		Volume (mm): 205X100X40mm
		Weight (kg): 0.8 kg
	Storage capacity	400 sets of test data
	Data transmission mode	Data line transmission
	Power supply mode	Lithium battery
	Display mode	Handheld host screen, Chinese and English shift display
Printer connection mode		Wireless Bluetooth printing
Sensor	Range of pressure sensor:	100 kN
	Range of displacement sensor	25 mm resolution 0.01 mm
Data acquisition device	Bearing plate	Diameter (mm): 300mm thickness: 25mm weight: 17.5kg
	Loading device	hydraulic pump Pressure cylinder (maximum pressure 100KN, stroke 150mm) High pressure hose (length 2m) Insertable pressure cylinder connecting long rod (1 × 40mm,1 × 90mm,1 × 120mm,1 × 160mm,2 × 60mm) magnetic ball joint
	Displacement measuring device	Three point support frame (with retractable lever arm and adjustable base) Size:2320 × 570 × 420mm (length × width × height) Weight: 12.5 Kg

4. Composition of the Instrument System

The GTJ-K Intelligent Foundation Coefficient Tester is mainly composed of main engine, micro printer, loading device and displacement measuring device, as shown in Figure 1.
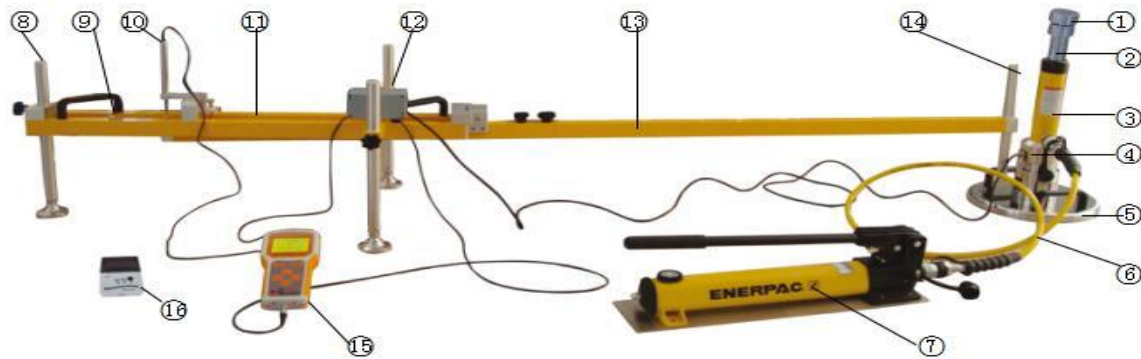
Figure 1

The digital identifiers shown in the figure are divided into:

Loading device

   1. Magnetic ball joint 2. Length rod 3. Pressure cylinder 4. Pressure sensor 5. Loading plate 6. Oil pipe 7. Pressure pump

Displacement testing device

   8. Support foot 9. Horizontal bubble 10. Displacement sensor 11. Measurement reference frame 12. Test box and support beam 13. Measuring arm 14. L-type accessories

Instrument

   15. Handheld Host 16. Micro Bluetooth Printer

Descriptions on the main engine's panel

   (1) ↑: Move the cursor upward, which will be replaced by Up in the following text.
   (2) ←: Move the cursor leftward, which will be replaced by Left in the following text.
   (3) →:Move the cursor rightward, which will be replaced by Right in the following text.
   (4) ↓: Move the cursor downward, which will be replaced by Down in the following text.
   (5) Return: It will be replaced by the Return Key in the following text.
   (6) Enter: It will be replaced by Enter Key in the following text.

Explanation of the side socket of the main engine

   (1)6-pin circular socket: Connect the test box;
   (2) Circular 232 socket: charging;
   (3) USB transmission socket: Connect the computer to transmit data;
   (4) Ship-type switch: Turn on or off the apparatus.

5. Test preparation

Installation of the loading device (see Figure 1)

   (1) Place the load plate 5 on the test point and the opening acts as a guide for connecting the L-type fitting 14.
   (2) Place the pressure sensor 4 on the load plate and then place the pressure cylinder 3 on the pressure sensor.
   (3) Attach the magnetic ball joint 1 to the loaded motor vehicle.
   (4) Adjust the height of the long rod 2 with a pluggable pressure cylinder.
   (5) Connect the oil pipe 6 to the pressure cylinder 3 and the pressure pump 7.

Installation of a three-point support frame (see Figure 1)

   (1) Install the support beam 12 on the measuring frame 11 and then install the three support legs 8 on the test frame 11
   (2) Take out the L-type fitting 14 and install it on the measuring arm 13

(3) Connect the measuring arm 13 to the measuring frame 11 and fixed with two bolts.
(4) Insert the 14 circular contacts of the L-type fitting into the center of the bearing plate, i. e. the notch of the L-type fitting is aligned with the edge of the round hole and level the whole three-point support frame with the aid of horizontal bubble 9.
(5) Install the displacement sensor 10 at the measuring position on the measuring base frame 11 and fix it.

Connection of sensors (see Figure 1)

Insert the connection line of the pressure sensor and the displacement sensor into the test box, and connect the output line of the test box to the corresponding jack on the host. Note: Both pressure and displacement sensors must be connected before testing.

6. Host Operation

6.1 Boot Status

Turn the key on the mainframe power supply according to the ship type, and then display the Boot interface (as shown in Figure 1.1).The top right corner of the interface shows the current battery capacity. The battery icon is full when there are four cells in it. When the battery is empty, the battery needs to be charged. The charging operation is shown in section 8. When the battery has electricity, press the Enter Key to enter the main menu interface (as shown in Figure 1.2), the Left key switch backlight, in any interface can.

```
5.2
          Welcome
       GTJ-K Tester
       GAO TIE JIAN
      +86010-60216565
```

Figure 1.1 Boot Interface

6.2 Main menu interface

Select Up or Down to choose the menu, and Press Enter Key to enter the corresponding menu (as shown in Figure 1.2).

```
      > Measuring
        Management
        Settings
```
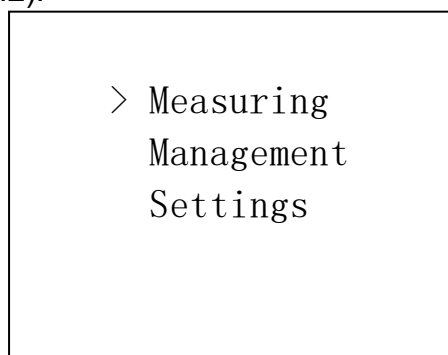
Figure 1.2 Main menu interface

6.3 Test Procedure

Select the test program under the main menu and press Enter Key to enter the test preparation interface (as shown in Figure 1.3).This interface allows you to modify the serial number, test type selection, and, if repeated, there will be a hint that the component already exists.

```
May 22  2019  07:39

        Num:   001
        Type: K30
        DL:9.99Mpa
```

Figure 1.3 Test Preparation Interface

Press Enter Key to enter the test program (as shown in Figure 1.4) for preloading.The bottom is the real-time display of pressure and displacement

```
Num:001       Steps:

       Mpa          mm
   0.000Mpa     00.00mm
   _____
       Pre-compaction
```

Figure 1.4 Test Program Interface

The real-time measurement data (shown in Figure 1.5) is displayed at the bottom of the test process. Press Enter Key to select the measurement data as the measurement results under this grade. When the sink reaches the required level, the bottom of the screen prompts the "Test Completed".

```
Num:001       Steps:02

   0.041Mpa     00.52mm
   0.040Mpa     00.52mm
   _____
           Load
```

Figure 1.5 Test Interface

According to the measurement principle of industry standard, the proportional relation between load K30 and stress sigma is as follows:

$$K30 = Sigmas/ Ss$$

During the test, the bottom of the screen will have the corresponding "Pre-pressure" and "Loading" text tips. When the test is completed, it will automatically switch to the test result interface (as shown in Figure 1.6). You may press ⬛Rightward ⬛Key for printing.
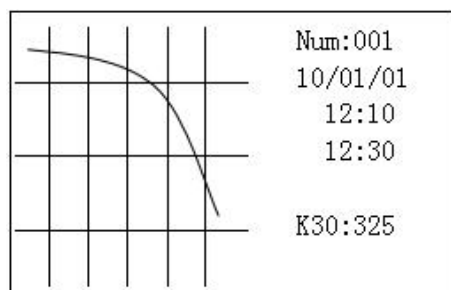
```
┌──────────────────────────┐
│              Num:001     │
│              10/01/01    │
│                 12:10    │
│                 12:30    │
│                          │
│              K30:325     │
└──────────────────────────┘
```

Figure 1.6 Test Results Interface

Press ⬛Return Key⬛ or ⬛Enter Key⬛ in this interface, it will ask whether the operator is to save (as shown in Figure 1.7).

```
┌──────────────────────────┐
│                          │
│       Save   Data?       │
│                          │
│       OK       Yes       │
│       ESC      NO        │
│                          │
└──────────────────────────┘
```

Figure 1.7 Save prompt interface

Press ⬛Enter Key⬛ to save the data. Then, it will automatically return to the main menu interface. Press ⬛Return Key⬛ to cancel and return to the main menu interface (as shown in Figure 1.2).

6.4 Data Management

Select Data Management in the main menu to enter the program (as shown in Figure 1.8).

```
┌──────────────────────────┐
│                          │
│       >View Data         │
│                          │
│       Delete Data        │
│                          │
│       Output Data        │
│                          │
└──────────────────────────┘
```

Figure 1.8 Data Management Interface

1. Data View

Select the data view option in the data management interface and enter the interface shown in Figure 1.9.

```
         Select    Num
         ___
         001   002   003
```
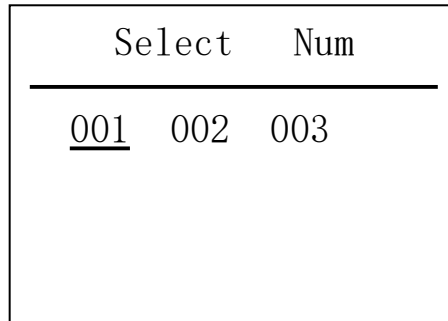
Figure 1.9 Selecting Sequence Number Interface

2. Data Clearance

Before testing, pass the data in the instrument to the computer (see Method 3, Data Output) and clear the data in the instrument.
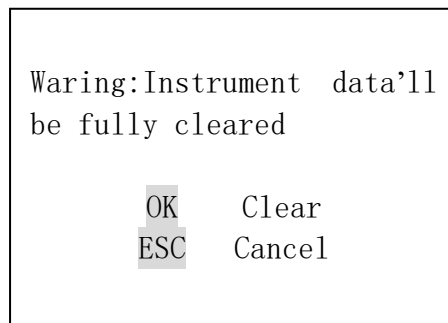
```
  Waring:Instrument   data'll
  be fully cleared

            OK     Clear
            ESC    Cancel
```

Figure 1.10 Select Clear Data Interface

The operation is as follows: In data management interface, select data clear sub-menu, press Enter Key to enter data clear interface as shown in Figure 1.10.
Look carefully at the prompts on the screen and press the prompts.Press Return Key to return to the main menu and it will not delete the data. Press Enter Key to start clearing the data and show progress in the bottom right corner of the screen. After the selected data in the host is deleted, it will return to the data management interface.

3. Data Output

It is suggested that the data should be transmitted to the computer in time after each test. The operation method is as follows:
1.   Connect the instrument to the computer using a USB data cable.
2.   Enter the data management interface, select the data output sub-menu, press Enter Key to enter the selection transfer data interface.
3.   Right-click the computer-device manager-port to see if there are COM ports that are not COM1.
4.   Turn on the analysis software in the computer.
5.   Click Information Reading into the data transfer interface, choose serial port (COM2, COM3, etc.).Click Opening Serial Port on the computer software .
6.   Press Enter Key of the instrument to display progress in the interface shown in Figure 1.11.

7. Wait until the transmission is complete. After completion, it will automatically return to the data management interface. The upper computer software interface will give the completion of the transmission tips. Please refer to the software instruction manual for details.
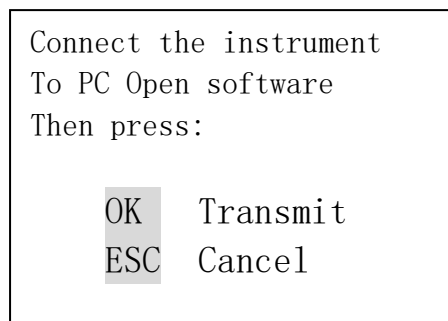
```
Connect the instrument
To PC Open software
Then press:

    OK    Transmit
    ESC   Cancel
```

Figure 1.11 Data Output Interface

Note: Make sure to open the data transfer interface on the computer and select the serial port for transmission, and then open the instrument for transmission, otherwise the data transmitted will not be complete. When the user uses USB data cable to carry on the transmission, they should install the driver. For details, refer to Section 1 Software Installation in Chapter 2 Software Introduction

6.5 System Settings

Select the system settings on the main menu to enter the program, carry out the change for the date and t he clock (as shown in Figure 1.12). Press Leftward or Rightward keys to move the cursor. Press Up or Down keys to modify the value. Press Enter Key to save and return to the main menu. Press Return Key to cancel and return to the Main Menu.

```
        Settings

     May  22, 2019
          08:19


     Language:English
```
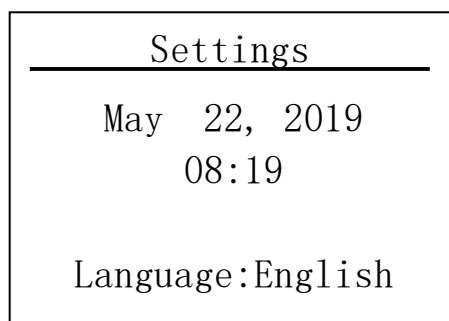
Figure 1.12 System Setup Interface

7. Test Completion

1. Turn off GTJ-K Intelligent Foundation Coefficient Tester by electric ship switch
2. Disconnect the connection between the cable and the test box from the intelligent foundation coefficient tester, grip the cable root and pull the plug out of the sensor interface.
3. Remove loading device and pack.

8. Charging

1. Host Charging: The main battery should be charged by 8.4V/ 2A charger provided by the instrument. The battery charger can be connected to 220V/ 50Hz power supply. When charging, the indicator light of the charger shows red. When the charging is finished, the indicator light turns green. The charging time is about 4 hours.

2. Printer Charging: The printer shall be charged by the 12.6V charger provided by the instrument. Plug the power adapter's plug into the 220V/ 50Hz power outlet, then plug the charging plug into the printer's power outlet, and the printer starts charging. During charging, the printer's[FEED] light turns green. When the battery is full, the[FEED] light goes out. The charging time is about 3 hours.

Note: If the first use of the instrument, printer or idle for a longer period of time, it should be charged before use. Charger can only correspond to the battery charging, not mixed use, charging other types of batteries may cause explosion risk. Don't open the charger case.

Chapter Two Software Introduction

1. A Brief Introduction

GTJ-K Intelligent Foundation Coefficient Tester Analysis software is developed by Beijing Gaotiejian Technology Development Co., Ltd. for GTJ-K intelligent foundation coefficient tester data analysis software processing. It runs on a computer installed with the Windows operating system.

The processing object of this software is the measurement data of "GTJ-K intelligent foundation coefficient tester" (. ORG) file. The software can calculate and process the multi-group test data uploaded by the intelligent foundation coefficient tester, and also can input the single-group data by hand. The software can receive, save and analyze the data of the intelligent foundation coefficient tester, and print out the analysis result after the data processing. The result can be used as the user's test report directly.

In this software, the text with gray background is the item on the software (button or menu bar, etc.), such as Save refer to the Save Menu, and Computate refer to the Computating Button in the data window for the data testing in the main window.

This software involves two different types of files, as shown in Table 1.1.

Type	Extension Name	Descriptions
Original file	ORG	The original data file of GTJ-K intelligent foundation coefficient tester.
Project document	K30	User-saved K30 project file. Contains user-entered header information, as well as the changed test name.

2. Installation

The installation process of this software is similar to that of common Windows software. This chapter will give a detailed introduction to the installation and pre-use of this software.
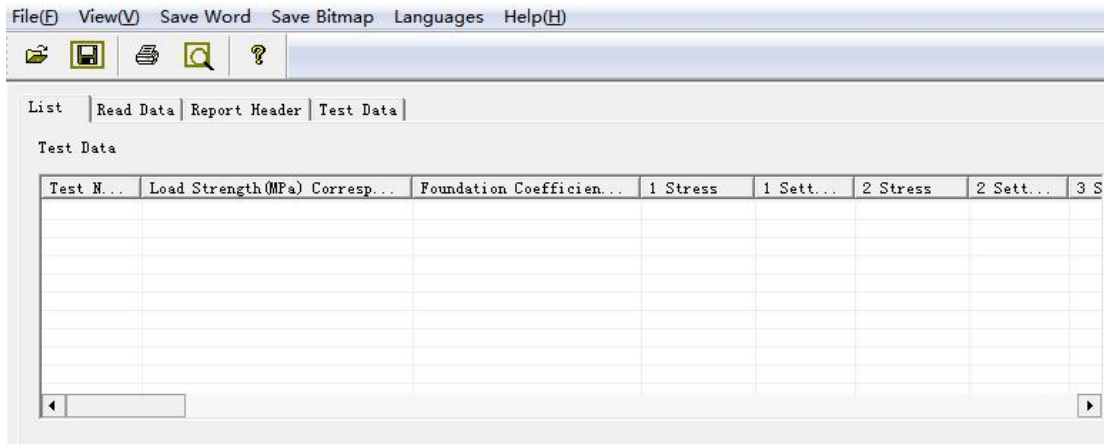
The installation steps are as follows:

Open the CD-ROM, copy the GTJ-K intelligent foundation coefficient tester analysis software to the computer, double-click the Gaotiejian K30 Foundation Coefficient Test Analysis Software. Exe to run the software.

3. Software introduction

3.1 Software Interface Introduction

Gaotiejian K30 Foundation Coefficient Test and Analysis Software operating methods and interface form fully are in line with the style of Windows. The users who are faimilar with the operation of Windows will find it easy to master the use of this software.

The software interface is composed of title bar, menu bar, toolbar and main window, as shown in Figure 3.1.

Title barFigure 3.1 Software Main Interface

●

   It displays software icons, software names, and currently processed filenames from left to right.

● Menu bar

   It is composed of three drop-down menu items (as shown in Figure 3.2). A drop-down menu will appear when you click each menu item, each with a corresponding set of functions. The sub-menu items of these three menu items contain all the functions of this software. This function is invalid in the current state when some menu item is in ash state.

Figure 3.2 Menu Bar

● Toolbar

   It is composed of a series of buttons (shown in Figure 3.3). Each button implements a common function.Hold the mouse on a button for a little while, and the function of the button will be displayed automatically on the screen.

Figure 3.3 Toolbar

● Main Window

   It includes four windows as list, read information, K30 report table head and K30 test data. The main window is used to receive serial data, display test data results, input engineering information, etc. It is the main part of the program which will be introduced below.

3.2 Main Window

3.2.1 Read Information Window

   When you click on the Read Information in the main window, it will display the read information window as shown in Figure 3.4. It includes opening the serial port button, a drop-down menu, and an editing box.

   Open the serial port button is used to open the serial port to receive data. The drop-down

menu is used to select COM ports, which automatically identify the COM ports currently in use on the computer. Select the correct COM port and click the Open Serial Button, the software will automatically test whether the COM port selected by the user is correct (if correct, white edit box prompt: serial X is ready, please send data... The white edit box displays the data received from the serial port.
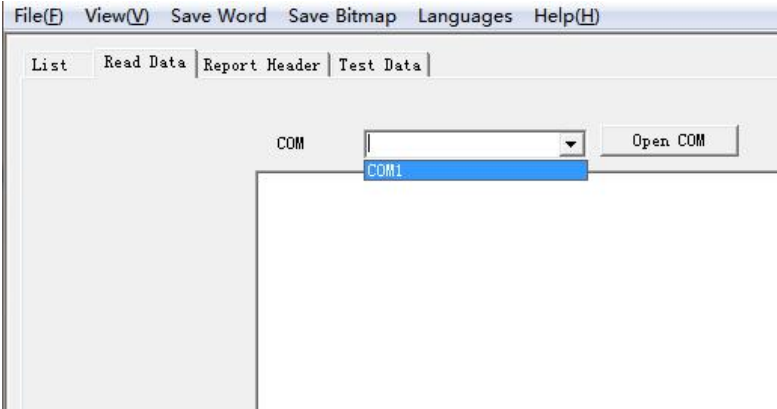

Figure 3.4 Read Information Window

3.2.2 List Window

Click the List above the main window, and the program can switch to the list window. Its function is to display all the data in the file in the list box according to the test point name. The contents are the stress and settlement values of several sets of experimental data, as shown in Figure 3.5:

Figure 3.5 List Data

Note: Only when the data is open or received, the value will appear in the list, otherwise the list will be empty.

3.2.3 K30 Report Table Head Window

When you open or receive the data and select the test point name to analyze in the K30 test data window, click the K30 report table head to enter the report table head window, you can see the contents shown in Figure 3.6. To print the final analysis result of the test data, you can fill in the corresponding information in the edit box such as the delegate unit, project name, and so on, and the information can be displayed in the print report.

Figure 3.6 Report Table Head

3.2.4 K30 Test Data Window

Click on the K30 test data above the main window with mouse, the program can switch to the test data window. It consists of three areas: the test data area, the test results area, and the stress-settlement curve area (Figure 3.7).

After opening or receiving the data, click the drop-down menu to select the test point name that needs to be analyzed, and the values of stress and settlement will be displayed in the test data area. The corresponding load intensity (Mpa) value and foundation coefficient (K30) value of 1. 25mm settlement are calculated in the list of test result area. Draw the curves of this set of data in the region of stress-settlement curve.
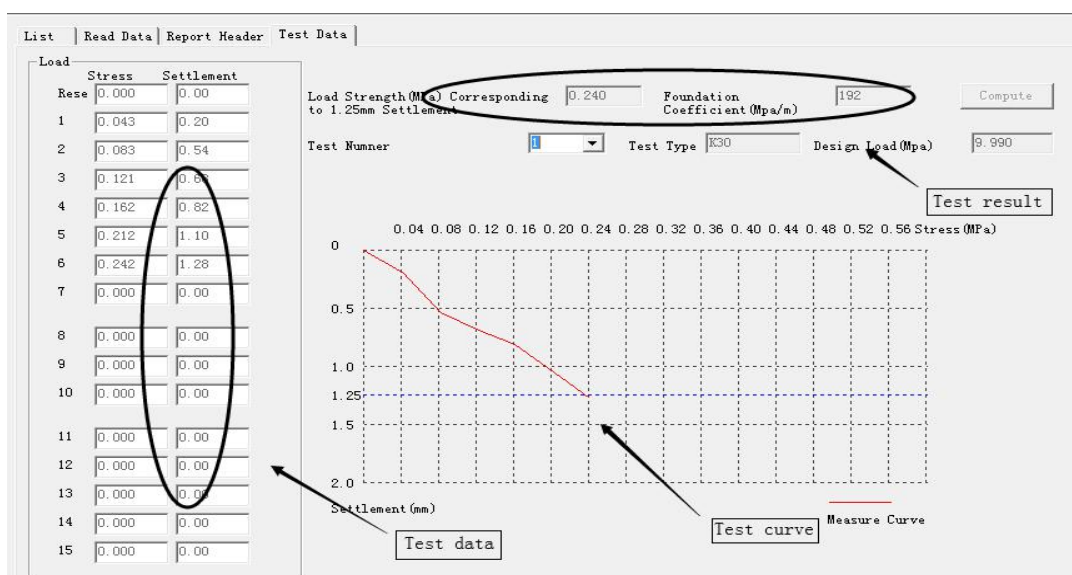

Figure 3.7 Test Data Window

Note: The test point name will appear in the drop-down menu only after the data is opened or received, otherwise the drop-down menu content is empty.

In addition, the computation buttons and test data areas that are circled by the ellipses in

Figure 3.7 are generally in a ash state. The user is not allowed to change the test data at this point. For user convenience, click the manual input data submenu in the data item under the file menu to enter data manually. For details, refer to Section 3.3.3.

3.3 Menu Introduction

This section describes several important menus for the software: open, save as, print, print preview, change the test point name, and manually enter data.

3.3.1 Open Data

Click on the Open on the File menu, there will be the open data dialog shown in Figure 3.8. In the file type, select the type of file to be opened (including two file types, one is the original file with the suffix name of ORG. The other is an engineering file with a suffix name of. K30), then select the file to open, and click Enter Key to open the selected file.
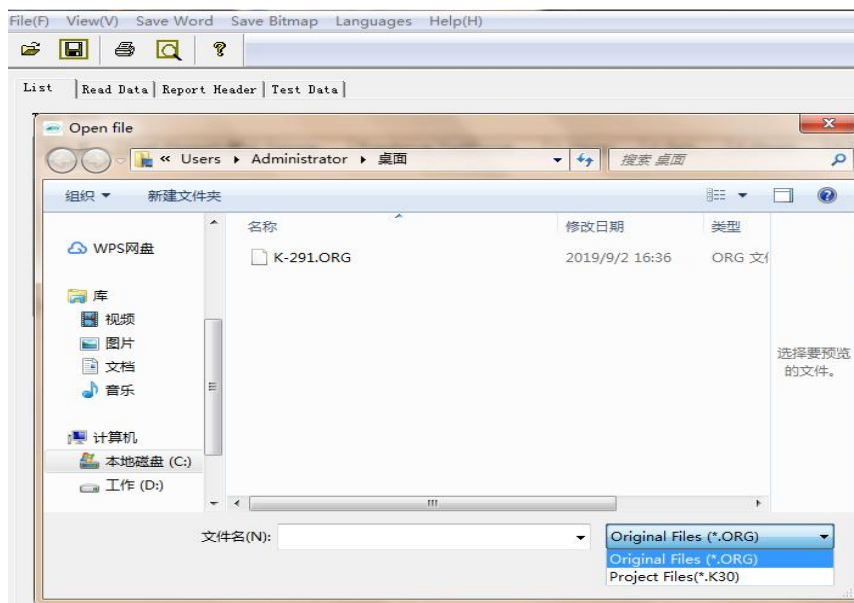

Figure 3.8 Open Data

When the data is opened, it can be analyzed, calculated and printed.

3.3.2 Preservation of Data

The Save toolbar includes two sub-menus, that is, Save Raw Data and Save Project Files.

1. Save Raw Data

After receiving the data, click the Save as under the File menu bar, and then choose Save Raw Data, there will be the Save Raw Data Dialog box shown in Figure 3.9, select the path to store the file, and enter the file name (the suffix name is). ORG), click the Save button to save the data for this time.
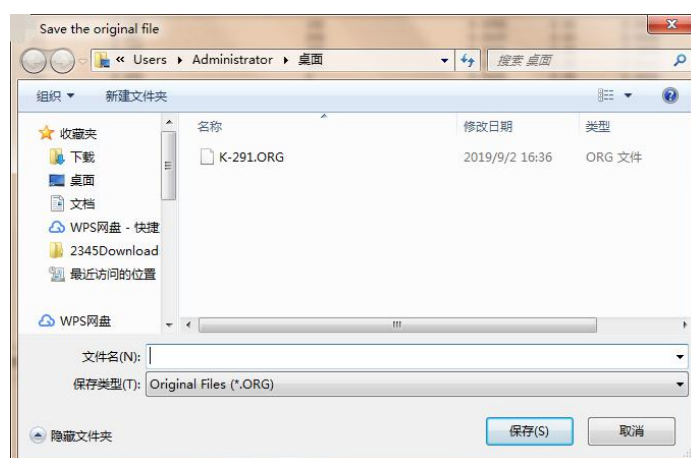
Figure 3.9. Preservation of raw data

2. Save Project File

The data stored in GTJ-K intelligent foundation coefficient tester may belong to several test projects. To store the data of a project separately, after receiving the data, click Save as under the File menu bar, and then choose Save Project Files, the selection test point dialog box as shown in Figure 3.10will appear.
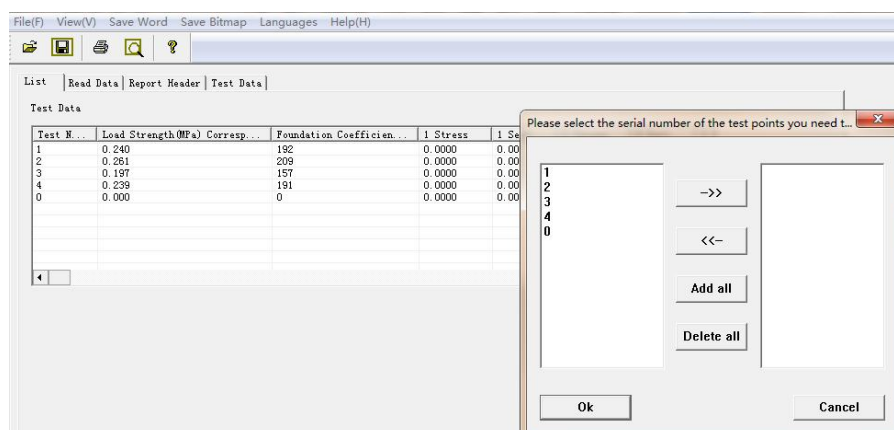

Figure 3.10Selecting Test Points

The left-hand list in this dialog shows all the test point names of the currently open file, and the right-hand list shows the test point names to be stored. In the left-hand list, the user selects the name of the test point to save, then clicks the->> button, and the test point is selected into the right-hand list box. Also, select the name of the test point in the list on the left side of the dialog, and then click <<-button, then the test point will be selected from the test point on the right column to the left list, and then click Delete All button to clear the right list. Click on the Select All button to select all test points into the right-hand list.

Select the test point to save, and then click Enter Key in the Figure 3.12 dialog box. The save project file dialog box, shown in Figure 3.11, selects the save path and enters the file name (the default suffix is. K30), then click the Save button to save the project file.
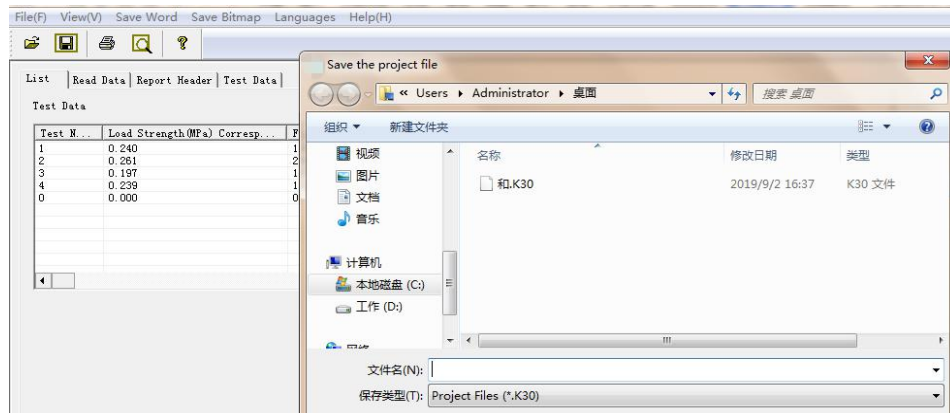
Figure 3.11 Storage of Project File

3.3.3 Data Menu

The Data menu under the File menu contains two submenu items: Change the Test Point Name and Manually Enter the Data. The respective introductions are provided below.

1.Change the Test Point Name

The test point name of the raw data in the meter is named after the test sequence number. In Figure 3.12, 1,2,,3,0 are the earlier test point names (that is, test sequence number), click the File menu bar, and then click the K30 test points under Change the Test Point Name of the Data menu. The change test point name dialog box, shown in Figure 3.12, appears.
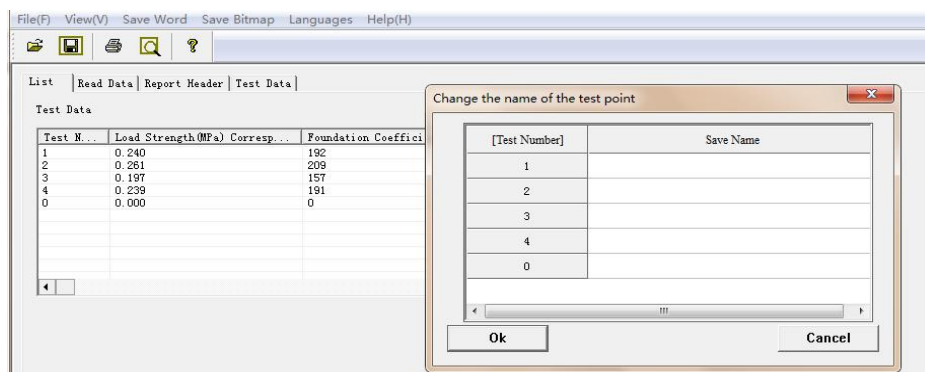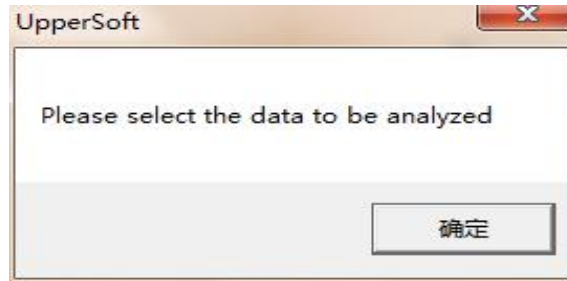

Figure 3.12 Change the Testing Point Name

In the test point name changed, double-click to rename the test point.

Note:

1. After changing the test point name, make sure to save it as a project file before saving the change.

2. Make sure to open the data or receive the data before you can change the test point name. Otherwise, the following dialog box will pop up.

2. Input Data Manually

For user's convenience, this software provides the function of input data manually and calculation. Click on the File menu bar and then click on the Input Data Manually from the Data menu. The input test point data dialog box, shown in Figure 3.13, appears.
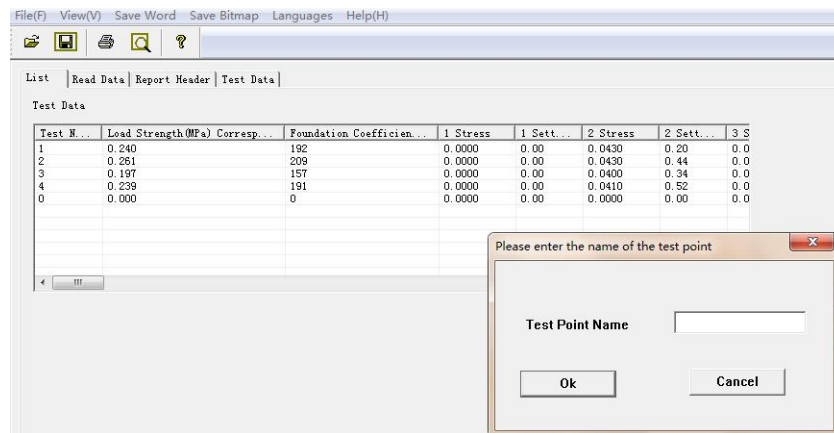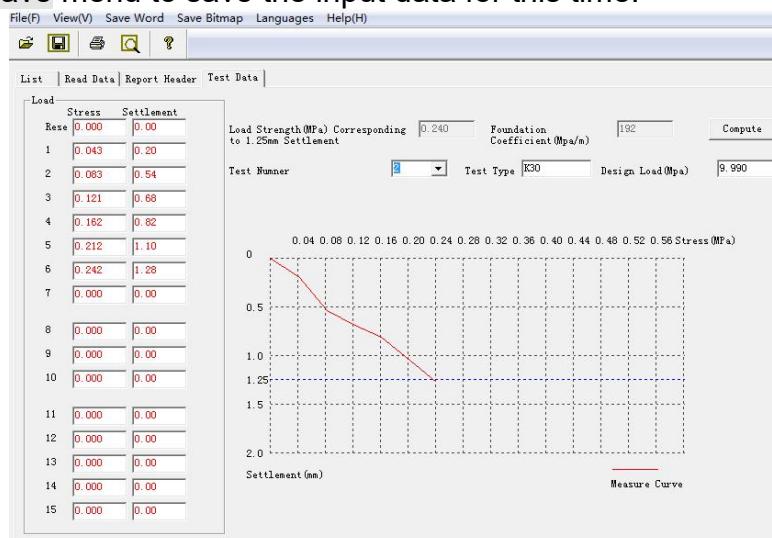

Figure 3.13 Input test point name

After filling in the test point name (note that only one type of test point can be entered at a time), click Add to the Main Window, it will automatically jump to the test data window as shown in Figure 3.14. At this point, the calculation button will change from the status of ash to available state. The 1-17 stress and settlement edit bar is also editable, and the font inside turns red. Enter the stress and settlement data in the red font edit bar, click the calculation button, the input data value will show in the test result table, and draw the stress settlement curve of the input data in the stress-settlement area. Click the Save Project File submenu in the Save menu to save the input data for this time.
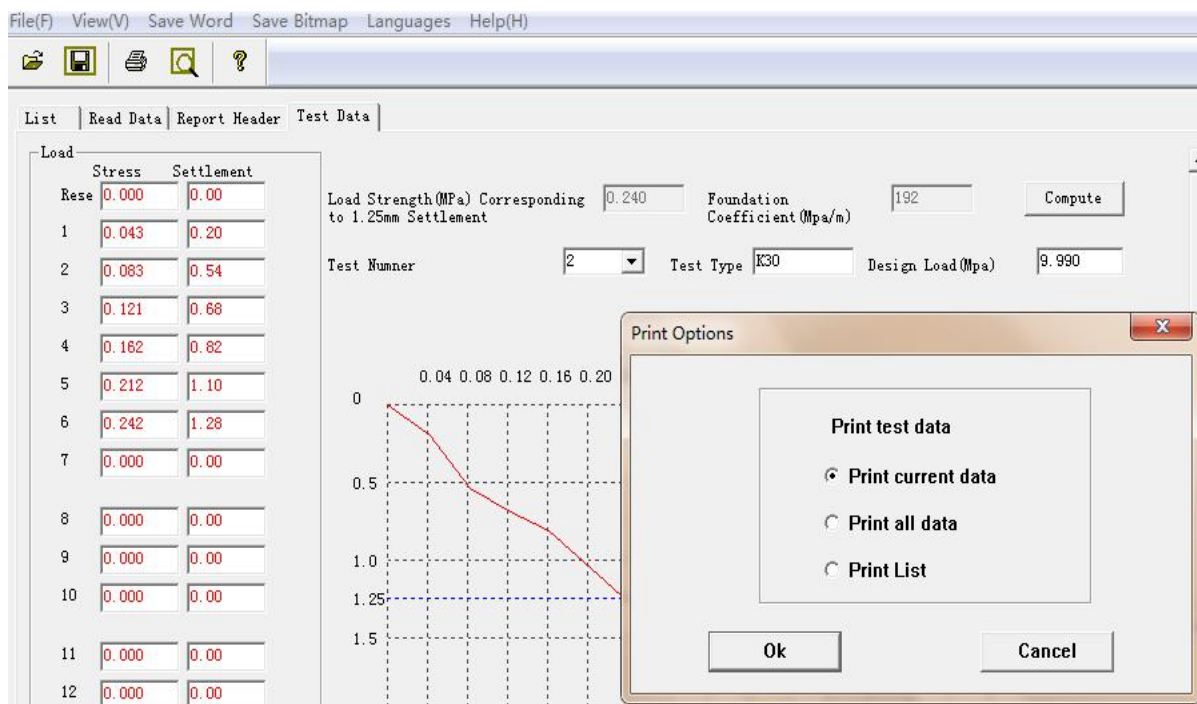

3.14 Test data window under input manually state

Note: The data entered by hand cannot be saved as the original file, and the menu bar for storing the original file is in ash state.

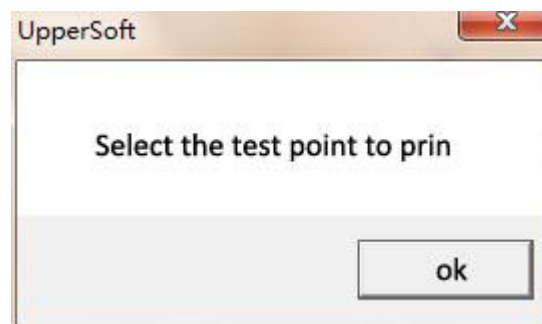### 3.3.4 Print and Print Preview

Click the Print button of the File menu or toolbar to print out the analysis report. Click the Print Preview button under the File menu to print a preview of the file in the paper type of A4.

Click Print or Print Preview, there will be printed type options dialog box as shown in Figure 3.15. There are three options in it, choose Print Current Data, then it will print the current test data window selected data value, stress-settlement curve and data results. Select Print All Data Button, it will print the data value, stress-settlement curve and data result of all test points under this file. Select Print List, it will print the data result of all test points.

3.15 Print Type Options

Note: When printing current data, make sure to select the test point to print in the test data window to print, otherwise the dialog box shown below will pop up.

Help

Click on the Help menu, it will pop up the User's Instructions, from which the user may inquire for relevant contents.

4. Introductions to Application Examples

4.1 Data transmission

The data transmitted by "GTJ-K intelligent foundation coefficient tester" mainly refers to the "Code for Geotechnical Test of Railway Projects". （TB10202-2010）.The transmitted data files include the following:

1. Instrument No.
2. Test Number
3. Stress
4. Settlement Value
5. The start test time of the group
6. End of Test Time for the Group

In this case, the GTJ-K intelligent foundation coefficient tester is connected to the computer through the COM2 port. In the Read Data window in the main window, select COM2 through the drop-down menu, and then click the mouse to Open the Serial Port button, then the button name becomes Serial Port 2 Opened. And white edit box shows: Serial port 2 is ready, please send data... as shown in Figure 4.1.This indicates that the serial port has been opened.

Figure 4.1 Open serial port

Note: COM port shall be selected correctly, otherwise the software will not be able to receive data. If the COM port selection error, when clicking Open the Serial Port, it will pop up the following dialog box, and the serial port selection error will pop up.

After the serial port is opened, the software can receive the data transmitted by the Intelligent Foundation Coefficient Tester. After the operation tester sends the data, the data can be displayed in the white edit box in the reading window as shown in Figure 4.2.

Figure 4.2 Data Reception

After data transmission, the system pops up the following dialog box:

Click Enter to store or analyze the data. Click the Save raw data sub-menu in the Save menu to save the transfer data.

Note: Make sure to wait for the data to be received after the dialog box, click Enter before the data can be analyzed and processed, otherwise the data received is not complete, and the data can not be processed.
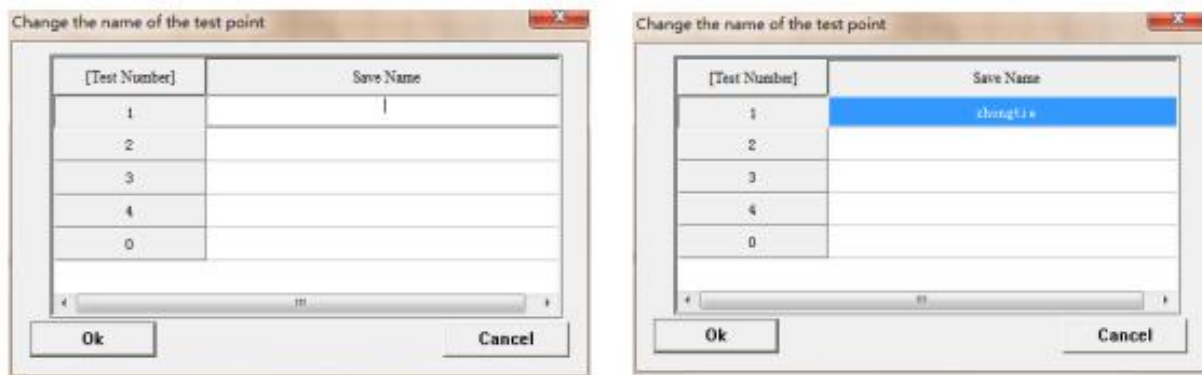
4.2 Data Processing

After receiving the data, click the Test Data button above the main window with the mouse, and switch the program to the test data window. Click the drop-down menu to select Test Sequence 1, and the processing results shown in Figure 4.3 below will appear.

Figure 4.3 Data Processing Results

4.3 Changing the Test Point Name

Fill in the report head, click on the File menu, then click on the Data, Change the Test Point Name, and the change test point dialog box as shown in Figure 4.4 (a).Change the test point name with the serial number 1 to the railway section, as shown in Figure 4.4 (b). Click Enter, and the data point name is changed successfully.

(a)　Before　change　　　　　　(b)　After　the　change

Figure 4.4 Changes the Test Point Name

4.4 Save Project Documents

Click the Save Project File menu under the Save Menu bar, the dialog as shown in Figure 4.5 will appear. Select the rail section, and then click Enter. The save project file dialog box will appear, the filename is set as a railway section test project. Click save to save the data received this time as a project file.
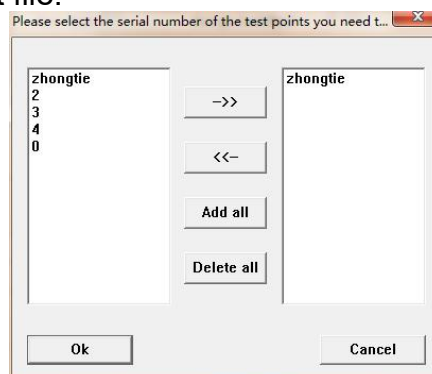

Figure 4.5 Select Test Sequence Number

4.5 Print Report

In the Test Data window, select the test point name to print, fill in the report header, and open the Print Preview under the File menu to preview the data and content of the print report (Figure 4.6).

Detection Report of Foundation Coefficient

Client:			Report Number:		
Elevation:			Filler Name:		
Project Name:			Test Number: 1		
Measure Point Location:			Required Foundation Coefficient:		
Subgrade Mileage:			Report Date:		
Filling Layer:			Detection Environment:		

No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Stress (MPa)	0.000	0.043	0.083	0.121	0.162	0.212	0.242	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Settlement (mm)	0.00	0.20	0.54	0.68	0.82	1.10	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

P-S Curve

Measure Curve

Load Strength(MPa) Corresponding to 1.25mm Settlement: 0.240

Foundation Coefficient(MPa/m): K30=192

Detection conclusion:

Tester: Reviewer:

Figure 4.6Print Preview

Click the print button under the file menu or on the toolbar, select the print type, printer name and print copies and click the Enter button to print.

ChapterThree Operation Key Points on Testing in Industrial Standards

1. Test environment:

I. In the case of medium coarse sand, hard crust on the surface, softening or other surface disturbance due to quick water volatilization, the deformation modulus test shall be carried out below the influence, and the undercut concentration shall not be greater than the diameter of the bearing plate.
II. For the fine grain homogenizer, it is advisable to start testing within 2-4H after compaction.
III. Test surfaces should be level without pits. If the surface of the mixture filling layer is uneven, under the rescue plate should be spread-layer thickness of about 2-3mm dry exercise sand or gypsum putty.
IV. Test points should be far away from the focus of the test.
V. No test shall be conducted on rainy days or weather with wind force greater than level 6.
Vi. The settlement of the bearing plate shall be measured by a single center point.

2. Key points of the test:
I. The site test surfaces shall be leveled and scoured with a brush to remove the surface dust. When the test surface is on the slope, the supporting surface of the bearing plate should be made into a horizontal plane.
II. The placement of test instruments shall meet the following requirements:
1.Place the bearing on the test point so that the bearing plate is in full contact with the ground and, if necessary, a thin layer of dry sand (2-3m) or gypsum putty may be laid. At the same time, the level of load-bearing plate is adjusted by the level bubble or level meter of load-bearing plate. When gypsum putty is used as a cushion, the film should be spread on the bottom of the bearing plate. Then place the load-bearing plate on the gypsum layer, rotate the load-bearing plate left and right, and strike the top surface gently, so that it is completely in contact with the ground.
2. Place the load-bearing drop of the reaction device over the bearing slab and brake it. The distance between the lateral edge of the bearing plate and the support point of the reaction device shall not be less than 0.75 m.
3. Place the jack in the center of the bearing plate to keep the jack vertical. Use the extension rod and adjusting screw to make the jack top ball hinge and the load-bearing part of the reaction device close.
4. When installing the bridge, place the contact of the settlement measuring device freely into the center position of the measuring hole on the bearing plate, and the settlement meter must be perpendicular to the test surface. The distance between the support seat of the bridge and the support point of the reaction device shall not be less than 1.25m.
5. During the test, the measuring bridge and the reaction device shall not shake.
III. If a load greater than the predetermined load is applied in the test, the load shall be maintained and noted in the test record sheet.
IV. When serious dumping of the bearing plate occurs during the test, leading to that the water pubbles on the bearing plate level cannot coincide with the circle mark, or if the bearing plate oversinks and the data of the measurement is abnormal, make sure to check the cause, and carry out the test at a different point, and note it in the test record.

Chapter Four Operation Process

Firstly, connect the instrument to the signal line and sensor when it is shut down.
Select the test function K30, K40, K60 and design load strength   for the test interface.
I. Enter the preloading interface under the condition of 0 load,
II. Start loading preload (keeping load value greater than or equal to 0.04 MPa)
(K30 preload is 0.04 MPa, K40 preload being 0.03 MPa, K60 preload being 0.02 MPa)
III. 30 seconds later, the buzzer rings to indicate uninstall.
After unloading, the dial is cleared, then wait for about 30 seconds before entering the first stage of loading.
IV.Please carry out the first stage loading. Please load to 0.04 MPa. Each stage loading stable takes about 3 minutes.
(Keep the load value stable greater or equal to 0.04 MPa.The buzzer prompts for the next level of loading).
V.Please carry out the second stage loading, please load to 0.08 MPa
(Keep the load value stable greater or equal to 0.08 MPa.The buzzer prompts for the next level of loading).
VI.Please carry out the third stage loading, please load to 0.12 MPa
(Keep the load value stable greater or equal to 0.12 MPa. The buzzer prompts for the next level of loading).
VII. Please carry out the fourth stage loading, please load to 0.16 MPa
(Keep the load value stable greater or at 0.16 MPa.The buzzer prompts for the next level of loading.
VIII.Please do the fifth stage loading, please load to 0.20 MPa
(Keep the load value stable greater or at 0.20 MPa.The buzzer prompts for the next level of loading.
IX. Please do the sixth stage loading, please load to 0.24 MPa
(Keep the load value stable greater or at 0.24 MPa.The buzzer prompts for the next level of loading.
X. Please do the seventh stage loading, please load to 0.28 MPa
(Keep the load value stable greater or at 0.28 MPa.The buzzer prompts for the next level of loading.
XI. Please do the eighth stage loading, please load to 0.32 MPa
(Keep the load value stable greater or at 0.32 MPa.The buzzer prompts for the next level of loading.
XII. Please do the nineth stage loading, please load to 0.36 MPa
(Keep the load value stable greater or at 0.36 MPa.The buzzer prompts for the next level of loading.
....
XIX. Please do the sixteenth stage loading, please load to 0.64 MPa
(Keep the load value stable greater or at 0.64 MPa).

When any of the following conditions are reached, the experiment automatically ends.
(1) The total subsidence exceeds the prescribed base value (1.25mm), and the loading series is at least 5 levels.
(2) The load intensity is more than 1.3 times the corresponding load value of the design standard, and the loading series is at least 5 grades.
(3) The load strength reaches the yield point of the foundation (the settlement value is greater than or equal to 1.25 within 5 grades).

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