ROZH

RH711 VIBRATION ANALYSER

USER MANUAL

Rozh- Gilwoo

Catalogue

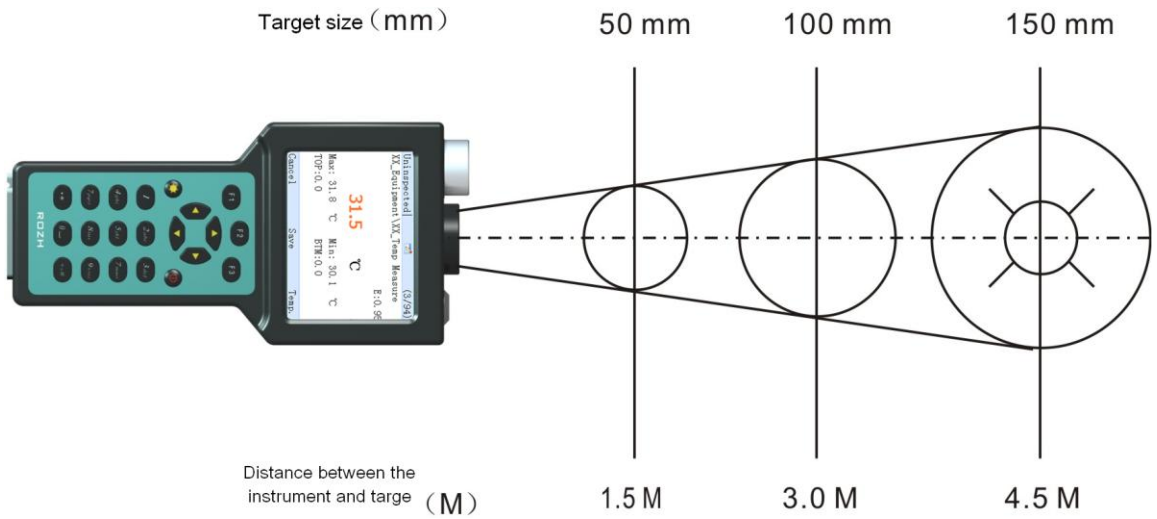
Terms and definitions

1. Emissivity

Emissivity is the amount that an object emits and absorbs energy. The level is relative to an actual object and an ideal radiator of the same size and temperature. The numerical value of emissivity is usually between 0.0 and 1.0, the emissivity of a perfect radiator is 1.

2. Distance coefficient

The distance from the thermo-detector probe to the object to be measured is the distance coefficient (D: S), this is an important parameter of infrared thermo-detection. “D” is the measuring distance; “S” is the objective diameter. The diagram below shows the considerations that should be made when considering the focal length of detection. If the D:S of an infrared thermo-detector is 30:1, then the size of the measured objective is 1 unit (ie unit of distance) and the objective can be measured by the infrared thermo-detector precisely to a maximum of 30 units distance, see the following figure for details:



3. Transducer sensitivity

Transducer sensitivity means the output voltage amplitude created from a certain vibration level. Acceleration transducer use mV/g to a nominal sensitivity, e.g. sensitivity nominal is 100mV/g, it means that when the vibration level is 1g, it’s output voltage is 100mV(0.01V).

General

1. Operating announcements

（1） Each instrument is equipped with a cover with straps from the two sides of the cover being connected by velcro. This neck strap allows easier transportation around site whilst data collecting. The purpose of the Velcro is to allow easy detachment to avoid injury should the cable or instrument become caught on rotating equipment. **The user should ensure good health & safety practice at all times and the manufacturer or supplier cannot be held responsible for any injuries incurred whilst using the equipment.*

（2） Please cover the sealing gasket when the instrument connector and temperature measuring area are not in use. In order to avoid errors of the temperature measuring precision, please ensure the thermo-detector sensor/area is kept clean at all times, the dust from the surface can be cleaned with soft fabric.

（3） Please avoid the following when using the product: dropping, long exposure to high a temperature source, water/rain, abrasive contact etc, inappropriate handling can damage the internal electronic parts of the instrument.

（4） In order to avoid system files being lost, do not format the disk when using the instrument.

2. Please ensure the connector cleaning between the electronic button and instrument electronic button when using them, take off the instrument immediately when read electronic button information accurately after contacting.

3. Temperature measuring announcements

（1） Please avoid pointing the laser towards to human eyes when temperature measuring.

（2） The emissivity of this instrument can be adjusted between 0-1, please set corresponding emissivity according to the tested objective emissivity to get an accurate value when making a temperature measurement.

（3） Temperature values are the “average” value of a view measured by infrared thermo-detection, the diameter of tested objective should be bigger than the view of the thermo-detector, (see point 2 in “Terms and Definitions”) otherwise it may cause a measuring error. Therefore, we suggested that the diameter of the tested objective is at

least 1.5 times the calculated size, according to the distance coefficient when taking actual temperature measurements.

（4） The objective temperature which is measured by the infrared thermo-detector could potentially be influenced by an unstable environmental temperature, it might cause measurement errors when using the infrared thermo detector across different environmental temperatures (especially if there is a significant temperature difference between the area in which standing and area being measured). In this case, allow increased time for the reading to “settle”.

4. The measurement precision will be influenced if the background light of tested objective is too bright (especially sunshine or strong light at the right angles), if unavoidable use a shield to eliminate the background light interference, ie provide shade.
5. Vibration measuring announcements

（1） Please set the sensitivity of acceleration transducer accurately to ensure the precision of measured data, e.g. 10mv/g or 100mv/g etc.

（2） Inspect the connection fastness between transducer and magnet base and cable TNC connector and the bolt before measurement.

（3） Keep magnet base position clean and in good condition to ensure a good connection on equipment surface. To avoid “Transducer resonance”, when placing transducer on surface avoid potentially damaging impact as magnet takes hold. This is achieved by making edge contact first and tipping the face gently onto the surface.

（4） Keep an appropriate safe distance (usually 1.5 meters) from machine when acquiring data on site, ensure tension on cable isn’t excessive enough to pull transducer away from machine surface. *N.b ensure all site health and safety rules are adhered to.*

Chapter Ⅰ. Product Introduction

1.1 Features and Characteristics

RH711 Vibration analyser is specially designed and developed due to the demand of the increasingly growing field of equipment condition monitoring and fault diagnosis for various industries; it is a "rugged" high specification instrument ideal for periodic equipment condition monitoring.

It has the following main features

- Comprehensive functions: vibration waveform, vibration spectrum, temperature measurement, manual input function;
- 2.8 inches large LCD true color, 320 * 240 pixel;
- High speed data acquisition: Enables the operator finished data acquisition quickly.
- 64MB huge storage capacity.
- USB data communication, high transmission rate;
- Ergonomic key designing, logical process and fit for daily use operation.
- High-performance DSP processing technique, with the characteristics of fast navigation, fast operation and fast storage;
- Powerful off route data acquisition function, temporary data can be easily input to database.
- "Off-route" data viewing on site, aids field diagnosis.

1.2 Instrument composition

RH711 vibration analyser is composed of a main screen and sub menu screens. The front of the instrument has the screen and keyboard; the connectors are located in the top and bottom of the instrument respectively. Main accessories include acceleration transducer, USB communication cable and charger.

1.2.1 Display Screen

LCD: 2.8 inches, 320 * 240 pixels, 26 thousand true color.

1.2.2 Keypad

There are totally 21 buttons in the keyboard area, they are 8 soft buttons (include 1 shortcut function button, 3 function buttons F1、F2、F3 and 4 direction buttons), 13 hard buttons (include power buttons and numeric buttons), as Figure 1-1. The functions of hard buttons are fixed, while the soft buttons have different functions in different interfaces.

Figure 1-1 Keyboard

Function keys: implement corresponding functions according to the instructions at the bottom of the various screen interfaces.


Direction keys: select corresponding functions from the 4 direction buttons.


Power key: used to turn on/ off the power or back to main menu.


Shortcut function key: implement different shortcut functions in different interfaces, the specific functions will be described in a later chapter.

Numeric/letter/symbolic keys: implement numeric “0~9”, letters “a~z” and symbolic “#,+,*” input operation.

1.2.3 Connector

The connector is located in the top and bottom of the instrument, the figure 1-2 is the top connector of the instrument.

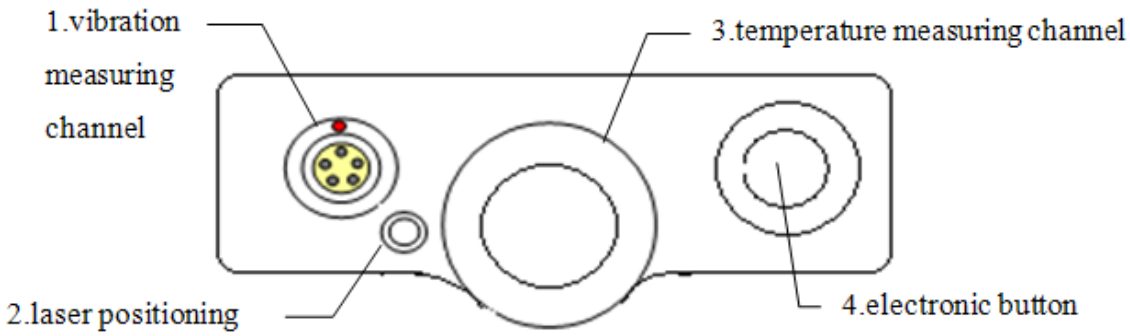


Figure 1-2 top connector of the instrument

1. Vibration measuring channel: connect with transducer, used to collect vibration signal.
2. Laser positioning: laser positioning during temperature measuring.
3. Temperature measuring channel.
4. Electronic button / RFID: with the function of RFID tags (Radio Frequency Identification) fitted to the route assets, route data collection is simplified with automatic measuring point identification. When using the navigation function, the users / data collectors touch with the RFID electronic tag to the measuring point location, the system will verify and navigate the corresponding spot inspection automatically. (3.3 Advanced setting will describe how to turn on the electronic button navigation function in details)

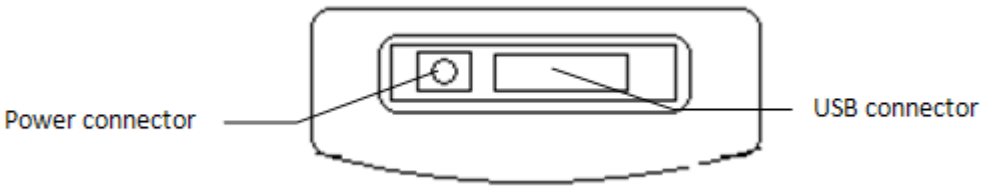


Figure 1-3

Figure 1-3 is the bottom power and USB communication port, this can be used for the charger or pc communications.

1.2.4 Transducer

The RH711 transducer kit is supplied with an acceleration transducer, bolt, magnet base and cable. The acceleration transducer is attached to the magnet base via a bolt, the cable is connected via the BNC plug. Instrument end of the cable is bayonet type LEMO plug, and is connect with CH1 of the instrument.

It is required to have the LEMO plug inserted into CH1 channel of instrument when using the acceleration transducer to measure vibration data. To ensure the bayonet plug connects

accurately, the red dots on the plug and socket should align with each other while inserting, then pull it slightly, as it shows in figure 1-4.

Figure 1-4

When taking the plug out, use thumb finger and forefinger to hold both sides of the metal on plug (as close to the socket as possible), then pull it out slightly.

：In order to keep the cleanness of the vibration socket, we suggest you don't unplug the LEMO plug when collect data on site.

The operation of speed transducer is the same as acceleration transducer.

1.2.5 USB Communication cable

This is the communication cable between RH711 and computer.

1.2.6 Charger

The power of RH711 is supplied by internally installed rechargeable Li-ion battery, the battery is permanently fitted into instrument, insert the charger into the power connector at the bottom of the instrument, and have the other end plugged in power source for charging. The charging system will be start automatically, and the status will be displayed on main interface. The normal charging time is about 3-4 hours.

1.3 RFID anti-metal tag card usage precautions

（1） Please stick the RFID anti-metal tag card on machine properly; It is suggested to adhere it horizontally on metal surface

（2） When using, put RFID tag sensing area over against RFID anti-metal tag card

（3） The distance between the instrument and RFID anti-metal tag card shall be ≥5CM (if fitted on the metal surface); if on other material, the sensing range will be smaller.

1.4Wifi usage precautions: the server of upper computer software must match the instrument and should be in the same gateway as the wireless router.

（1） Before using, please enter into the system setting to configure the wireless network

（2） During WIFI connection to disconnection, do not operate the instrument; During WIFI communication, all the interfaces entering the instrument will be disconnected.

WIFI Operation instructions

1. Open the instrument, enter the “system setting”, long-press F2 in “system setting” and enter “ wireless network setting”
2. Set the wireless network SSID, network connection password, server IP address, server port number and click save. The default server port number is 1192. Please do not change it.
3. Open “Wireless instrument management” in the upper computer software, long-press F2 key, it will show “connecting, please wait” and display “WiFi is communicating” in the top left of the instrument screen. This means the instrument has connected with the server successfully. Users can transmit plans and retrieve the data, etc.
4. After operation, long-press F3 key to disconnect.

Chapter Ⅱ. Operating Introduction

2.1 System Interface

Press power button to activate instrument startup, the progress bar on the screen will start rolling. After startup has completed, the system interface will be displayed as it shows in figure 2-1.

Figure 2-1 System interface

2.1.1 Information display

The title panel on the upside of the system interface respectively display current operator、current date/time and battery information. The instrument will be power-off automatically when the battery power is too low.

2.1.2 Main menu list

The main menu of system are as following, selection of main menu can be finished through press buttons of up、down、left、right to move cursor.

（1）Route task: Manage and implement route tasks issued by computer (please refer Chapter four for specific content);

（2）Data viewing: View acquired and saved data to ensure it’s authenticity (please refer to Chapter six for specific content);

（3）Off route task: Collect off route data (please refer to Chapter five for specific content);

（4） System setting: Instrument parameter and other advanced setting (please refer to Chapter three for specific content).

2.1.3 Function keys operating area

The function keys operating area is in the below of the main interface. The function keys will have different functions in different operating interface. For example: The selections under main interface are “system information”, “operators” and “OK”; when select ROUTE and press “OK”, it will switch to a subsidiary “ROUTE” and include the function keys of “Back” and “OK”.

2.2 Operator Interface

This function is used to switch the current operator to another for data collection traceability. Press “Operators” under system interface, you will see the operators, as shown in Figure 2-2. Use arrow keys to move cursor and select an operator, then press “OK”, the current operator displayed on the upside of the main interface will become the selected operator accordingly.

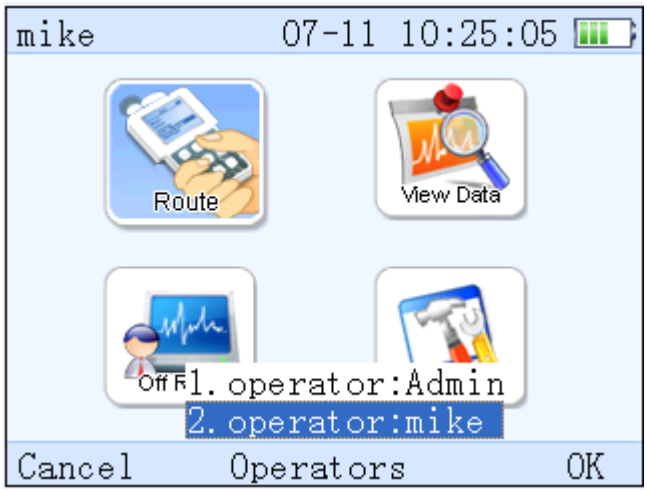


Figure 2-2 Operating personnel switching

2.3 System Information

After system start-up, “system information” will be displayed in the left bottom of the system interface, press corresponding function key F1 to enter “system information” interface.

2.4 System shutdown

Press power button until system shutdown.

Chapter Ⅲ. System setting

3.1 Login system setting interface

Login system setting menu by moving the cursor via the arrow keys on system interface, press "OK" to login system setting interface, as Figure 3-1.

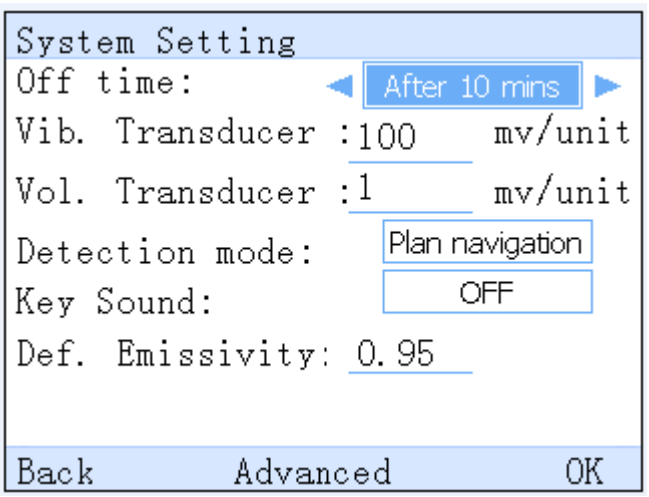


Figure 3-1 system setting

Users can set corresponding parameter according to different demands, then press "OK" to save the new setting.

3.2 Set system parameter

（1） Off time

In order to save power source, this setting enables the instrument automatically power-off after a pre-set time time. Press left/right key to set standby time.

（2） Vibration transducer

Used to enter the vibration transducer sensitivity parameter directly, this parameter must be set accurately to match the acceleration transducer sensitivity. Use "delete" function key to modify the input data.

（3） Voltage transducer

Operation process is the same as vibration transducer.

（4） Detect mode

This setting can select measuring point from ROUTE menu to have task or off-plan navigation. Press left/right key for selection.

（5） key sound

This setting can select turn on or off function of key pressing sounds.

（6） Default emissivity

Set emissivity of temperature measuring, the system standard is 0.95, it can be set between 0~1.0.

Users can press "" to modify the emissivity when implementing off route or route temperature measuring.

3.3 Advanced setting

Press "Advanced " under system interface to login advanced setting interface. System will request you to type in password before entering advanced setting, as shown in Figure 3-2.

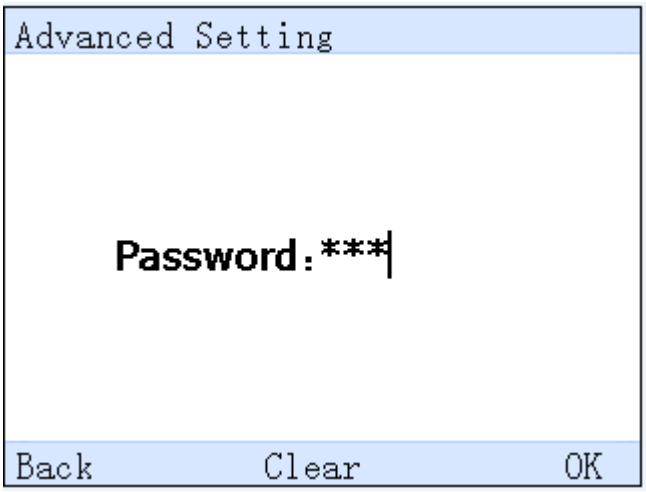


Figure 3-2 password input by operator

After entering the correct password (default password is 111), press "OK" to login advanced interface (as shown in Figure 3-3), press "password modification" to modify the advanced setting password.

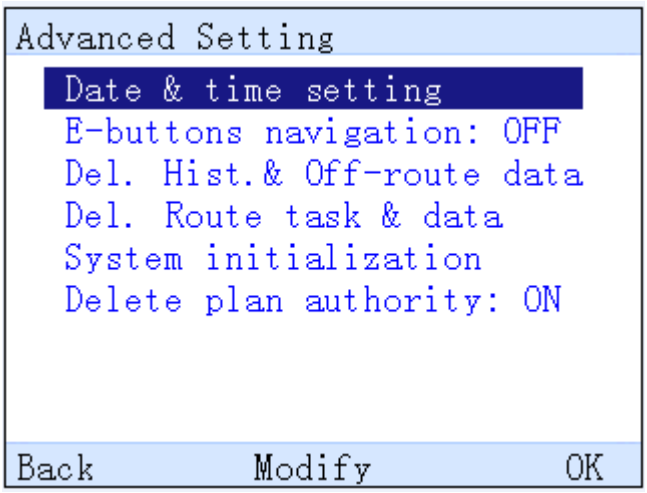


Figure 3-3 advanced setting

（1） **Date & time setting:** Set system time of instrument.

（2） **Electronic buttons navigation:** Users can decide to turn on/off the RFID function. Use left/right key to select “turn on” or “turn off”.

（3） **Delete historical and off-route data:** Delete all historical and off route data that collected by operator, the historical data is refer to the collected route data.

（4） **Delete route task and data:** After implementing this operation, all of the route task, historical data and off route data will be deleted.

（5） **System initialization:** When the files or folders from a system are damaged, this operation will enable the system to generate necessary files and folders. After selecting, the warning message will ask whether to confirm this operation. Press “OK” to start system initialization, press “Back” to cancel this operation.

（6） **Delete plan authority:** This setting can help users to decide whether to turn on the route plan deleting limits of authority. Use left/right key to select “turn on” or “turn off”.

：Please use the deleting function in the advanced setting carefully, the deleted data will be unrecoverable.

Chapter Ⅳ. Route task

"Route task" refers to the planned data collection routes set up in the pc based analysis software, (please refer to the software manual on how to setup and formulate a route plan). After transmitting route plan to the data collector, press key under main interface to switch to the download route plan files. Choose route method to activate task navigation or plan navigation.

4.1 Task navigation

Route task will implement navigation according to the route already setup, this includes create daily route tasks according to the download route plan setup.

4.1.1 Task date setting

Select route task under main interface, press "OK" to login ROUTE TASK navigation interface, it will appear as below, Figure 4-1;

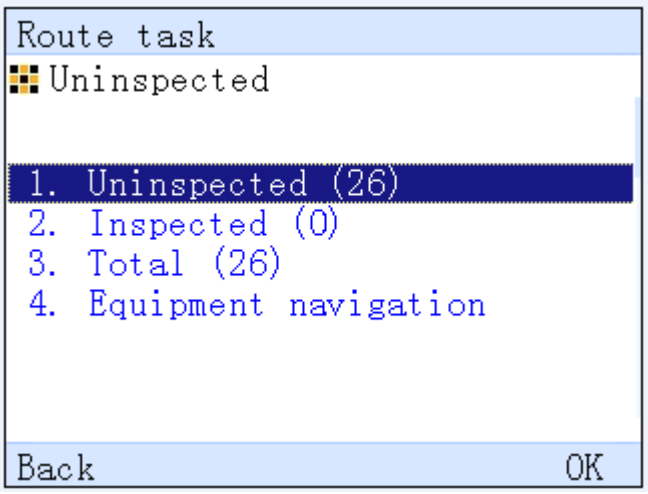


Figure 4-1 Route task interface

The progress bar on the right of the interface indicates position of currently selected item.

The title panel indicates interface "route" title. The "task number" under current task type shows completed tasks etc. Sub menus are used to select different branch navigation, e.g.

- **Task navigation:** includes uninspected, inspected and other tasks according to the task inspection status navigation
- **Equipment navigation:** set according to the navigation of equipment definition

4.1.2 Task navigation

Login route task interface, select “uninspected” or “inspected” task, press “OK” to login task navigation interface as Figure 4-2. Press “OK” to login measuring point data collection interface as Figure 4-3.

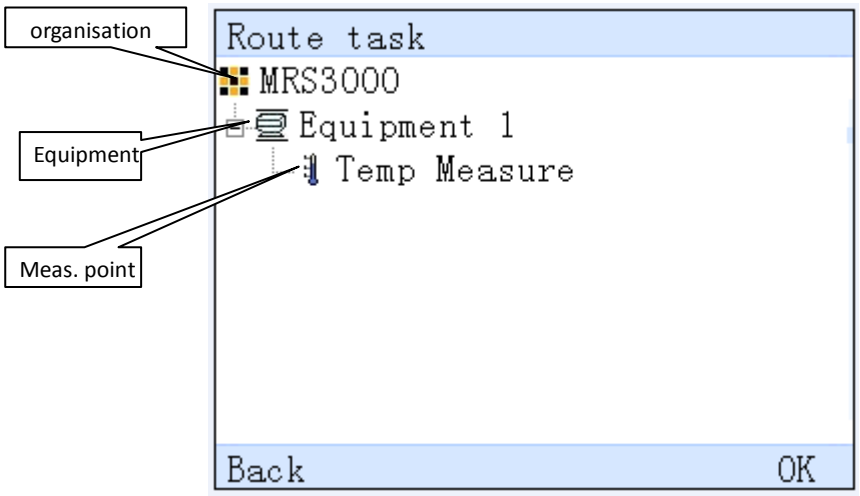


Figure 4-2 Task navigation

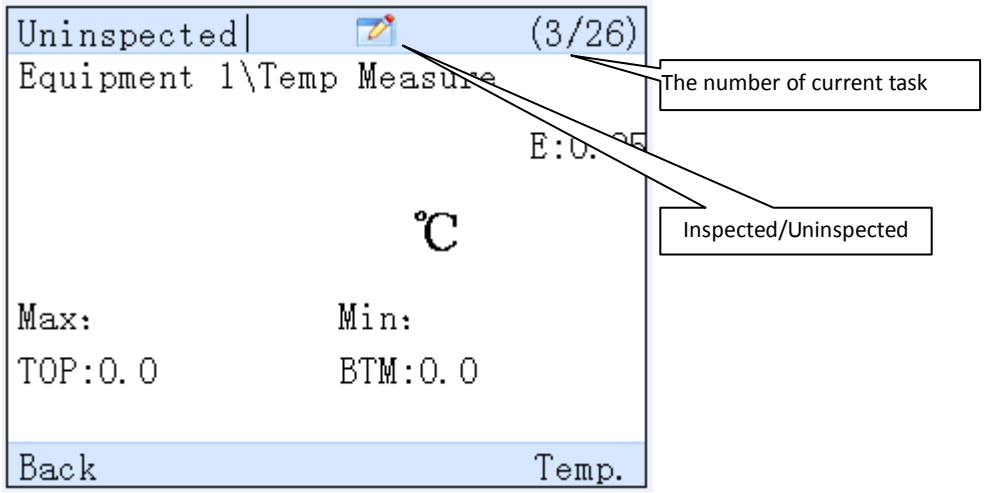


Figure 4-3 Measuring point data collection

4.1.3 Equipment navigation

Select “equipment navigation” under ROUTE TASK interface, press “OK” to login “equipment navigation” interface as Figure 4-4, the number “0/5” (after equipment) indicates “completed measuring point number of route task/ total measuring point number of this equipment”.

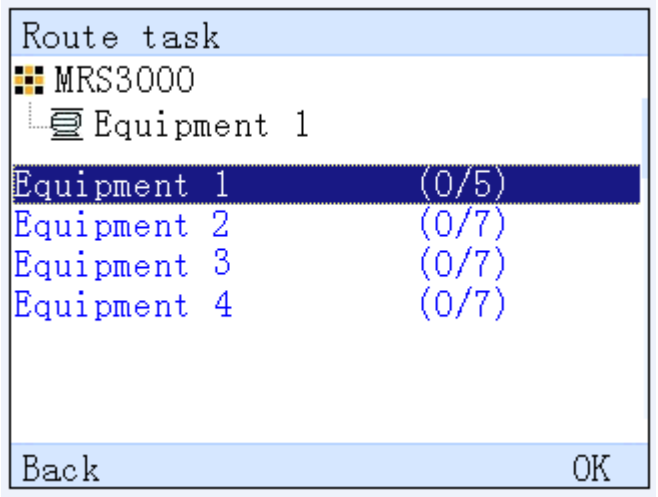


Figure 4-4 Equipment navigation

Press up/down keys to select the equipment of current page, press left/right keys to have page turning and help users to search the needed equipment quickly. When there is more than one page of equipment, the status bar on the left indicates that the list continues on the next page. When the cursor is in the first/last equipment of current page, continue to press up/down to move to next page. Select equipment, such as "**Equipment 1 (0/5)**", press "OK" to login Route task interface as Figure 4-5.

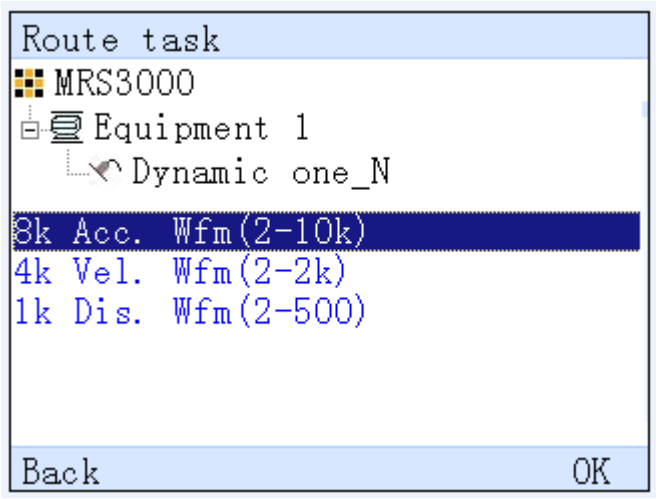


Figure 4-5 Route task

Each equipment includes a number measuring points, press left/right keys to select different measuring points, when it is the first or last measuring point of this equipment, the system will be switched to the pre or next equipment automatically.

4.2 Plan navigation

When selecting the inspection method of "plan navigation" under system setting, the inspection task will implement navigation on schedule.

Select ROUTE TASK under main interface, press "OK" to login Route plan navigation interface, there are 3 route plans as it shows in Figure 4-6.

Under the mode of plan navigation, the route plan can be selected and deleted (when the plan deletion limits of authority under advanced setting is open.)

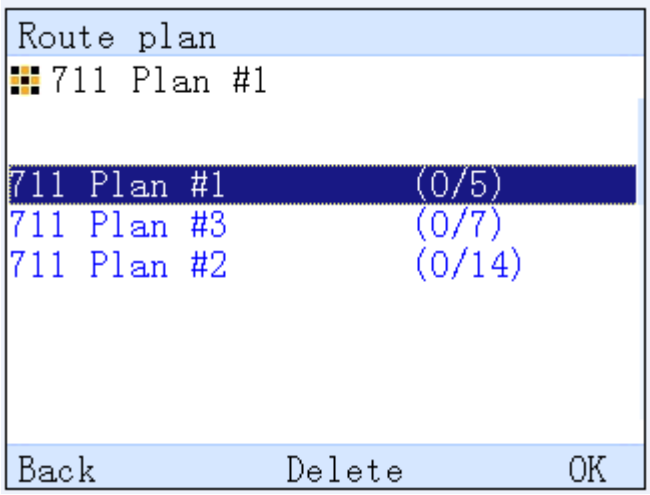


Figure 4-6 Route plan navigation

Select route plan that will be implemented "**711 Plan #1 (0/5)**", press "OK" to login the equipment navigation interface under "**711 Plan #1 (0/5)**" as Figure 4-7.

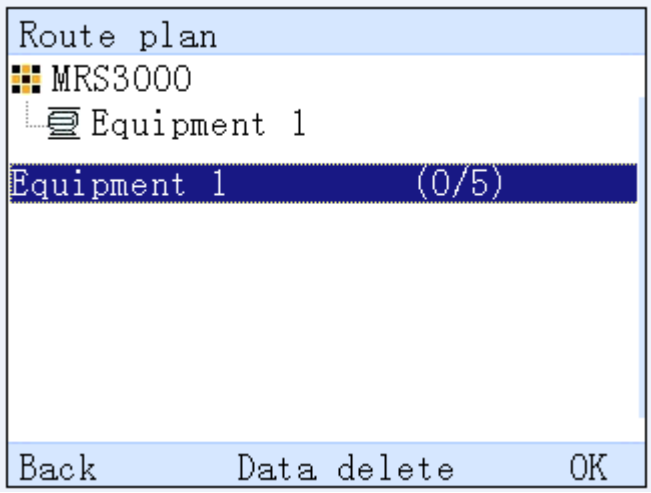


Figure 4-7 equipment navigation under route plan

The structure and equipments are listed from top to bottom on this interface. The "equipment navigation" under "route plan" is the same as in measuring point navigation. Use up/down keys to select corresponding equipment, the structure information of the corresponding equipment will be changed accordingly if you select equipment under a different structure. Use left/right keys to turn to the pre/next pages of equipment。

4.3 Route task data collection

The type of measuring point include dynamic (vibration acceleration, velocity, displacement, voltage, time domain waveform and spectrum), observation, process information, temperature, speed and lubrication.

4.3.1 Transducer placement

The vibration data is collected through acceleration transducer, please ensure the transducer placed correctly during data collection because it's very important to acquire effective measuring data。

Inspect the connection fastness between transducer with magnet base bolt and cable TNC connector with bolt before measurement.

The magnet base should be adsorbed on the smooth surface of machine, and keep cleanness of the surface. The dust or prill on the magnet base should be wiped off before adsorption. The magnet base has very strong adsorptive power, so please have the side of the transducer contact with machine surface firstly, then bristle it slowing until fully adsorption, as it shown in figure 4-8.

Figure 4-8 Transducer placement

：It might have the transducer overload and invalid data collected if put magnet base adsorbed on machine immediately.

4.3.2 Dynamic data collection

The dynamic measuring point data can be collected through two types after login the route task window as Figure 4-9.

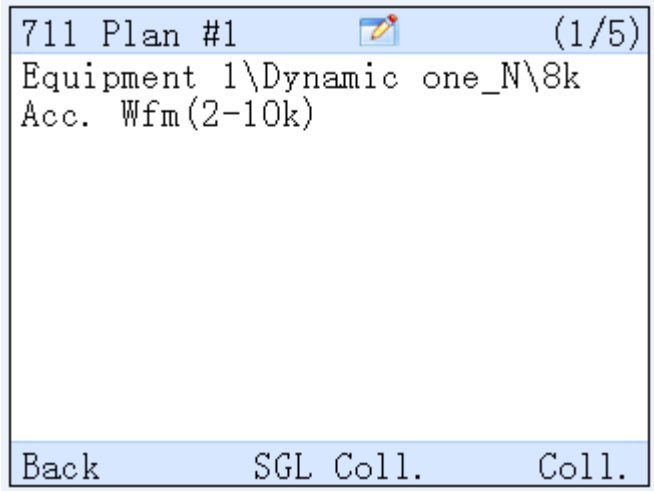


Figure 4-9

1. **One shot collection:** Press “collect” under this measuring point to finish automatic and continual collection of all measurement defined data, as Figure 4-10. Press “Save” after collection finished, system will automatically navigate to next measuring point to have the same type data collection.

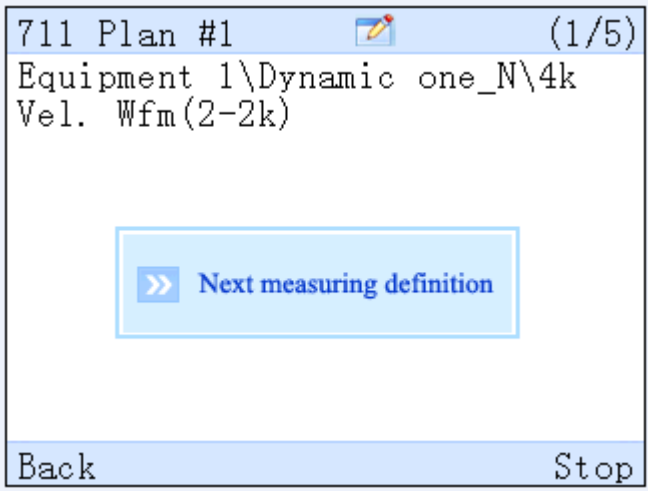


Figure 4-10 Continual dynamic collection

：We recommend users to choose this collection type for it’s easy and fast.

2. **Single shot collection:** Use up/down keys to select a measurement definition to implement single collection of measurement defined data as Figure 4-11. Such as “**8k Acc. Wfm.(2-10k)**”, press “Single shot collection” to start, and “Save” to finish.

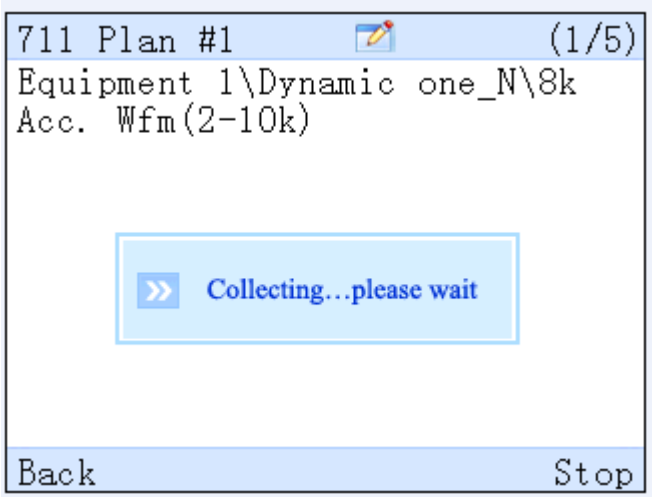


Figure 4-11

Different signal type (acceleration, velocity and displacement) has different collection calculating method. Acceleration-- effective value; Velocity—effective value; Displacement—peak value.

Users can have the following operation during measuring process:

Break off data collection: Press “Stop” to break off the procedure during or before data collection, and press “Return” to return task navigation window.

Afresh data collection: When implementing this operation, system will remind users to cover the original data or save new acquired data. Press “Save” to have new acquired data saved, press “Cover” to have the original data covered, press “Cancel” to cancel the current operation.

4.3.3 Observation measurement

Users can select several observation codes under one measuring point. As Figure 4-12, use up/down keys to select observation code, press “Select” for observation code selection, and press “OK” to save. Users also can select the corresponding numeric keys to realize quick inspection.

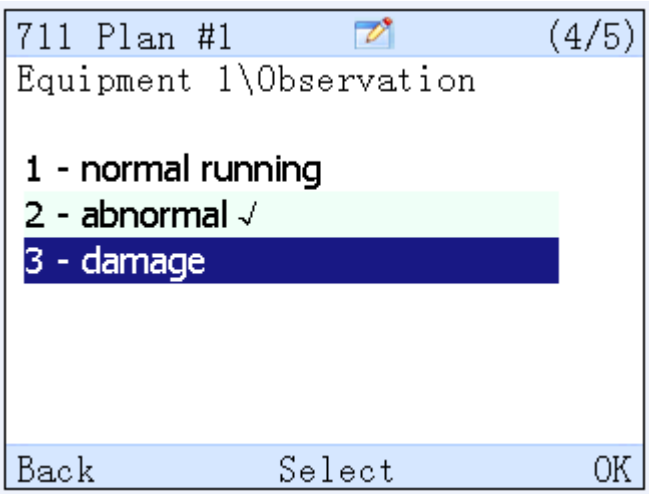


Figure 4-12 Observation measurement

4.3.4 Process information measurement

Type-in corresponding number; press “OK” to save, as Figure 4-13. If the number is out of standard range, it will display alarm color, press “Backspace” to delete wrong information and retype correct number.

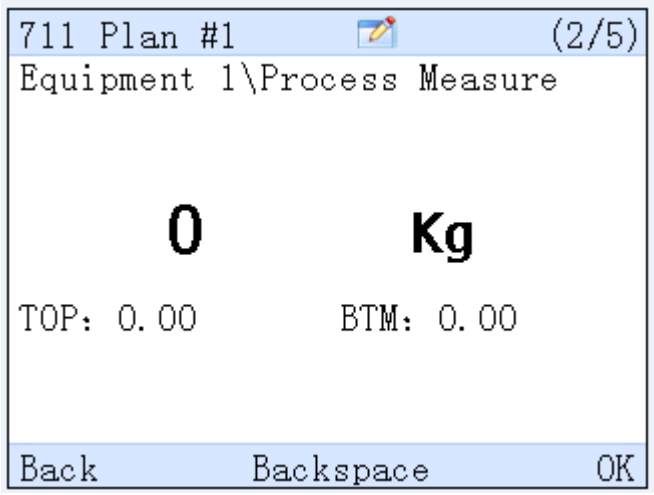


Figure 4-13 Process information measurement

4.3.5 Temperature measurement

When login temperature measuring interface, the "E:0.95" on the right interface is the current emissivity status, it can be modified via key, the modified emissivity will be invalid when instrument is power off. Press "Temperature measuring" key, and make laser aim at the target within valid measurement distance, when the temperature acquired, press "Stop" and "Save" the information, as Figure 4-14.

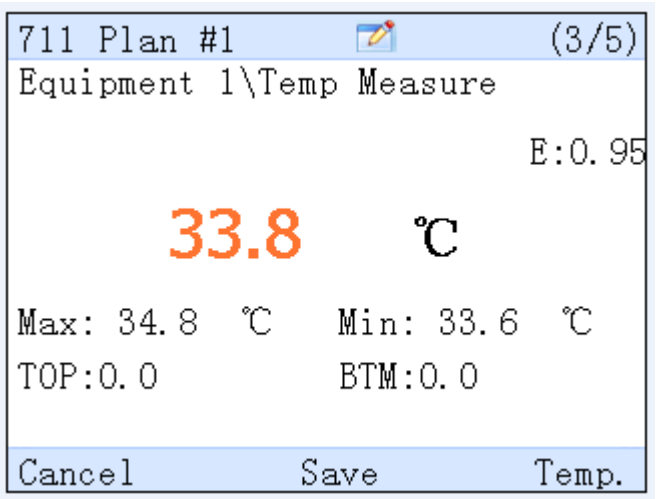


Figure 4-14Temperature measurement

4.3.6 Lubrication measurement

Use numeric keys to type in fuel charge, press "Backspace" for modification. Press shotcut key to switch input method, and "OK" to save the result, as Figure 4-15.

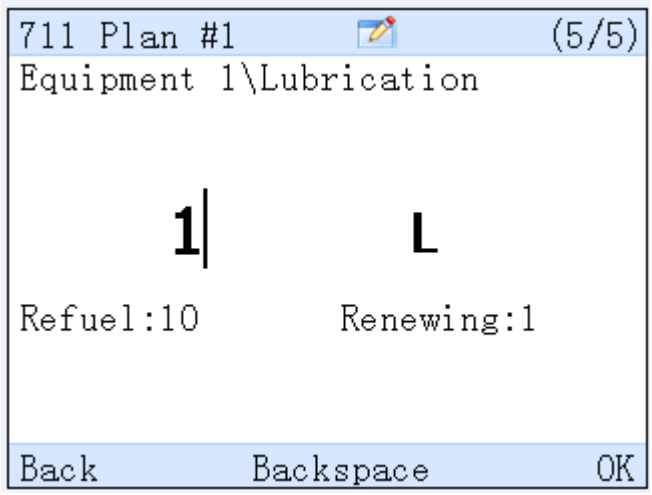


Figure 4-15 Lubrication measurement

The prompt message of "Collection finished" will be displayed when complete all of collection tasks.

4.3.7 Equipment status

Press "*" under measuring point data collection interface to login equipment status selection, as Figure 4-16. Users can select equipment status of "Operating", "Reserving" and "Maintenance". The acquiescent equipment status is "Operating", when select other options, all of the measuring point under this equipment won't be inspected accordingly.

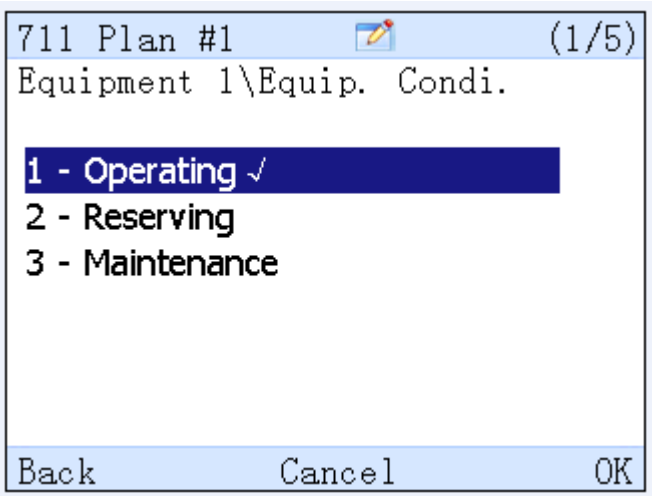


Figure 4-16 Equipment condition selection

Chapter Ⅴ. Off route Task

The off route data collection function is one of the key functions of RH711 vibration analyzer, providing a useful tool for unplanned data collection for users. If the operator finds an abnormal equipment which does not belong to the route tasks, the off route data collection function can be applied here. Off route task can collect temperature and dynamic data. Off route task can be marked for conveniently distinguish.

5.1 The differences between off route and route task collection

The operation between off route data collection and route task collection is mostly alike. The differences are as following:

1) Method for parameter setting: the parameter setting of route task is finished in computer. Users don't need to set again; while off route task needs to be set up by users according to their demands.
2) Method of Route navigation: route task is navigated by task type or instrument automatically; while off route task has no planned route, and only use of route data number to indicate the corresponding off route task.
3) Method of data acquisition: off route task data acquisition is conducted by single shot collection only.

5.2 Off route data collection

Move the cursor to "Off-route" in the main interface, press "OK" to login Collection parameter group setting interface, as Figure 5-1, the data type including temperature, dynamic. The dynamic collection parameter setting can be selected from existing collection parameter list or defined by the users.

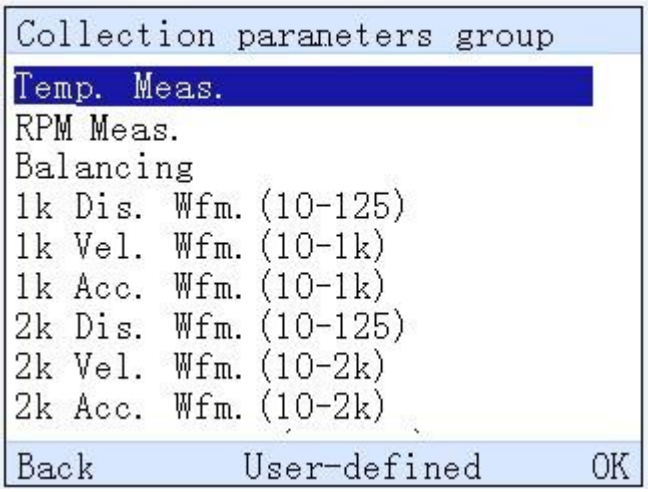


Figure 5-1 Collection parameter group selection

5.2.1 Temperature measurement

As Figure 5-1, select “Temperature measuring”, press “OK” to login Figure 5-2 temperature measuring interface. The top right corner in the interface shows current temperature measuring emissivity, same as the measuring point of temperature. The emissivity can be modified by pressing “ ”.

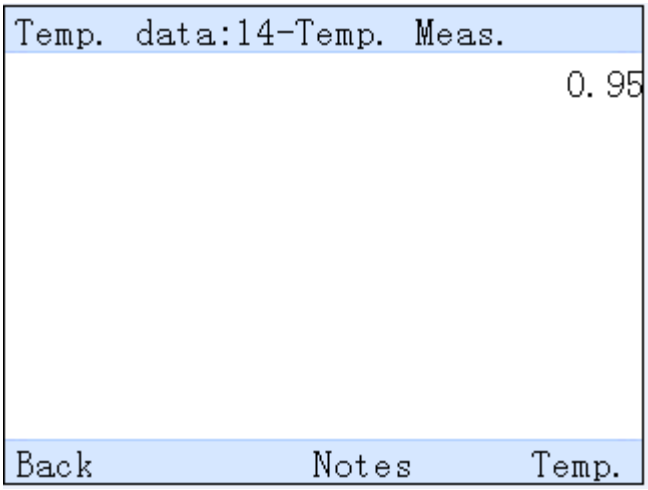


Figure 5-2 temperature measuring

Press “Temperature measuring”, aim the laser at the target, wait till the temperature data stable and press “Stop”, temperature will be shown as Figure 5-3.

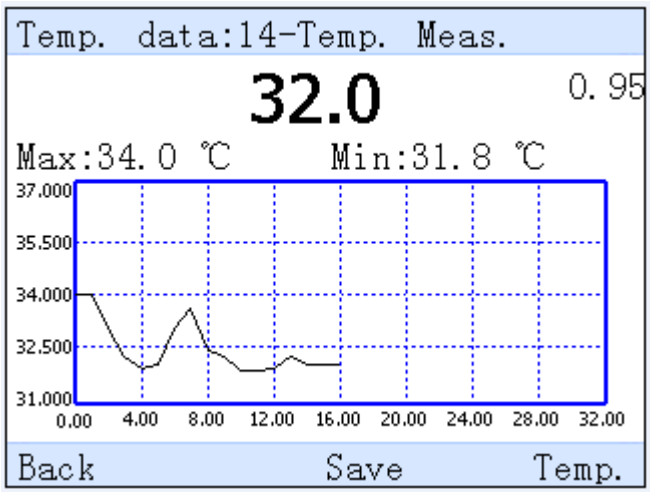


Figure 5-3 Off route temperature measuring results

Users can choose different ways to save the temperature data:

- ✧ Press “Save” to save the collected temperature data into the temperature task
- ✧ Press “  ” to save temperature waveform showing on the present interface, saved temperature waveform can be checked while viewing off route data.

5.2.2 RPM measurement

As Figure 5-1, select “RPM measuring”, press “OK” to login Figure 5-4 RPM measuring interface.

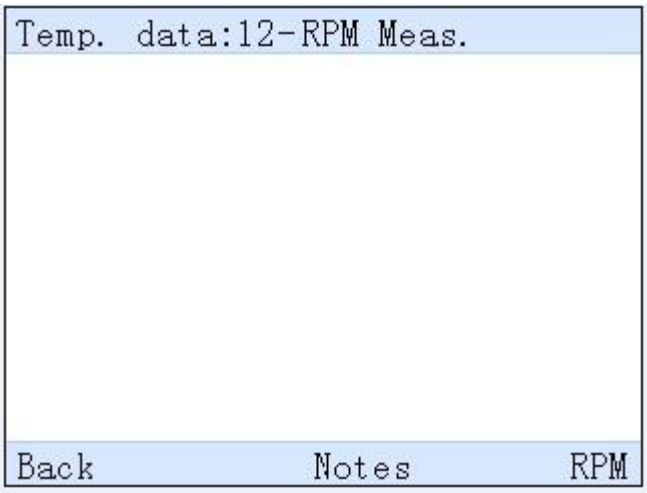


Figure 5-4 Off route RPM measuring

Press “ RPM”, aim the laser at the target, wait till the data stable and press “Stop”, RPM will be shown as Figure 5-5.

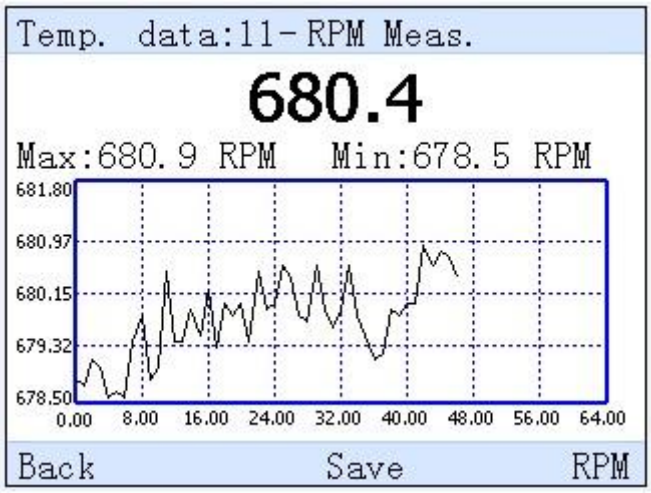


Figure 5-5 Off route RPM measuring results

5.2.3 Balancing measurement

As Figure 5-1, select “Balancing”, press “OK” to login Figure 5-6, balancing measuring interface.

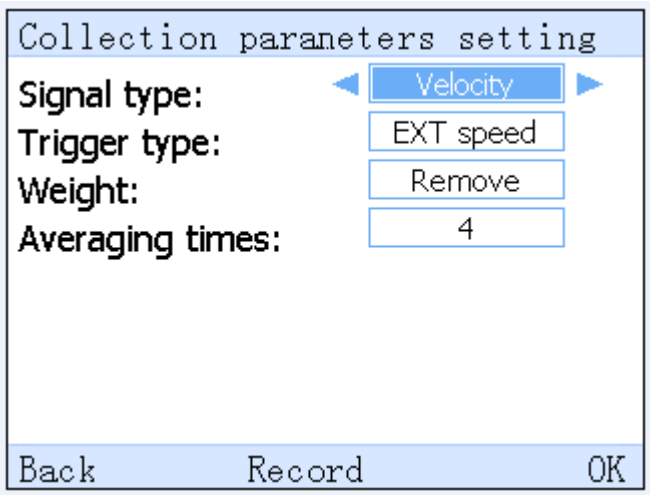


Figure 5-6 Balancing measuring

Move cursor to choose the specific needed parameter:

(1) Signal type: acceleration, velocity, displacement and voltage
(2) Trigger type: EXT speed
(3) Weight: Remove, Add
(4) Averaging times: 1,2,4,8,16,32,64,128

Press left/right button to choose needed parameter, press “OK” to login initial measurement, as figure 5-7.

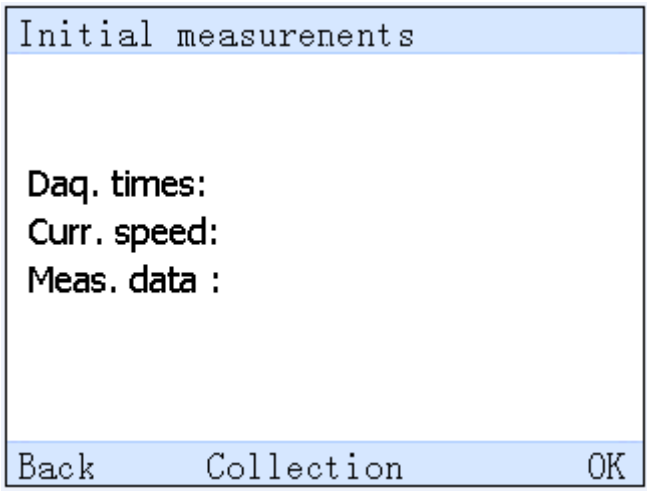


Figure 5-7 Initial measurement

Press “OK” to start collection, as figure 5-8.

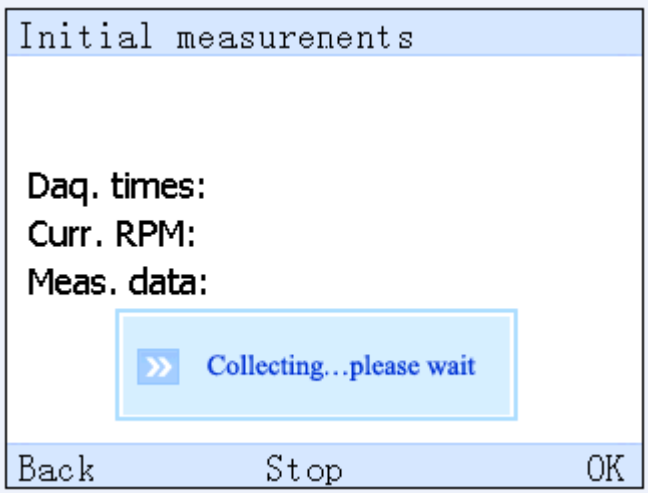


Figure 5-8

After collection finished, displays the initial RPM and unbalance value, as figure 5-9.

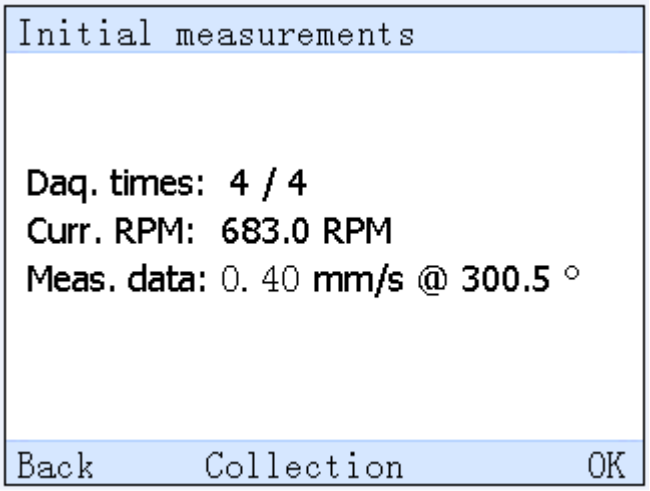


Figure 5-9

After initial measurement, press “Ok” to login try weight suggestion interface, as figure 5-10.

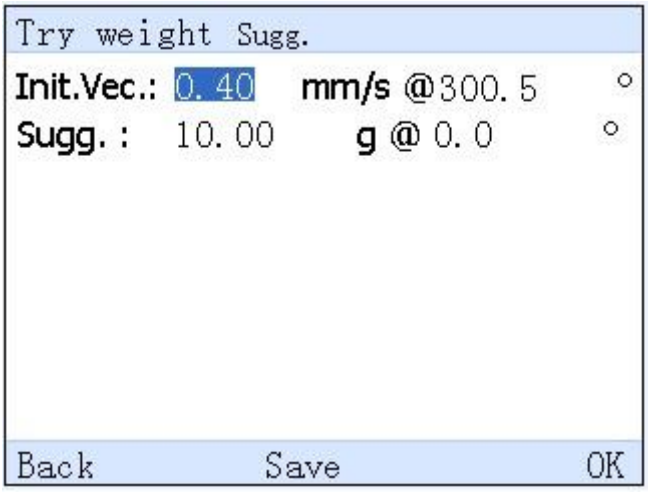


Figure 5-10

Turn off the machine, add weight on the rotor, users can add the instrument suggested weight or input actual weight as needed, press “OK” to login try weight measurement interface, press “Collect” to get the unbalance data and “OK” to login balance weight suggestion interface, as figure 5-11.

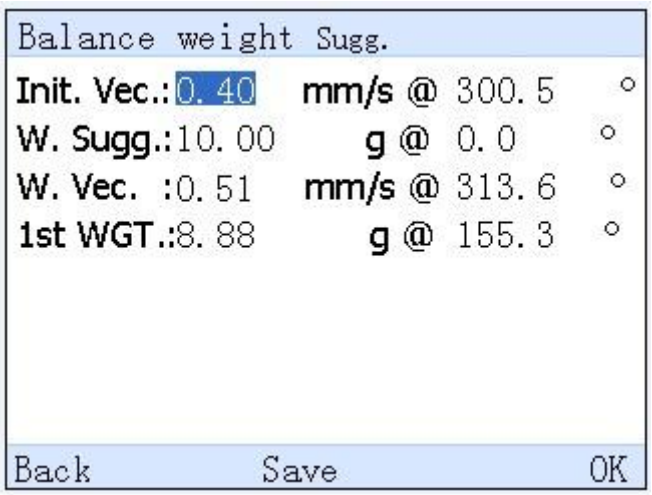


Figure 5-11

According to the instrument suggested, input actual weight and angle (use the try weight as initial phase), start rotor and press “OK” to login balance measurement interface, figure 5-12 shows the finished collection interface.

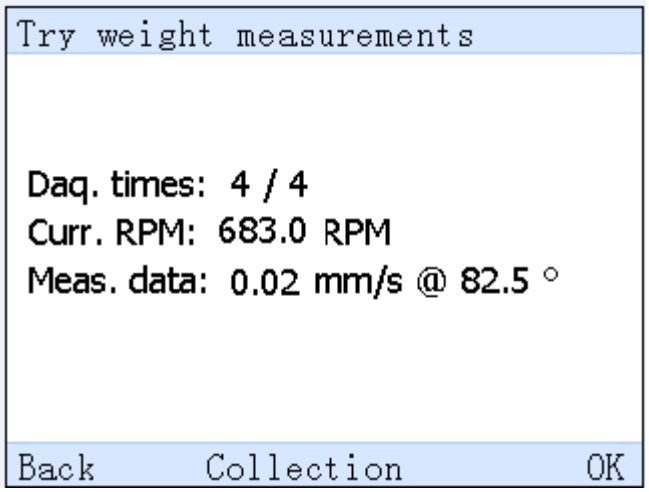


Figure 5-12

From the data on 5-12 you can see that the unbalance value has been reduced. If need to make the value lower, press “OK” to login balance weight suggestion interface for second balance weight, as figure 5-13.

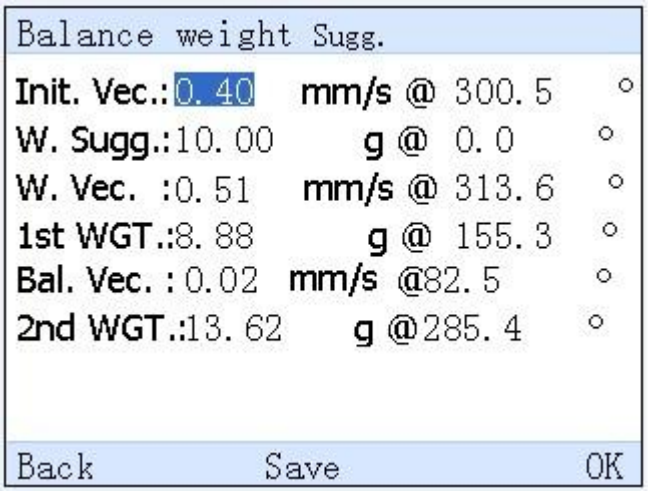


Figure 5-13

If the vibration has been reduced to acceptable value, the balance measurement is finished.

In addition, press “Record” in figure 5-12 can view the recorded balance data.

Caution:

If unbalance can’t be improved, please check if you input or added correct weight or angle, or check if there is misalignment, bearing failure or any other factor.

5.2.4 Dynamic measurement

- Select the existing acquisition parameter

To facilitate user’s off route task data collection, the system provides the defined acquisition

parameter group. Users can choose as demanded. Press “OK” after selecting parameter to login dynamic off route data collection interface.

Press “Coll.” to start data collection. After the data is stable, press “stop”, the collected waveform will be shown as Figure 5-4 and press “Save” to save the data.

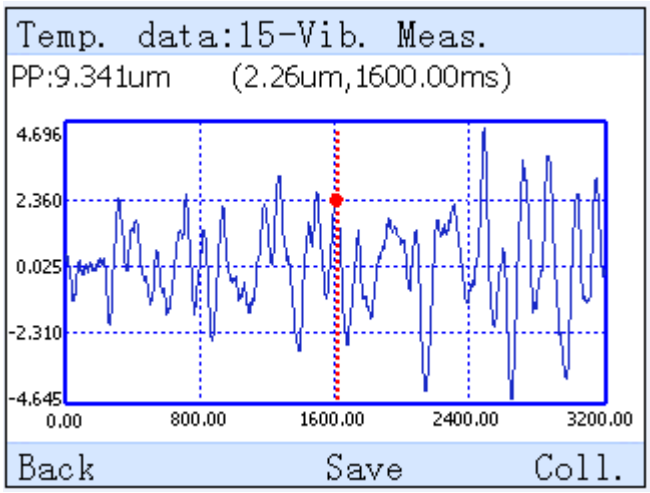


Figure 5-4 Off route vibration measuring results

- User-defined collection parameter

If the collection parameter list does not include the needed parameter, users can define collection parameter. Choose off route task, press “User-defined” in the acquisition parameter interface to login Figure 5-5 acquisition parameter setting interface.

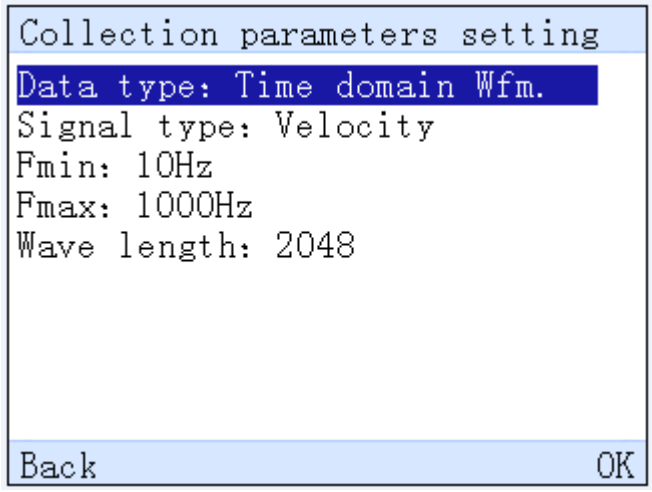


Figure 5-5 Acquisition parameter setting

Move cursor under the relevant parameter to choose the specific needed parameter:

(1) Data type: time domain waveform and spectrum(frequency is converted from time domain waveform)
(2) Signal type: acceleration, velocity, displacement and voltage

(3) Minimum frequency: 2Hz, 10Hz
(4) Maximum frequency: among 100Hz~10kHz
(5) Time domain sampling: 1024, 2048, 4096, 8192
(6) Lines: 400, 800, 1600, 3200
(7) Averages: 1
(8) Averaging type: Linearity, peak hold
(9) Window function type: Rectangle, Hanning
(10) Coupled modes: this option only exists under voltage signal; alternating and direct current are available.

：The acquisition parameter is differs according to different signal type.

After parameter setup, press “OK” to login the off route dynamic data acquisition interface. The collection method is the same as the existing parameter. Press “Collect” to conduct data acquisition. After finishing, press “Save” to save the data.

5.2.5 Off route task note

When collecting off route data, Users can add notes for conveniently identification.

After selecting or setting off route data acquisition and login data acquisition interface, press “notes” to login Figure 5-6 adding note interface. Users can add less than 10 words note to the off route data or collect data first and add notes before saving as off route data.

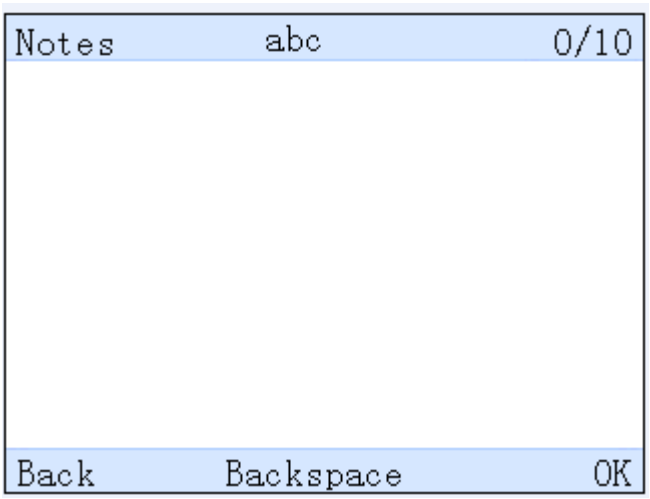


Figure 5-6 adding note interface

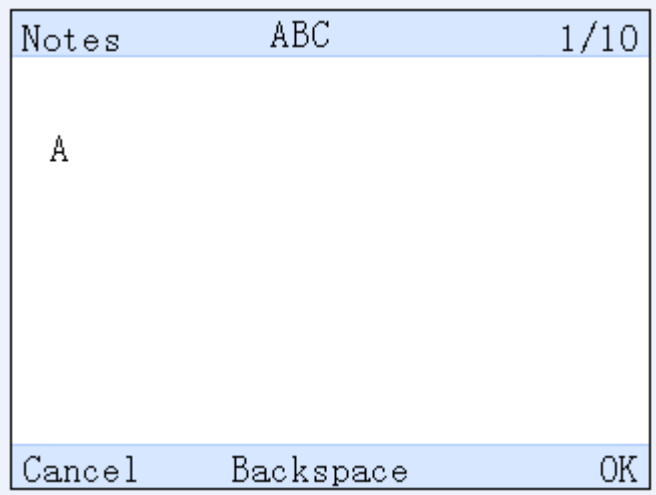
The text area can input numbers (123), capital letters (ABC), lowercase (abc).

The top right corner in the interface shows the current input method, acquiescent one is lowercase (abc) , press “#” to change the input method. Press “*” to add punctuation marks.

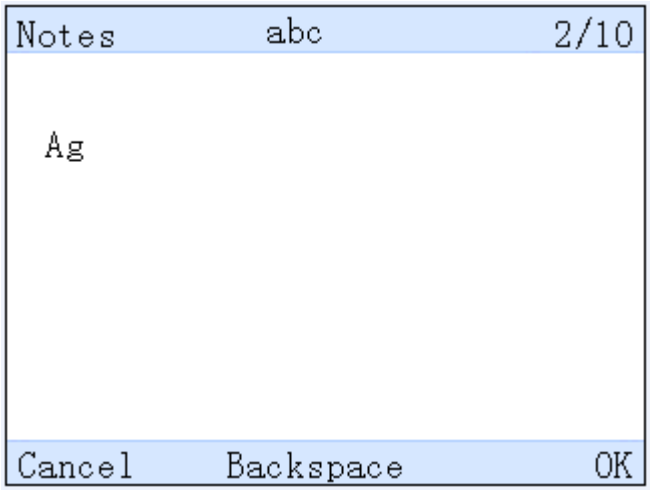
(1) Capital letters and lowercase input

Press “#” to change into capital letter input (ABC), as Figure 5-7. Press number keys to input the numbers needed. Press once to input the first letter in the key, continuously double presses

to input the second letter, continuously three presses to input the third letter.



（a）



（b）

Figure 5-7 Letters input

(2) Numbers input

Press “#” to change into numbers input method (123), input numbers as Figure 5-8.

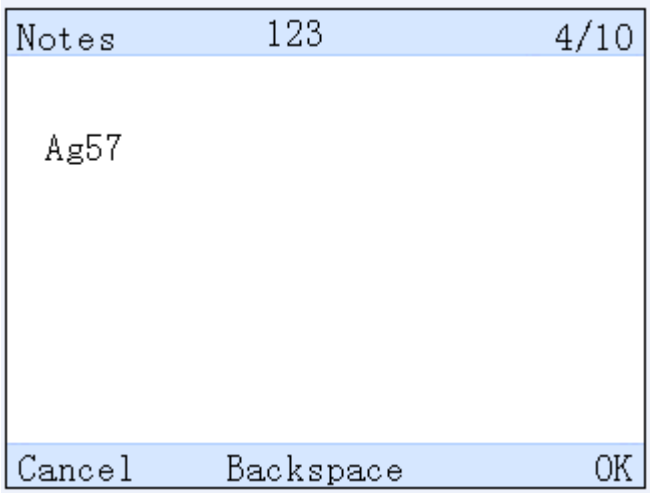


Figure 5-8 Numbers input

(3) Punctuation and other marks input

During the words input, press "*" to access the interface as Figure 5-9. Users can insert punctuation, mathematical symbols and other marks in the place the cursor stays.

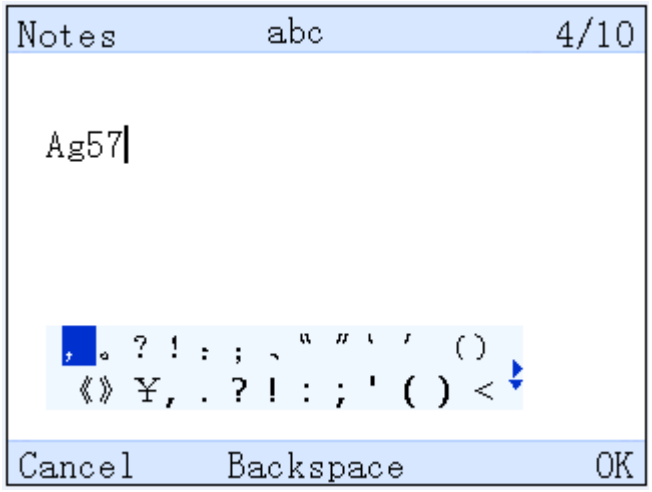


Figure 5-9 Inserting punctuation marks

After adding the notes, press "OK" to finish off route data collection noting. Then off route data collection interface will be shown as Figure 5-10, the note is shown on the top of the interface.

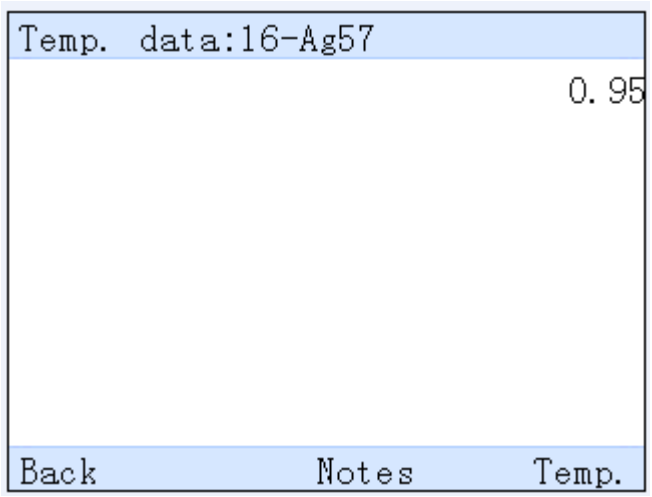


Figure 5-10 Noted off route data

Chapter Ⅵ. View Data

RH711 provides data viewing function to facilitate the users to check the route task or off route task data on site or afterwards, ensured the accuracy of data acquisition or diagnosis conduction of the equipment on site.

6.1 Select data type viewing

In the main interface, choose view data menu, press “OK” to login data viewing interface, data types include: historical data and Off Route data.

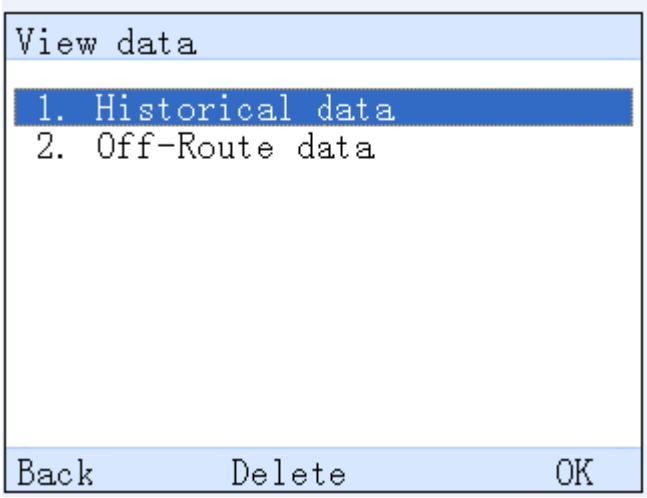


Figure 6-1 Data viewing interface

6.2 Historical data viewing

Choose historical data in the data viewing interface, press “OK” into Figure 6-2 historical data navigation interface, data listed according to the equipment names. If there is no historical data available, the system will popup prompt message, which will close automatically 2 seconds later.

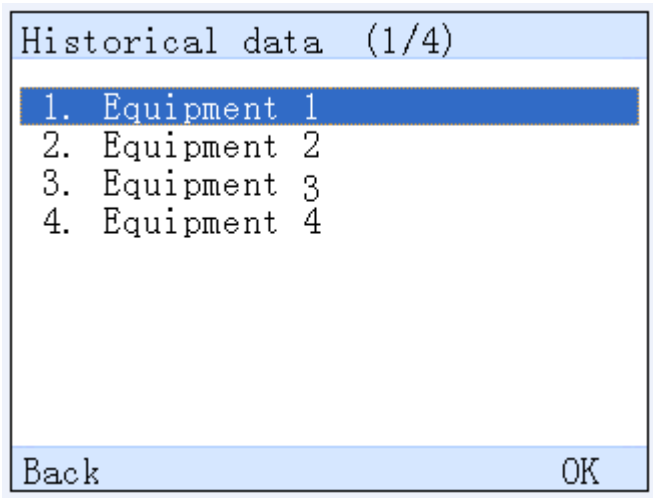


Figure 6-2 Historical data equipment navigation

Use up/down keys to move the cursor to choose the relevant equipment, use left/right keys to turn into pre/next pages of equipment list. Choose the equipment which need to view, press "OK" to view historical data of this equipment. Press left/right keys to view the pre/next data of measuring point. Press up/down keys to view the data of current measuring point. The data is listed according to the measuring date. The first data displayed is the latest measuring data.

Choose one equipment, such as "**Equipment 1**", press "OK" to login the historical data viewing interface of this equipment measuring point.

Observation measuring point historical data viewing interface as Figure 6-3.

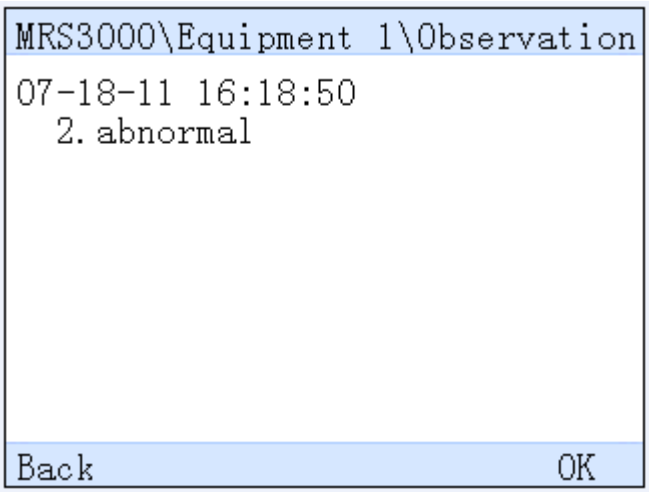


Figure 6-3 Historical data viewing of observation measuring point

The content of temperature measuring point viewing interface is similar to observation.

The historical data viewing interface of the processing information measuring point as Figure 6-4.

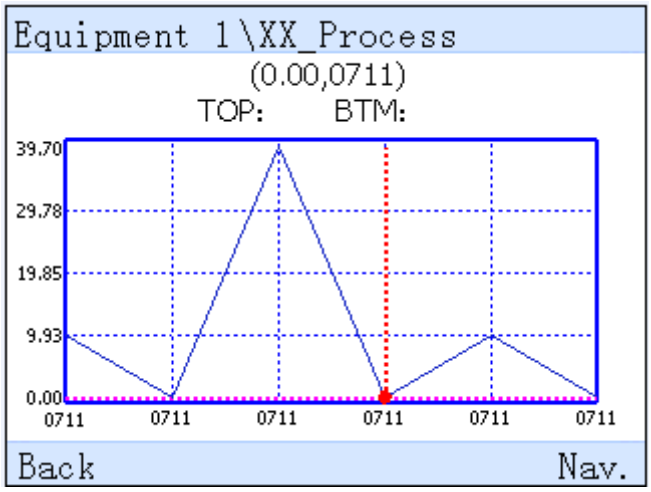


Figure 6-4 Historical data of the processing information measuring point

The top standard and bottom standard are marked by different color lines to help users to quickly learn the abnormal of historical data. The horizontal axis stands for inspection date, vertical axis stands for measuring information, cursor information is shown in the top of the interface.

The viewing interface for the historical data of the dynamic measuring point is shown as Figure 6-5.

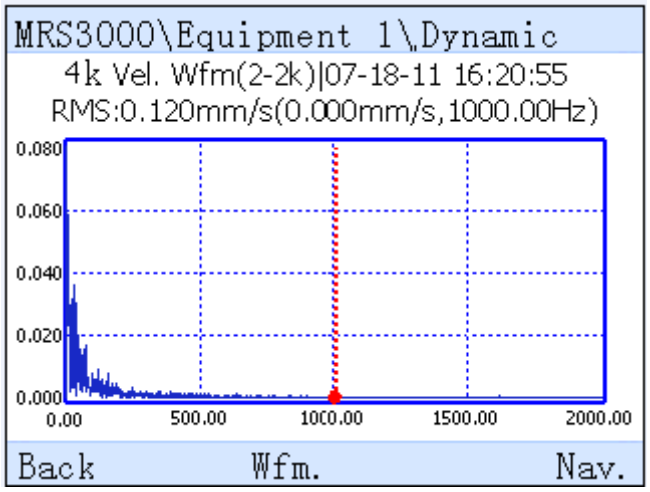


Figure 6-5 The historical data of the dynamic measuring point

In the waveform viewing interface, the following operation can be conducted:

Cursor Function: Press “Navigation”, the cursor will appear. Move it to view the horizontal axis and vertical axis values of the relevant point in the waveform. The method of moving cursor:

- ✧ Slow move: Press left/right keys, the cursor will be moved as single unit slowly.

✧ Fast move: Press up/down keys, the cursor will be moved in big pace rapidly.

Scale Function: Press “Cursor”, the “Scale” will appear. The interface will access scaleable status.

Press up/down keys to enlarge/reduce the waveform around the vernier position, so that the waveform can be viewed clearly.

Navigation Function: Press “Scale” to login “Navigation” and access navigation status. Press arrow keys to navigate to other measuring points.

Spectrum analysis/Time domain waveform: This function only occurs under the vibration data viewing interface. Press “Switch into spectrum”/ “Switch into waveform” keys to get the spectrum analysis chart or time domain chart of the corresponding waveform.

6.3 Off-Route data viewing

Choose Off-Route data in the data viewing interface. Press “OK” into the Off-Route data navigation interface. If the system has no off route data, a prompt message will appear, as Figure 6-6.

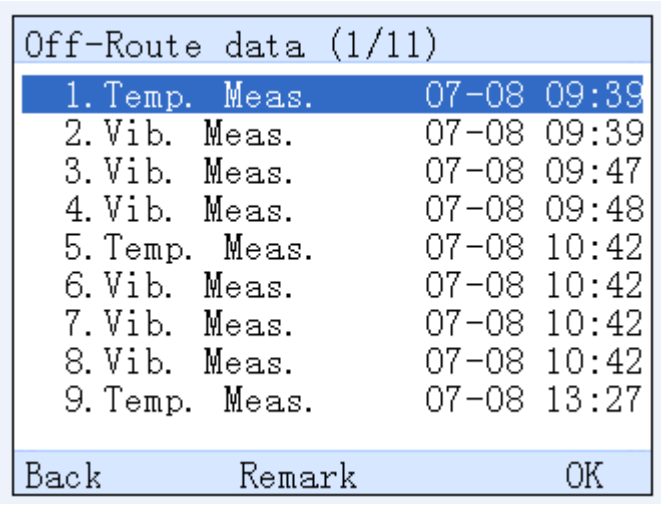


Figure 6-6 Off route data navigation

There are 2 types of off route data: temperature and vibration. If the noted existed already during data collection, the entry will show the notes as Figure 6-6, such as “2.temp” etc. Press “Remark” to edit the notes.

Choose an off route data, press “OK” to login the temperature data viewing interface, as Figure 6-7.

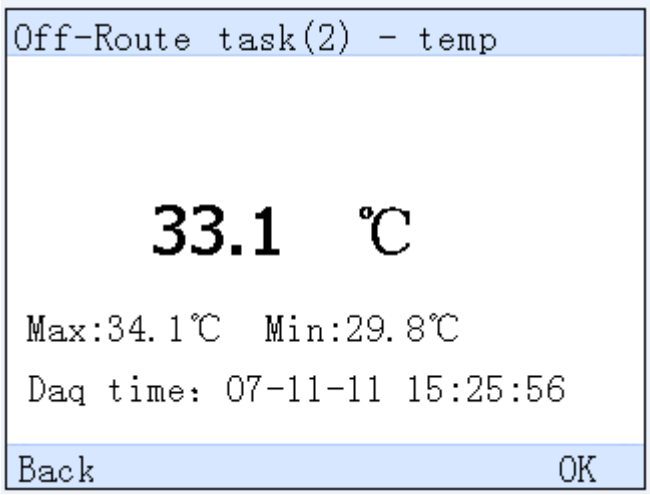


Figure 6-7 Off route data of temperature

If the selected temperature data is saved as temperature waveform, the temperature waveform will be shown when viewing temperature data, as Figure 6-8.

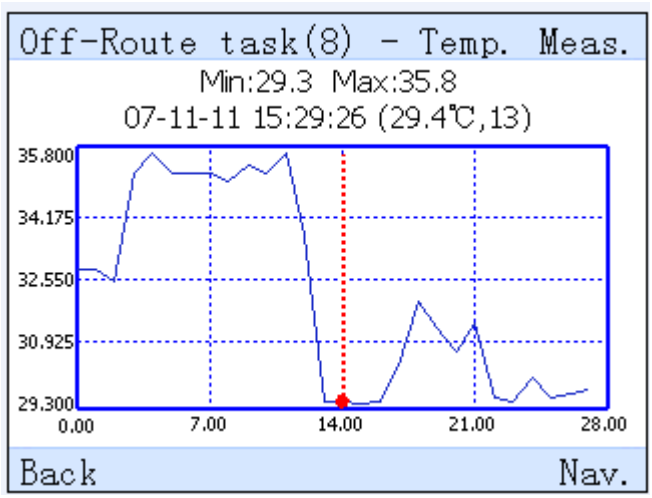


Figure 6-8 Off route data of temperature waveform

After selected the vibration data, press “OK” to login the vibration data viewing interface, as Figure 6-9. It shows the time domain waveform data.

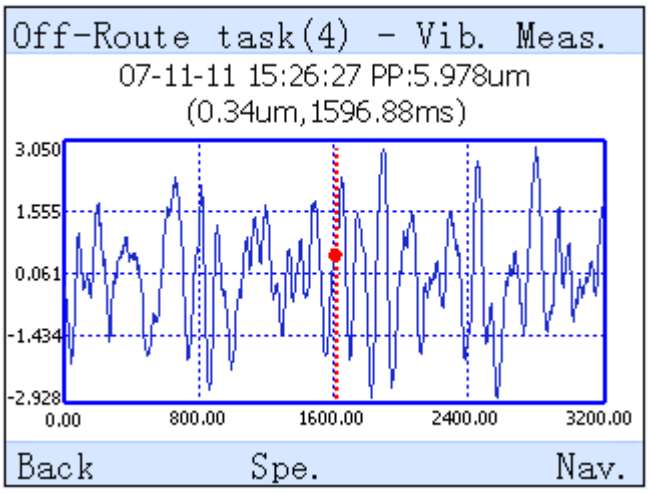


Figure 6-9 Off route data of vibration

The method of off route data viewing is the same as historical data.

Press left/right keys to view pre/next off route data in the off route data viewing interface.

6.4 Delete collected data

The collected and saved data can be deleted by instrument directly.

Users can conduct following operation in the **view data** interface:

Choose **view data** menu in the main interface, select historical data, press “Delete” in the delete inquiry window, press “OK” to delete all historical data of the current operator. Press “ Backspace” to cancel the previous operation. Choose off route data, press “Delete”, then press “OK” in the delete inquiry window to delete all the saved data in the Off-Route task.

Appendix—Abbreviation list

Dis. Wfm ……Displacement waveform
Vel. Wfm ……Velocity waveform
Acc. Wfm ……Acceleration waveform
400 Dis. Spe. ……..400 lines displacement spectrum
400 Vel. Spe. ……..400 lines velocity spectrum
400 Acc. Spe. ……400 lines acceleration spectrum
800 Dis. Spe. ……..800 lines displacement spectrum
800 Vel. Spe. ……..800 lines velocity spectrum
800 Acc. Spe. ……800 lines acceleration spectrum
Sys. Info. .....System information
SN .....Serial No.
ACC SENS. .....Acceleration sensitivity:
SGL COLL. .....Single collection
RMS ……...Root Mean Square
Temp. Meas. .....Temperature measurement
Vel. Meas. ……..Velocity measurement
L .....Liter
Daq. time .....Data acquisition time
PP ……..Peak-Peak value
Ext. speed .....External speed
Coll. Times .....Collection times
Curr. Speed .....Current speed
Meas. Data .....Measuring data
Spe. ……Spectrum
Nav. ……Navigation
Wfm. ……..Waveform
Sca. ……Scale
Ver. ……Vernier
Def. Emissivity .....Default emissivity
Curr. PWD ……..Current password
New PWD ……...New password
AVG type ……Averaging type
Daq. Times…….. Data acquisition times
W. Vec. ……Weight vector
Init. Vec. ……..Initial vector
Bal. vec. ……..Balance vector
WGT ……...Weight
AVG times .....Averaging times
Vib. Transducer: mv/unit.....Vibration transducer sensitivity: mv/unit
Vol. transducer: mv/unit.....Voltage transducer sensitivity: mv/unit
Del. Hist & Off route Data……Delete historical & off route data
Win. Type ……Window type
Rect. Window……... Rectangle window
Equip. Condi. ……...Equipment condition

ROZH

Industrial monitoring expert

In Korea

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