USER'S GUIDE

APL-2

Optical Time Domain Reflectometer

Warning and note

WARNING

You are cautioned that changes or modifications not espressly approved in this document could void yout authority to operate this equipment.

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

All is subject to the object, the manual is for reference only.

NOTE

As the laser is harmful to the eyes, do not attempt to disassemble the cabinet.

Precautions for Use

Use batteries

At the same time, can not use different style or different capacitance batteries. And only use and charge the batteries the product equipped..

Avoiding condensation problems

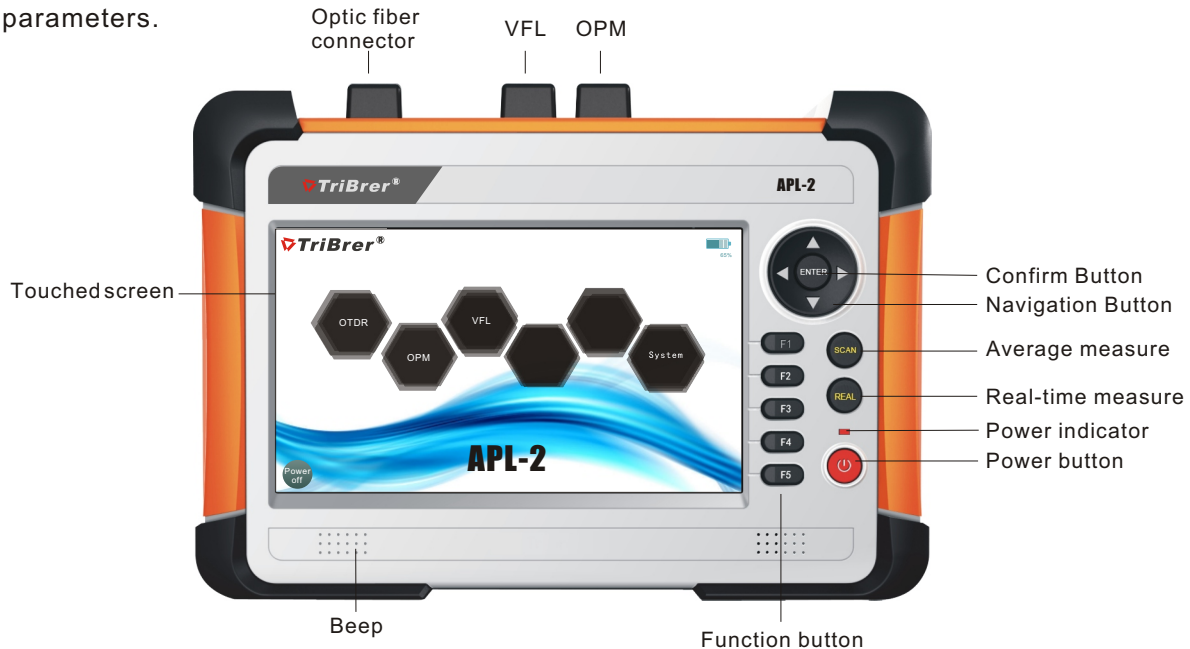
As much as possible, avoid sudden temperature changes. Do not attempt to use the drive immediately after moving it from a cold to a warm location, to raising the room temperature suddenly, as condensation may form with in the drive. If the temperature changes suddenly while using the drive, Stop using it and take out batteries for at least an hour.

Storage

When long time no use, must take out the batteries to avoid destroying the device.

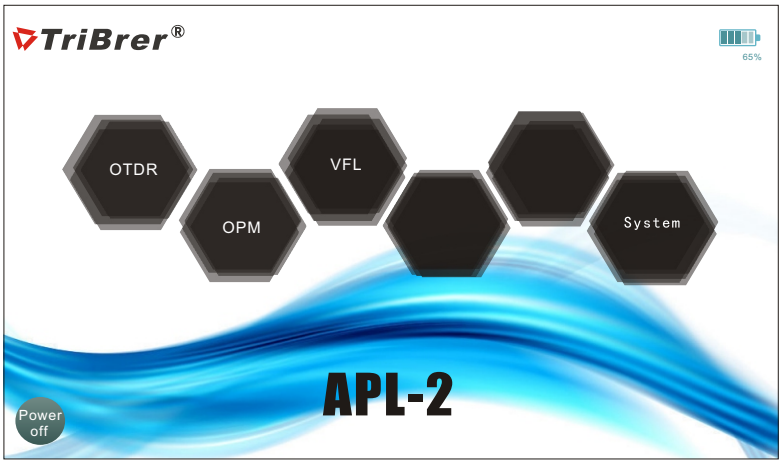
Summarize

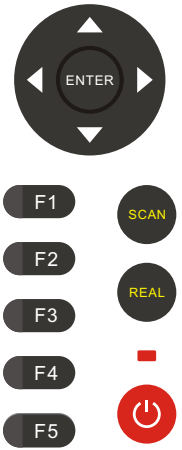
The device uses the module design, includes the host, battery module and function module for customizing. The user's guide describes the use of OTDR, OPM and VFL function modules and detailed parameters.



Power on/off

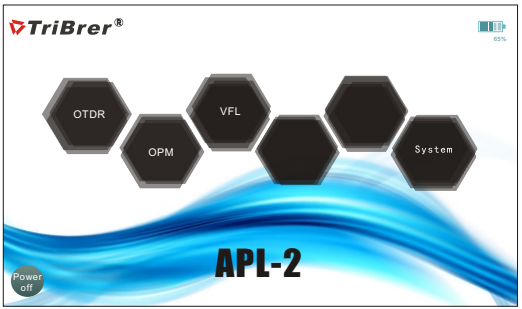
Press and hold " ⏻ " button for 2 seconds to turn on the device, click on the required function to enter the function interface.

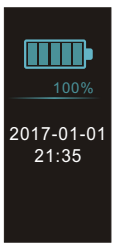




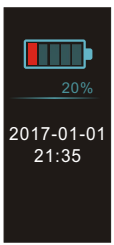
Battery information

The upper right corner of the interface is the battery status and power indication. It will show up different colors in different status, just as followed. Also user can check the battery information in system menu.

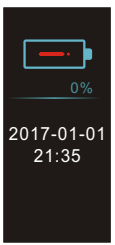




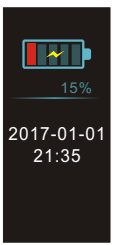
Remain 100%



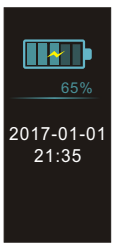
Remain less than 20%, displayed in red icon



No battery



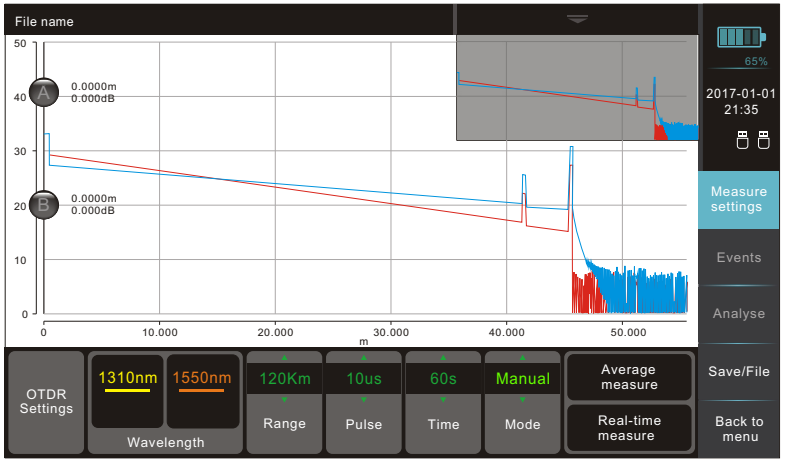
Low battery, Connect to charger, show up charging

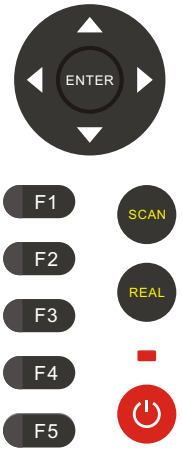


Charging, Connect to charger, show up charging

OTDR

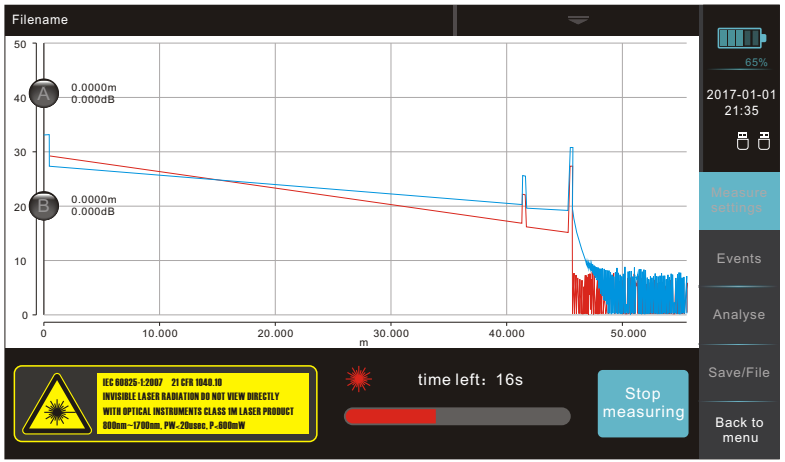
Click on " OTDR " to enter the measurement interface. In OTDR measurement interface, press " SCAN " or " REAL " button to the start optic fiber measurement work directly. User can insert two external storage devices to our device, and it will show up the USB icons below the "date time" .

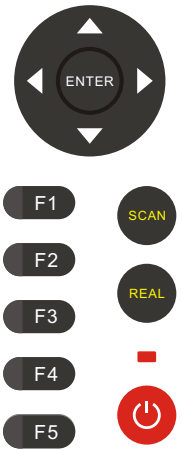




OTDR

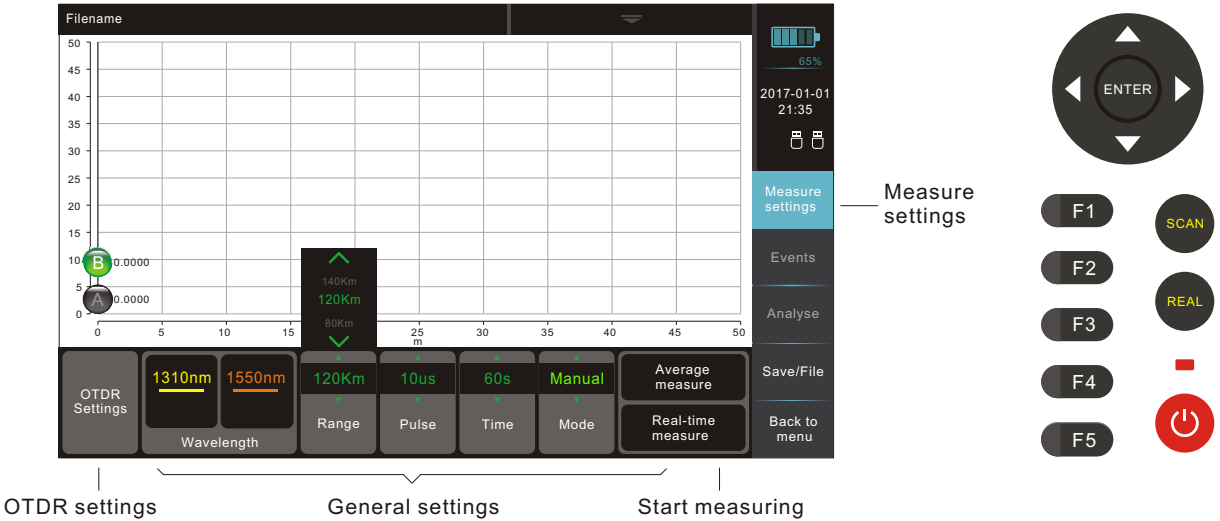
During optic fiber measuring, the information window will show the warning sign and the progress bar of remaining time. During measuring, click on "Stop measuring" or press " SCAN " or " REAL " button to stop at anytime.





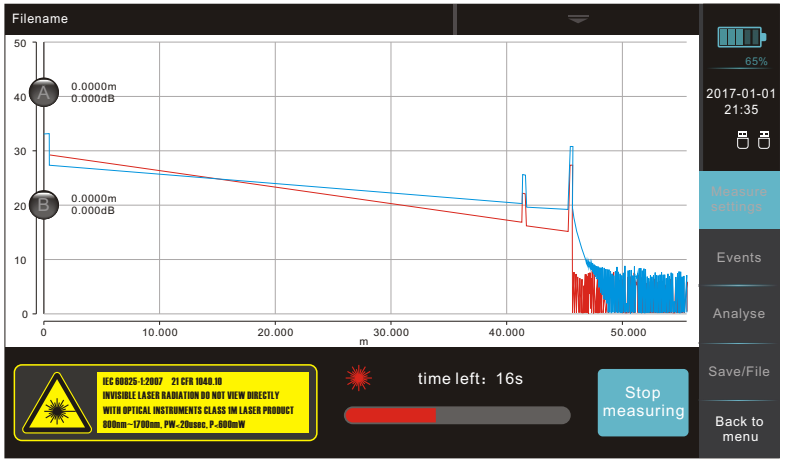
OTDR- Measure settings

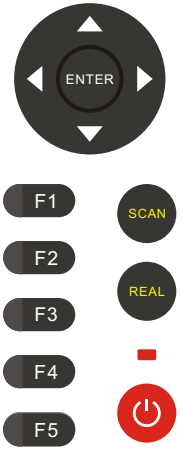
Click on " Measure settings" to enter the measurement interface, which shows the buttons of OTDR settings, general settings and start measuring. User can select the mode to be manual or auto. Under manual mode, users can set the range, pulse and time by themself. User can select the wavelength measured, default are yellow 1310nm and orange 1550nm.



OTDR-Average measure

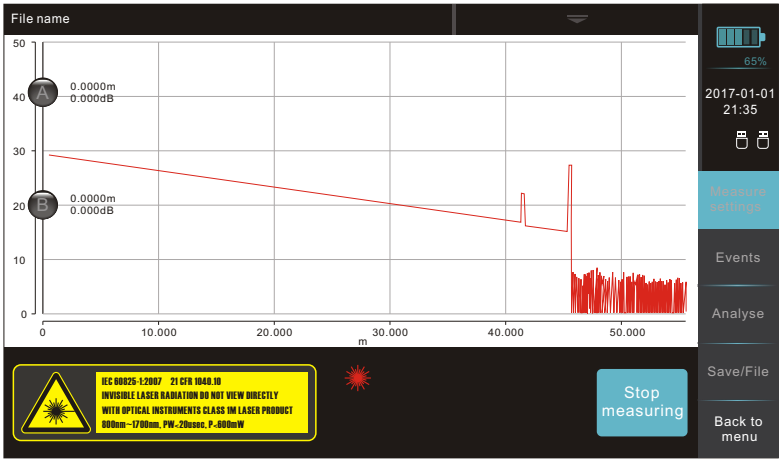
Click on "Average measure" button or press "SCAN" button to enter the average measure interface. During measuring, click on "Stop measuring" or press " SCAN " or " REAL " button to stop at anytime. The average measure can measure two wavelengths at the same time.

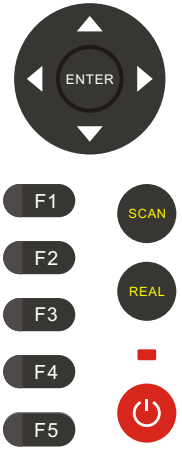




OTDR-Real-time measure

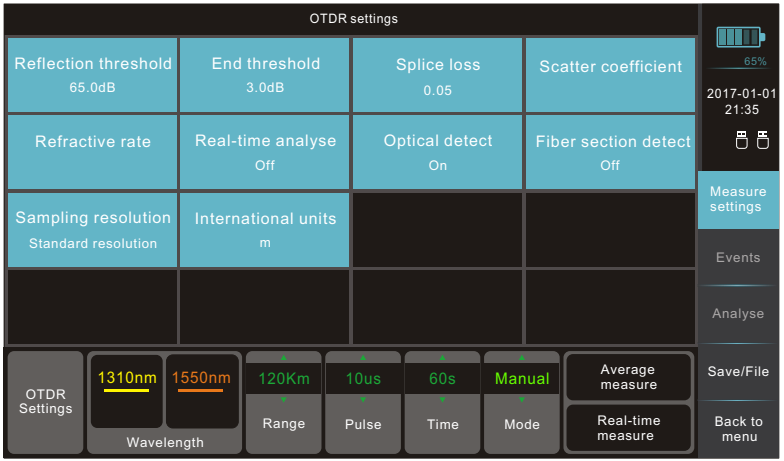
Click on "Real-time measure" button or press "REAL" button to enter the real-time measure interface. User can press navigation button up and down keys to increase or decrease the range, and click on "Stop measuring" or press " SCAN " or " REAL " button to stop at anytime. Real-time measurement can only measure one wavelength at a time.





OTDR- OTDR Settings

Click on "OTDR Settings" to show the OTDR settings menu. There are 10 options in the menu, and click on each one can set the parameters. Click on "Confirm and exit" to save the changes. Click on "Restore" to restore system defaults. After finishing setting, click on "OTDR Settings" again to quit.



Measure settings

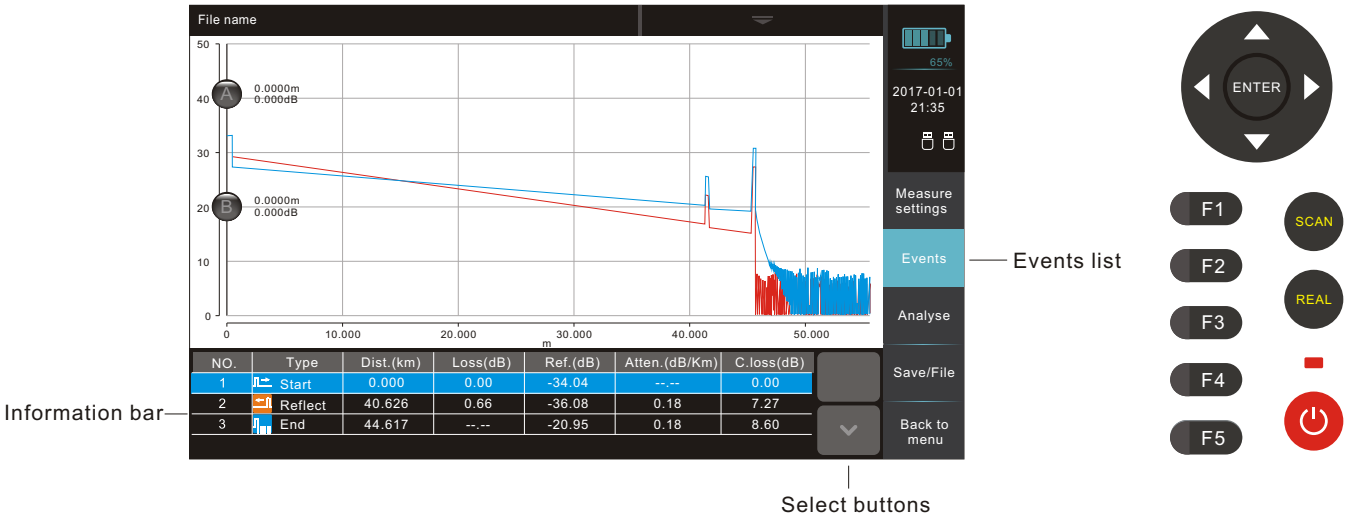
OTDR settings

OTDR- OTDR settings

Reflection threshold 65.0dB	Treat as an event when the reflection is higher than setting value.
Splice loss 0.05	Treat as an event when the loss is higher than setting value.
Refractive rate	Set the optic fiber's refractive rate for each wavelength, which can improve the measurement accuracy.
Optical detect On	Detect whether signal in fiber or not.
Sampling resolution Standard resolution	Display the sampling resolution
End threshold 3.0dB	Treat as the end of optic fiber when the loss is higher than setting value.
Scatter coefficient	The intrinsic value of Rayleigh Scattering.
Real-time analyse Off	Set whether analyses events after real-time measuring or not.
Fiber section detect Off	Detect the quality of the connector. The device will remind user if in poor quality.
International units M	Select the international units in m, Km and Kft.

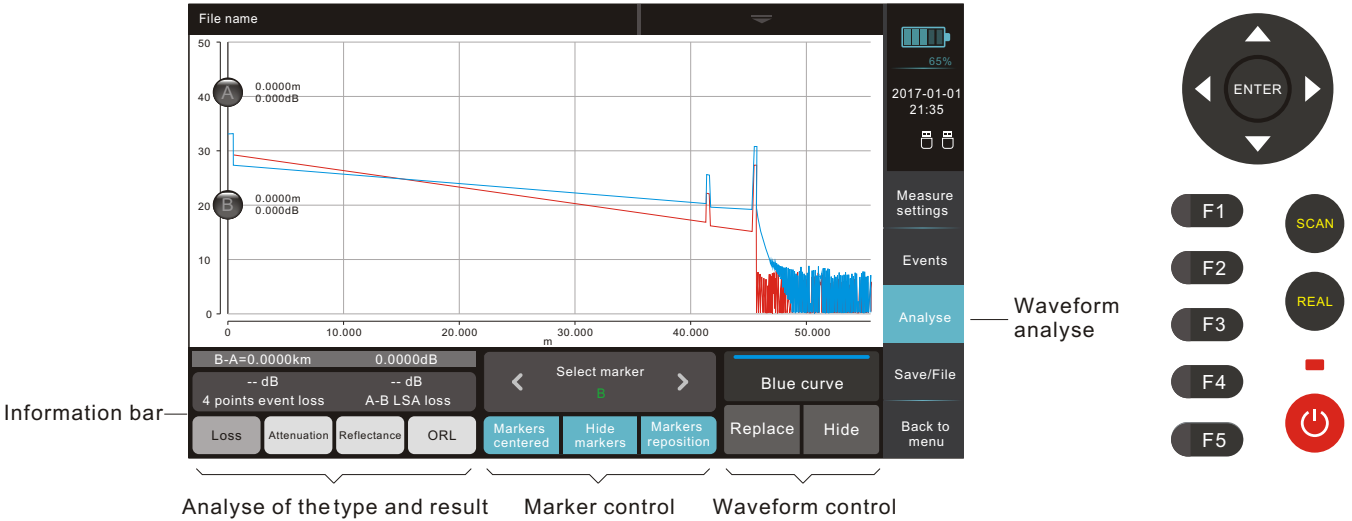
OTDR- Events

Click on "Events" to show the events list, One page shows four event log. Click on the select buttons or slide in the events list area to turn the page up/down. If the arrow to the select button disappears, it means that there are no more events in that direction. Click on each event, the marker will locate to the record automatically.



OTDR- Analyse

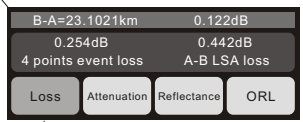
Click on "Analyse" to show the waveform analyse. This function can analyze the problem which is difficult to find in the auto measurement mode. It includes analyse of the type and result, marker control and waveform control.



OTDR- Analyse- Analyse of the type and result

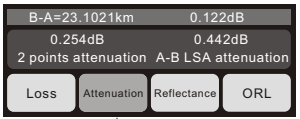
Analyse of the type and result shows the distance difference and power difference between marker A and B.

The distance and attenuation between marker A and B



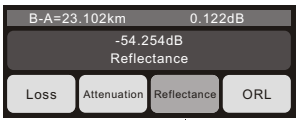
4 points event loss: marker a, A, b and B in 4 points algorithm. Move the markers appropriately, the difference between the LSA value in "a, A" and "b, B" can be used to judge the loss more accurately.

A-B LSA loss: marker A and B in 2 points algorithm. Calculate the difference between A and B by the LSA slope.

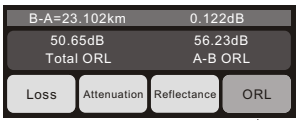


2 points attenuation: calculate the real attenuation between marker A and B, then unitized to the loss per kilometer, which makes the noise interference larger.

A-B LSA attenuation: obtained after calculating the LSA slope between marker A and B, and the attenuation is relatively stable.



Reflectance: marker a, A and B in 3 points algorithm. Set "a, A" in the flat position before reflection and set B in the highest point of reflection to show the reflectance value.



A-B ORL: the ORL value between marker A and B,

Total ORL: the ORL value in the entire circuit.

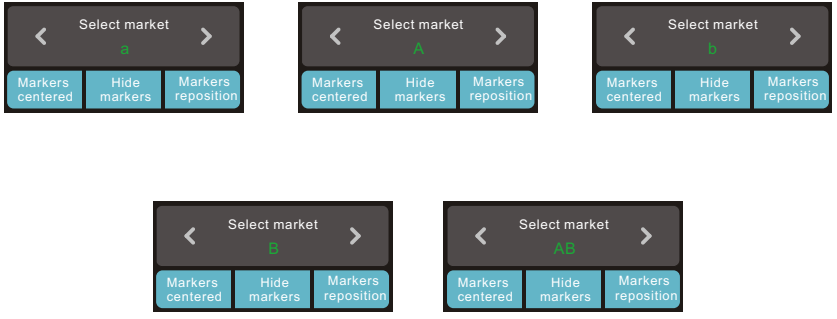
OTDR- Analyse- Marker control

According to the option of analyse of the type and result, user can select different markers by clicking on "Select marker".

Markers centered--- locate the markers in the middle of the waveform region.

Hide markers--- hide/display all the markers.

Markers reposition--- locate the markers to the zero position.



OTDR- Analyse- Waveform control

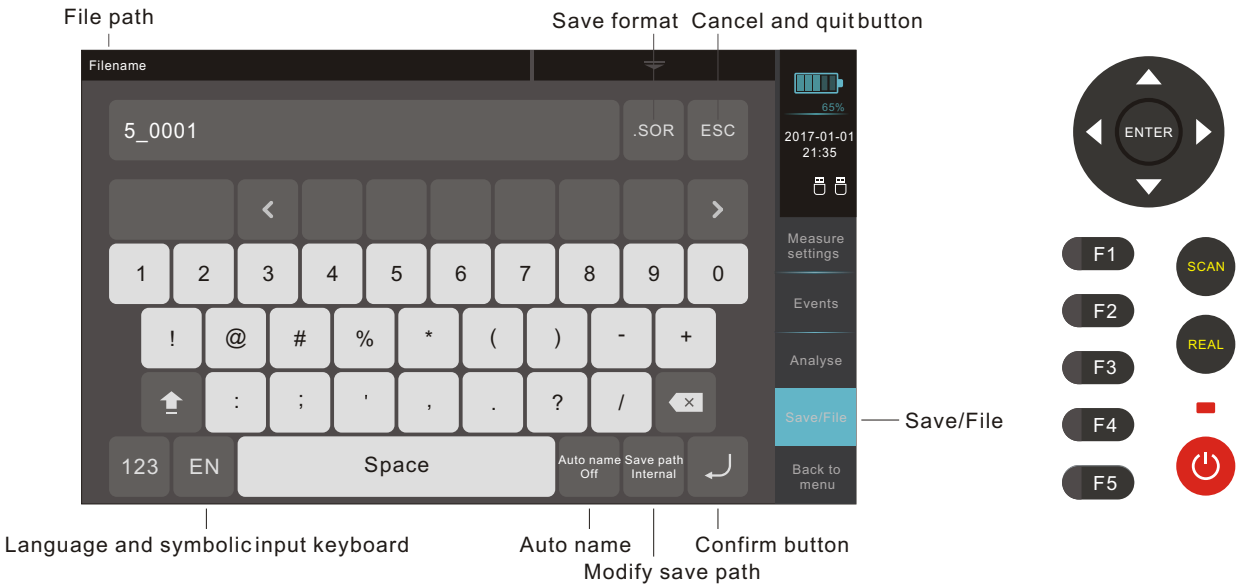
OTDR can display the double curves for user to contrast and analysis.

Replace--- replace the selected curve.

Hide--- hide the selected curve.

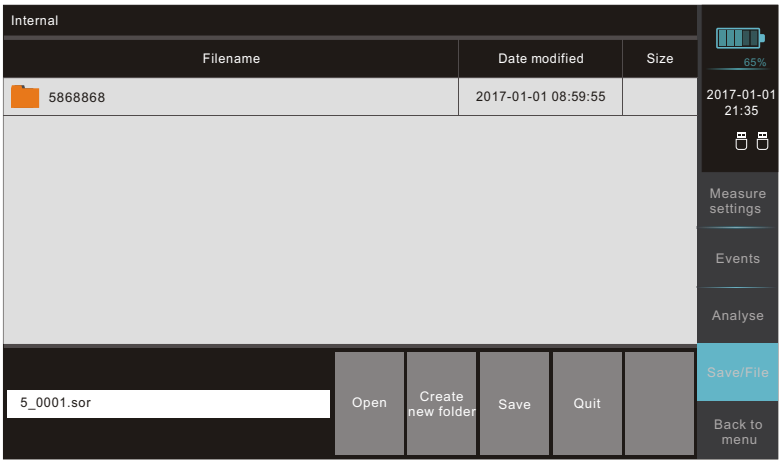
OTDR- Save/File-Save

After measuring, click on "Save/File" to enter the save interface. The user needs to insert the USB external storage device in advance. User can set the auto name function to be on/off and select the save path. The longest filename can be 40 characters.



OTDR- Save/File-Save

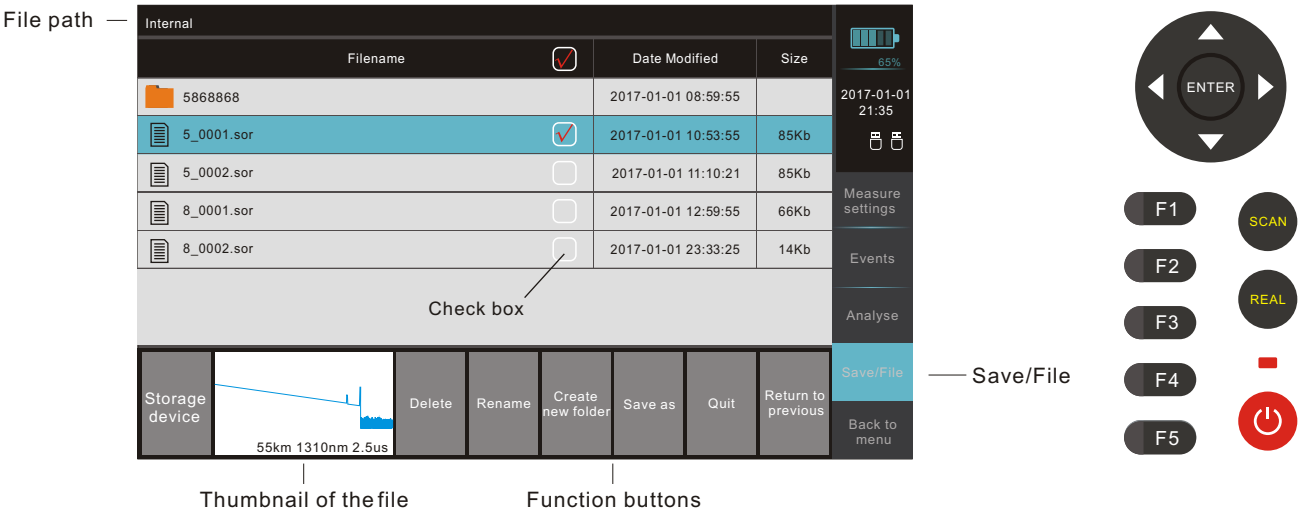
Click on " ↵ " to enter the save settings interface after the file name is entered . Click on "Save" to confirm and exit.



Save File

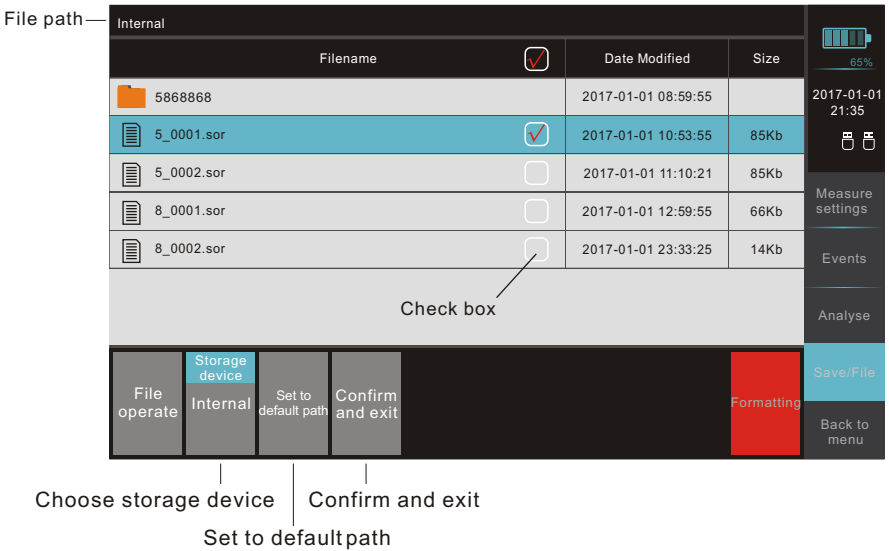
OTDR- Save/File

Without new measurement, click on "Save/File" show the file menu. Slide the screen up/down to browse the files, double click to enter the folder or open one file. When a file be chosen, it will show up the file thumbnail at the bottom of the screen. Files can be selected multiply for file operation.



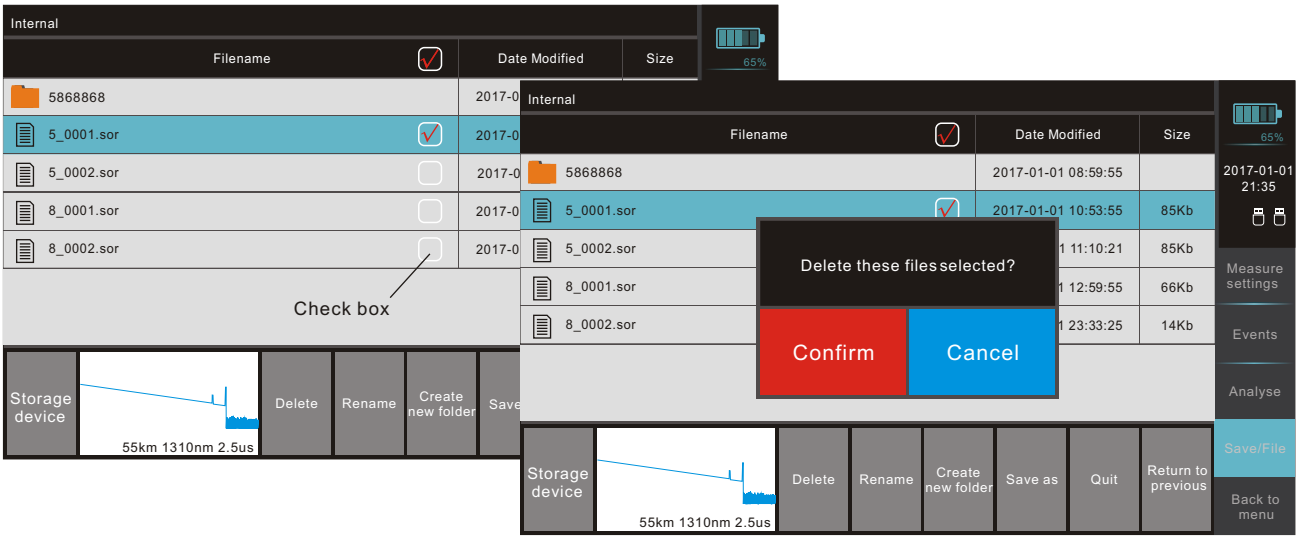
OTDR- Save/File- Storage device

Click on "Storage device" and choose the storage device. Click on "Confirm and exit" or "File operate" to confirm and exit. Set the path will still save after shutdown.



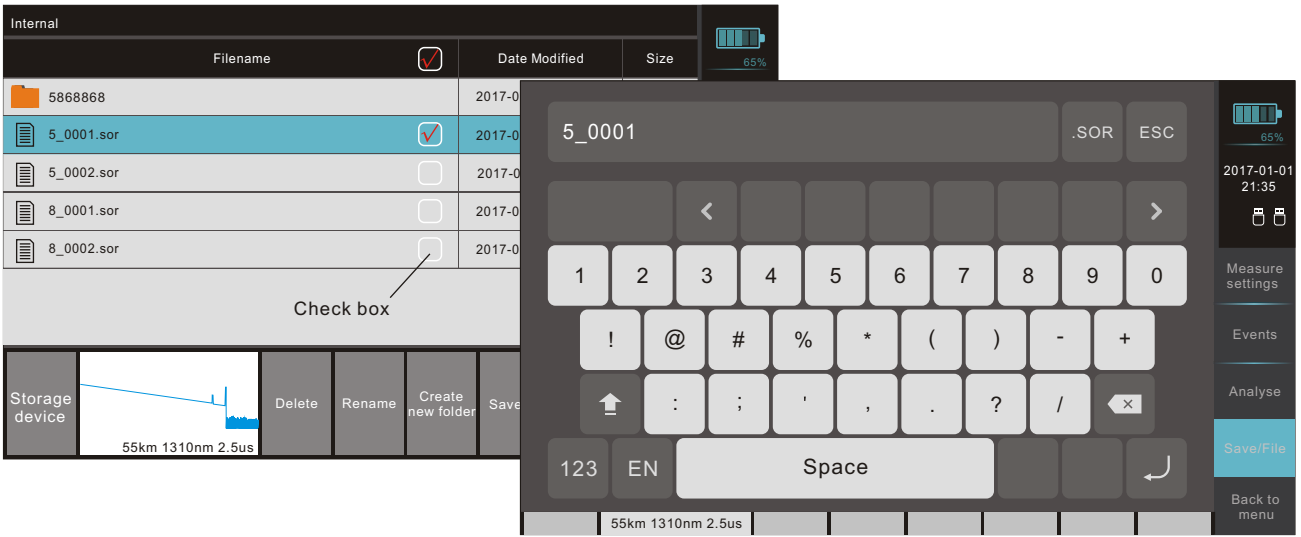
OTDR- Save/File- Delete

Select the file and click on "Delete", there will be deleting confirm box, click on "Confirm" will delete the selected file. File can be multi-selected, the folder can only be single-selected.



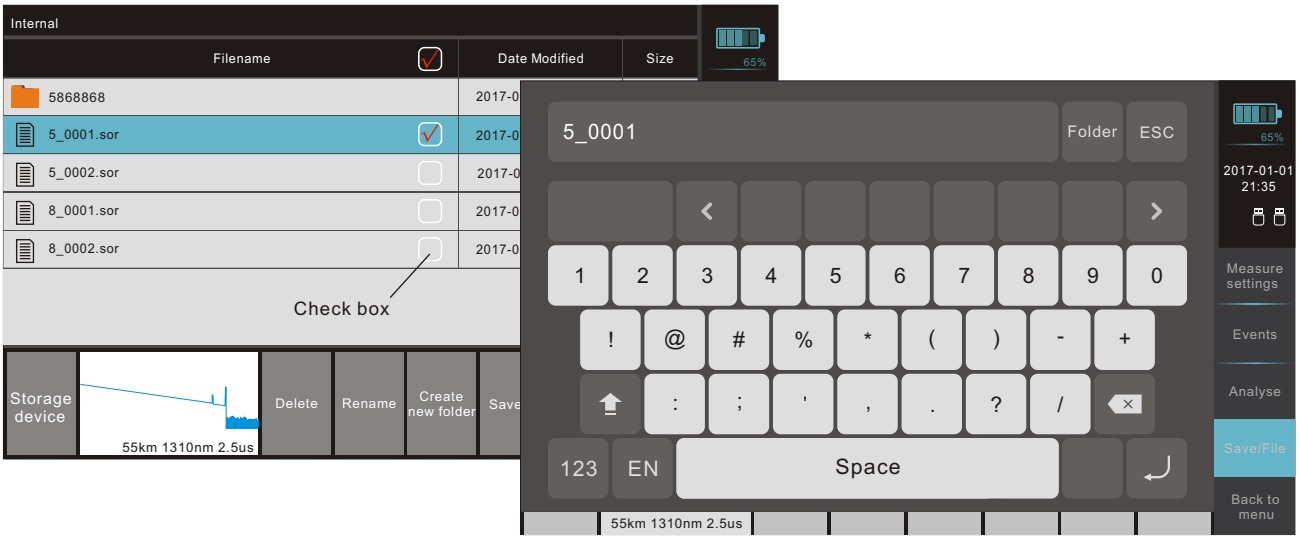
OTDR- Save/File- Rename

Select a file or a folder and click on "Rename" to enter the rename operation interface. User can click on " ↵ " to save.



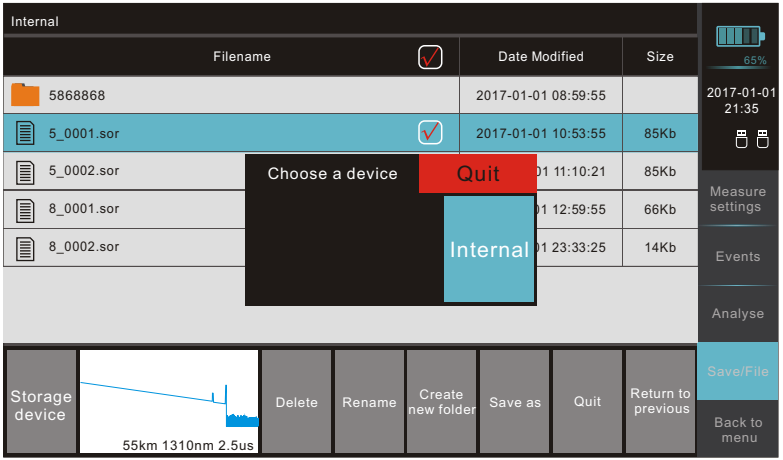
OTDR- Save/File- Create new folder

Select a hierarchy and click on "Create a new folder" to create a new folder. User can input the folder name and click on " ↵ " to finish creating.



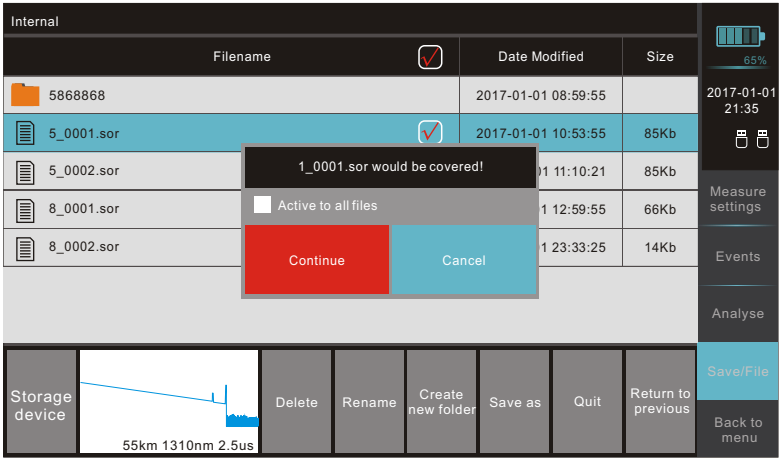
OTDR- Save/File- Save as

Select some files or a folder and click on "Save as" to save the files into the current storage device or others.



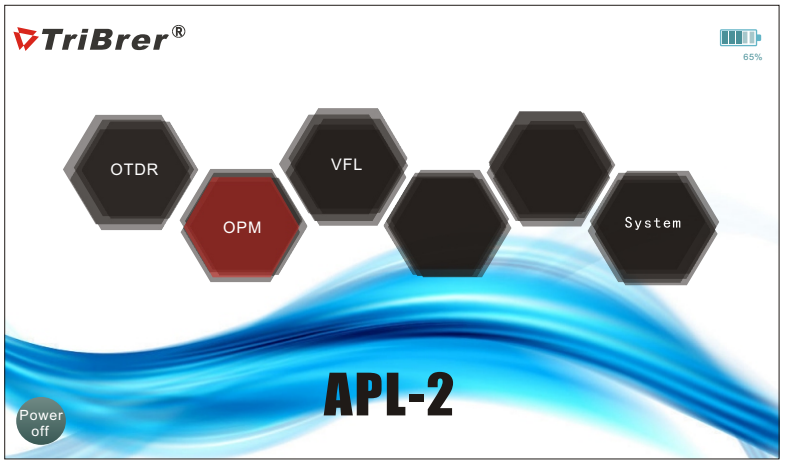
OTDR- Save/File- Save as

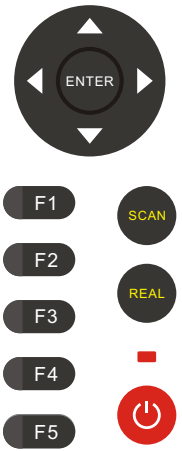
The file name in a folder can not be the same, otherwise it will prompt "the original file would be overed" information.



OPM

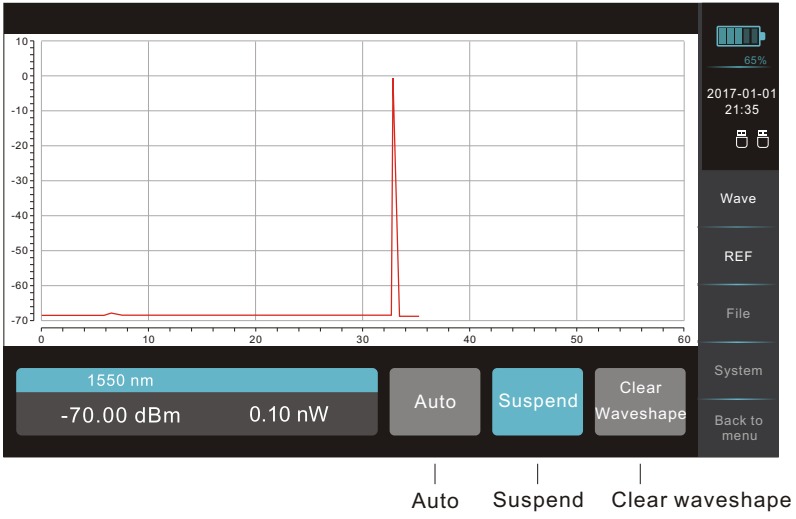
Click on " OPM " to enter the optical power meter interface.





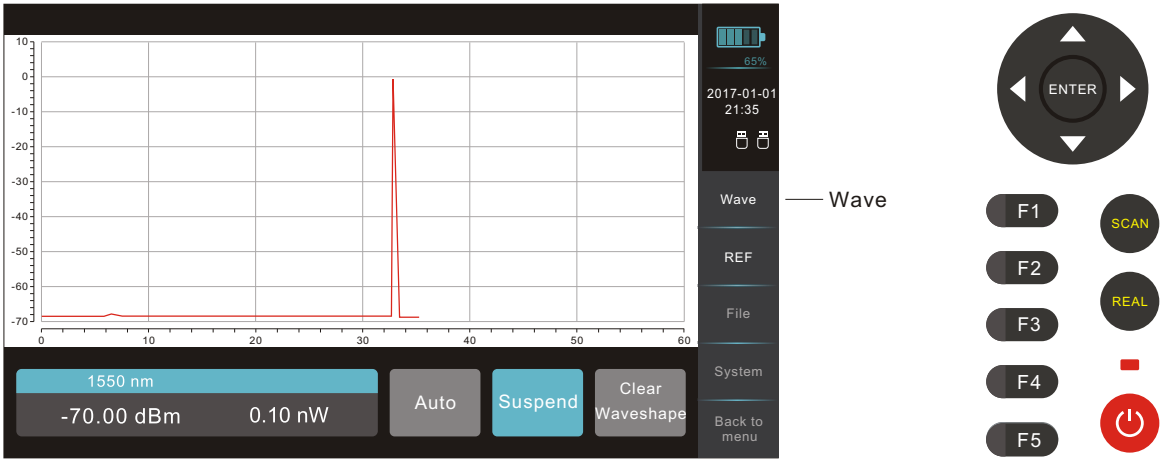
OPM

During measuring, click on "Clear Waveshape" to clear up the current waveform, click on "Suspend" to suspend or continue the measurement, click on "Auto" to set the waveform to adjust to the screen.



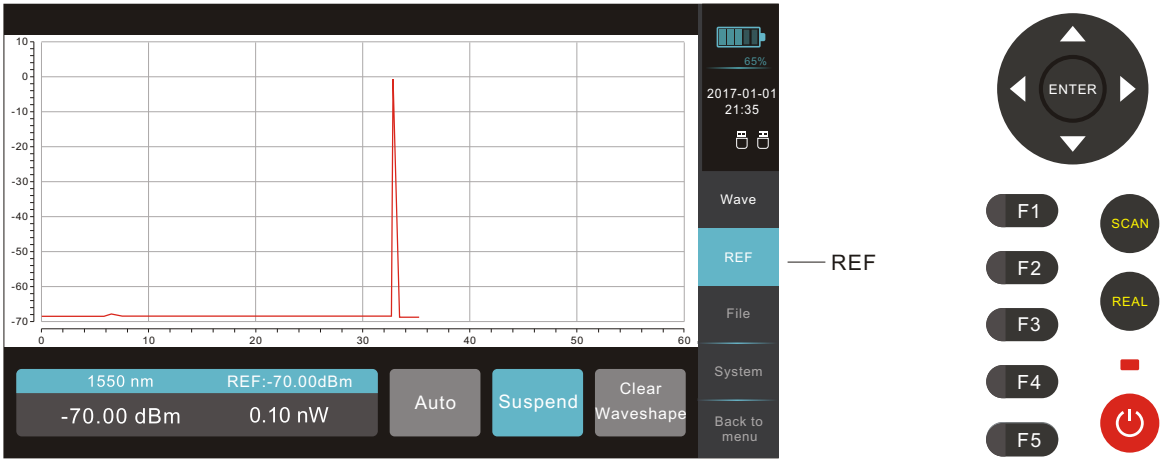
OPM- Wave

Click on " Wave " to select wavelengths, include 850nm/1300nm/1310nm/1490nm/1550nm/1625nm.



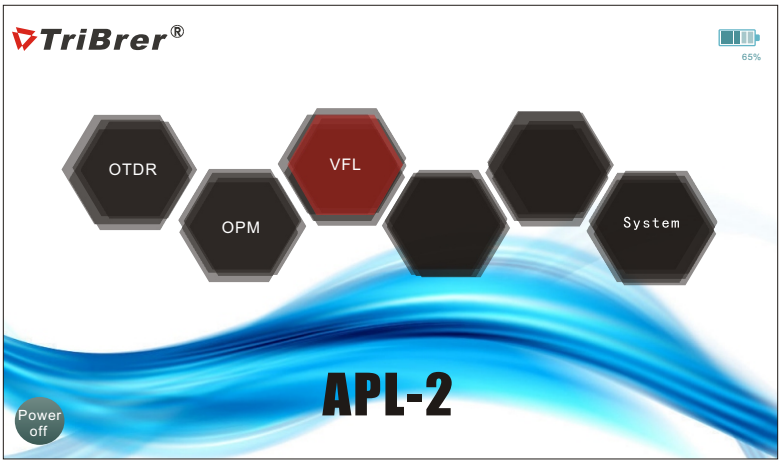
OPM- REF

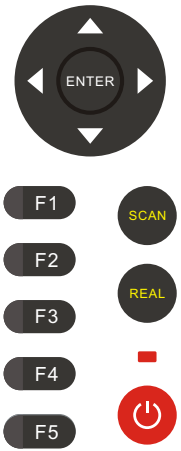
Click on " REF " to turn on/off this function. When turn on it, the displayed value is the difference between the current value and the power value at activation.



VFL

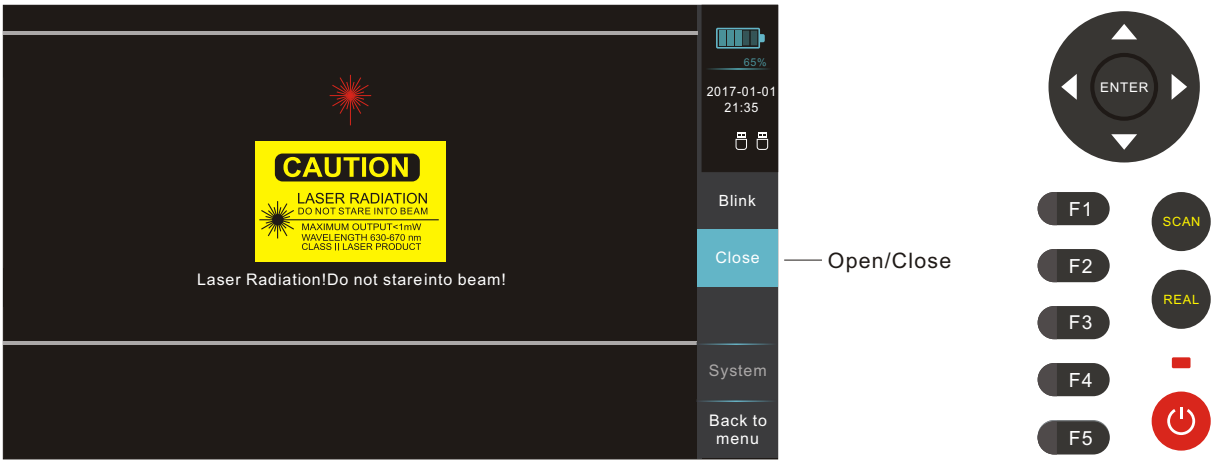
Click on " VFL " to enter the visual fault locator interface.





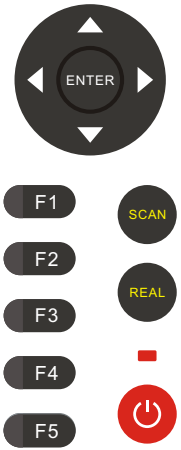
VFL- Open/Close

Click on "Close" to turn off the laser. Click on "Open" to turn on it.



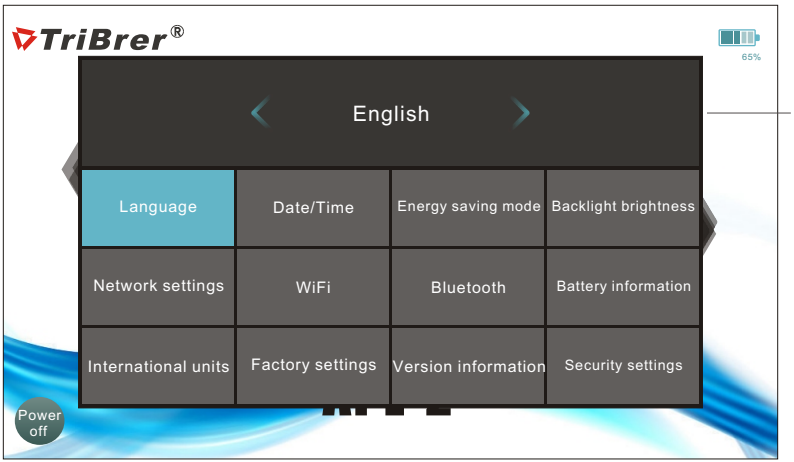
VFL- Blink

When the laser is on, click on "Blink" to turn the laser blink.

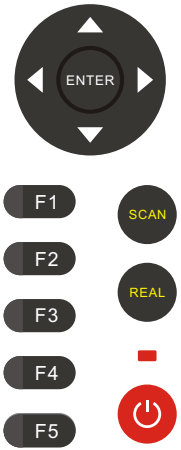


System settings

Click on "System" icon to enter the system setting interface. There are twelve options. Click on each one to enter the setting interface and then press “Enter” button or click on blank space to save and quit the system setting.

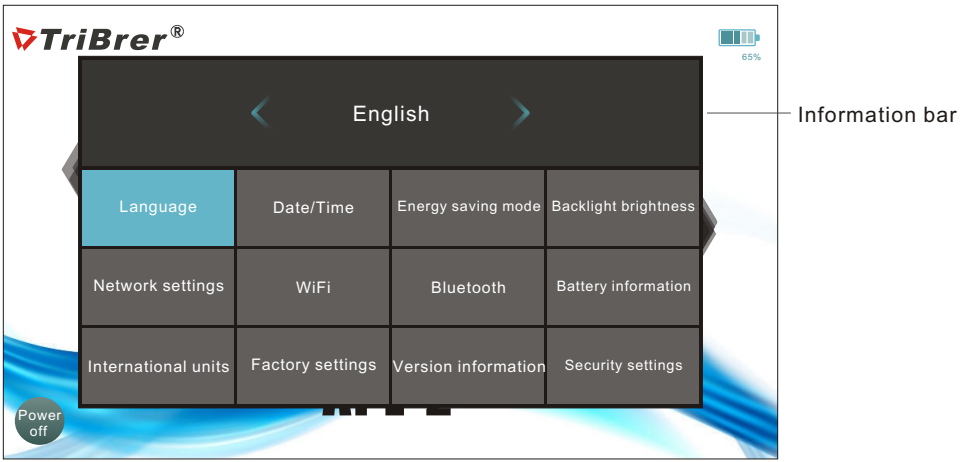


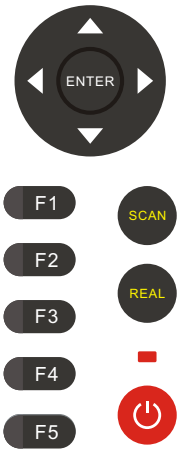
Information bar



System settings- Language

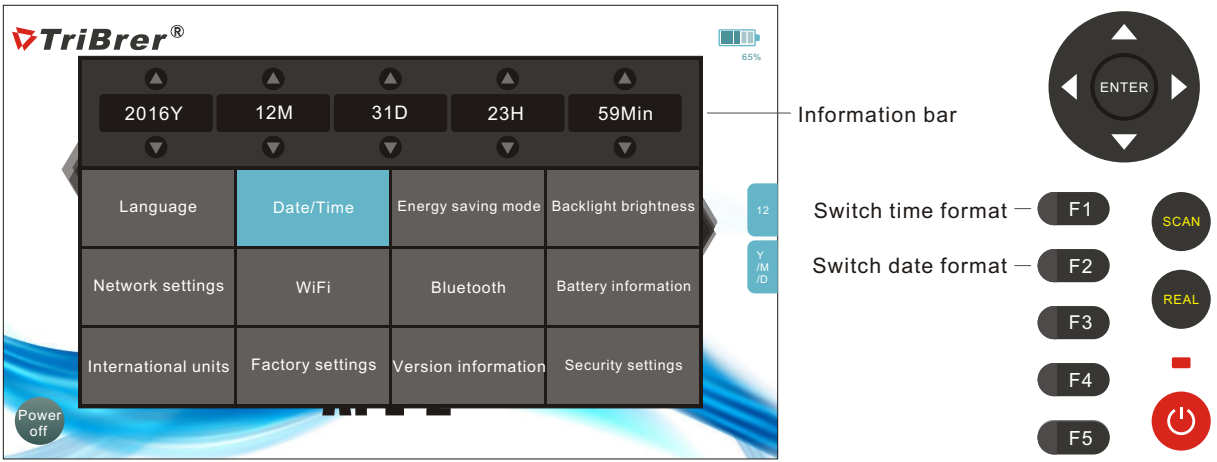
Click on "System" icon to enter the system setting interface. The default is the local language. The user can slide your finger left/right in the information bar or click the blue button to switch the language.





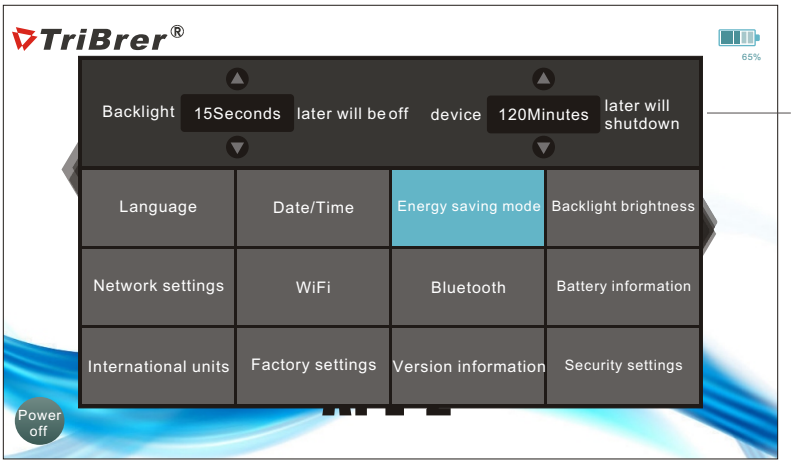
System settings- Date/Time

Click on "Date/Time " icon to set the year, month, day, hour and minute information. Press “ F1” button to switch to 12 or 24 time format. Press “F2” button to switch to Y/M/D or M/D/Y date format.

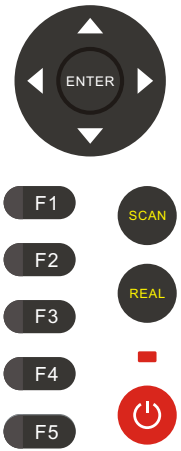


System settings- Energy saving mode

Click on "Energy saving mode " to set the time of backlight and automatic off. With no operation in the setting time, the backlight will be off or the device will shutdown automatically.

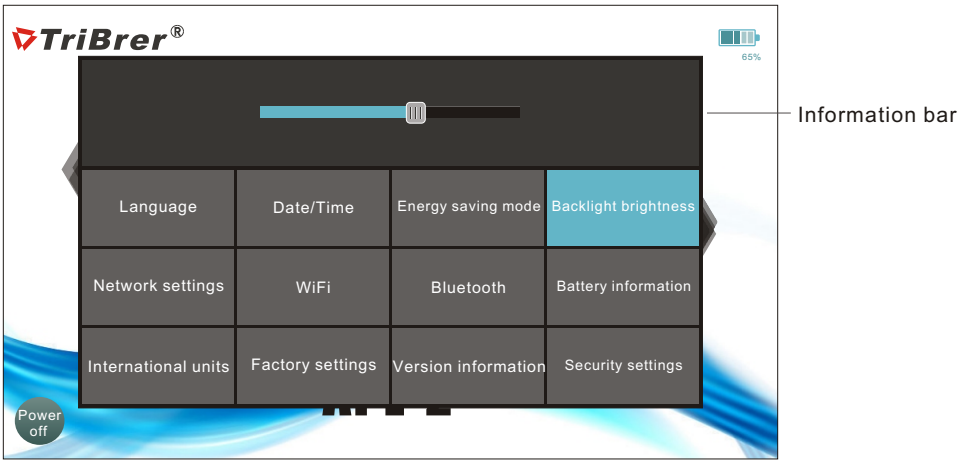


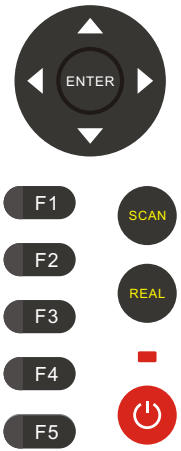
Information bar



System settings- Backlight brightness

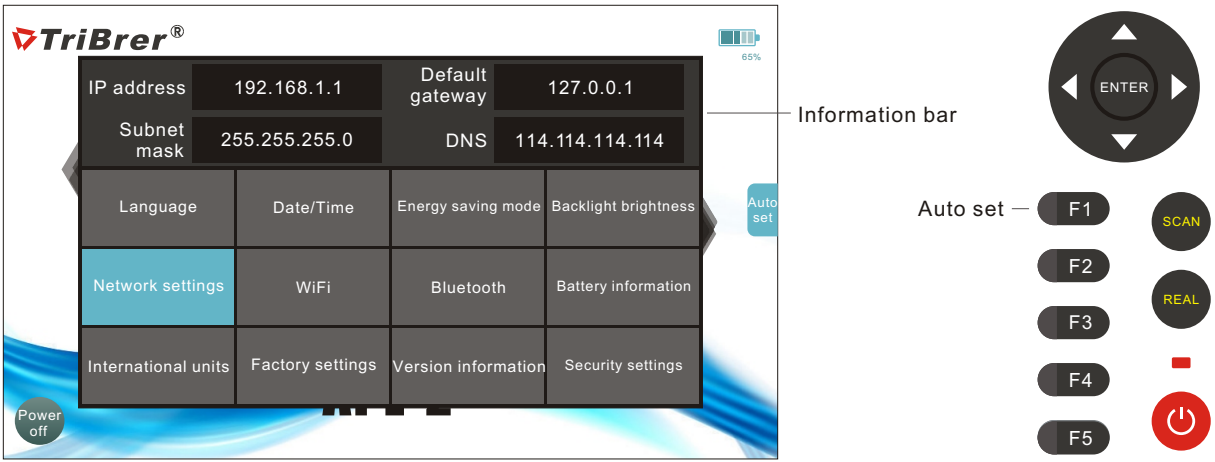
Click on "Backlight brightness " to set the brightness. Dragging the black handle to set the brightness.





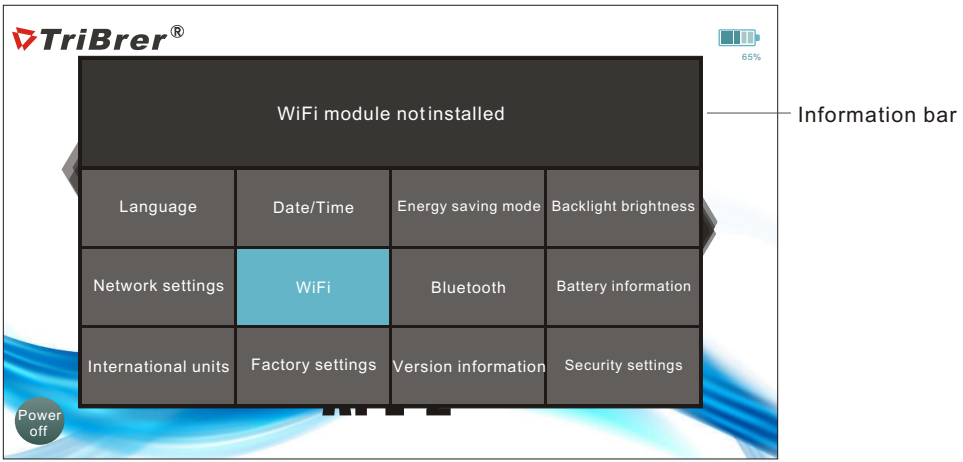
System settings- Network settings

Click on " Network settings " to set the local network information. In the case of remote application, you can set the IP address, default gateway, subnet mask and DNS. Press "F1" button can configure network information automatically.

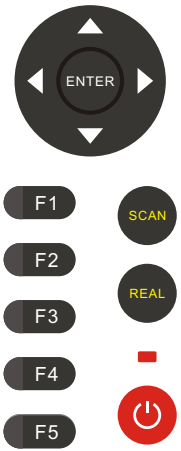


System settings- WiFi

The WiFi module can be set when the WiFi module is installed, the information bar will be prompted if the WiFi module is not installed.

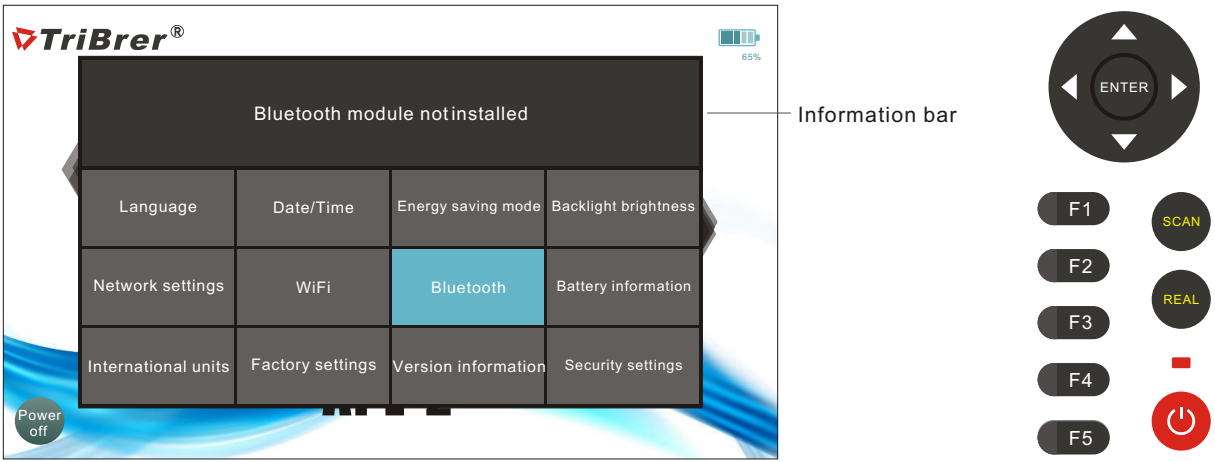


Information bar



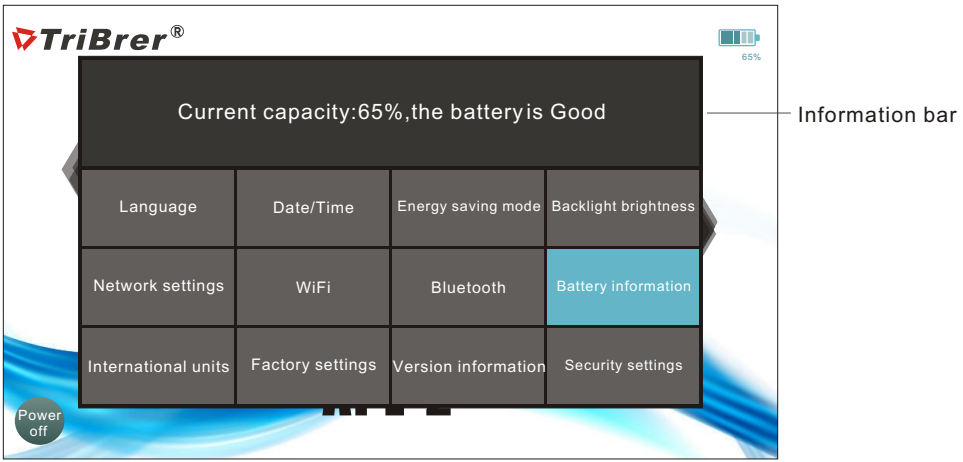
System settings- Blue tooth

The bluetooth module can be set when the bluetooth module is installed, the information bar will be prompted if the bluetooth module is not installed.

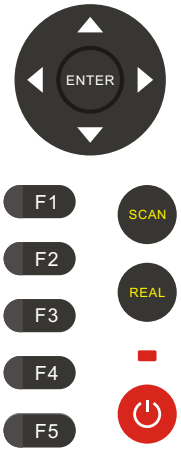


System settings-Battery information

Click on "Battery information" to display the battery capacity and current battery status.

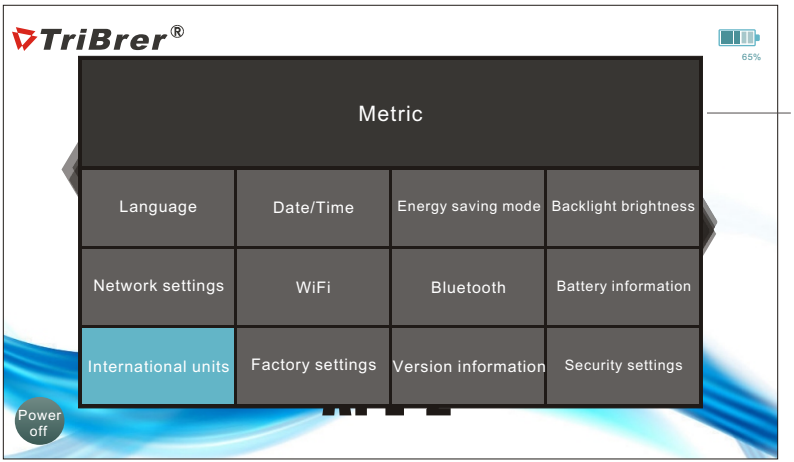


Information bar

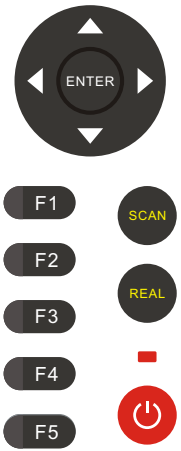


System settings- International units

Click on "International units" to show the unit selected.

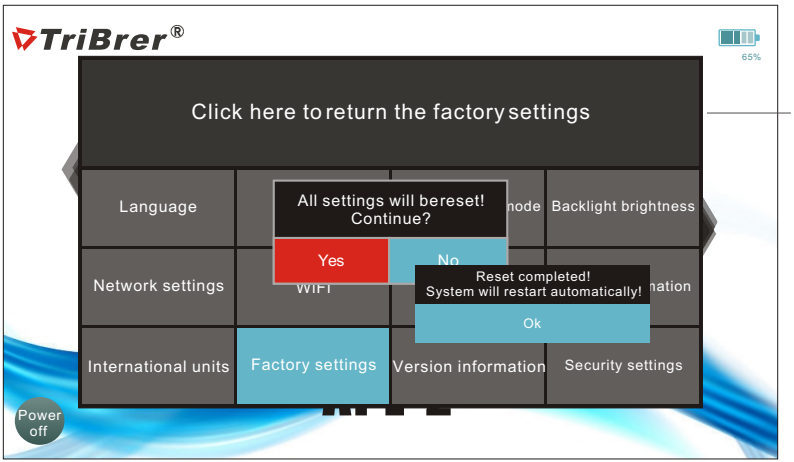


Information bar

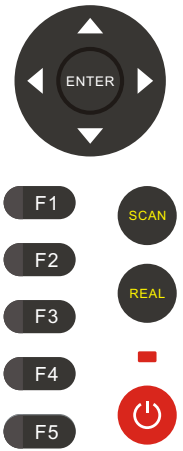


System settings- Factory settings

Click on "Factory setting" to return the factory settings. Click on "Yes" in the prompt box to clear up all the setting data. Be careful when using this function.

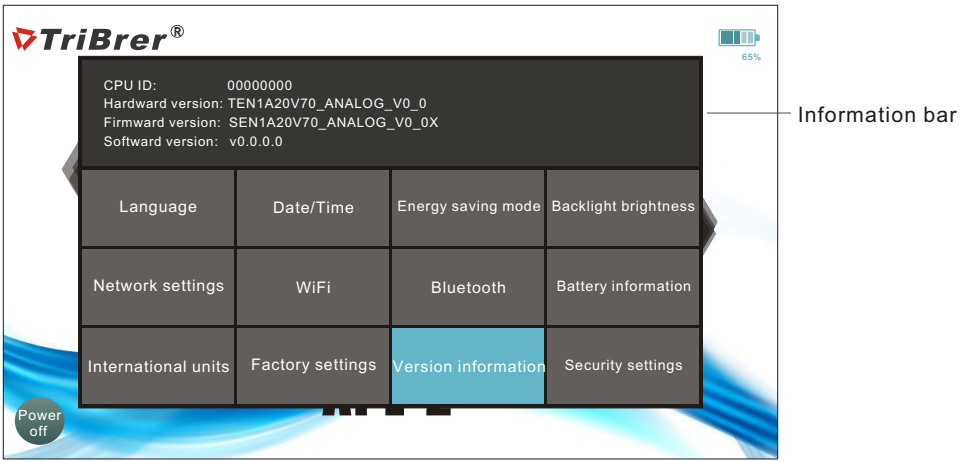


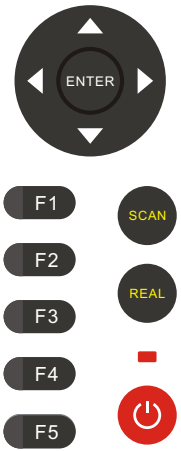
Information bar



System settings- Version information

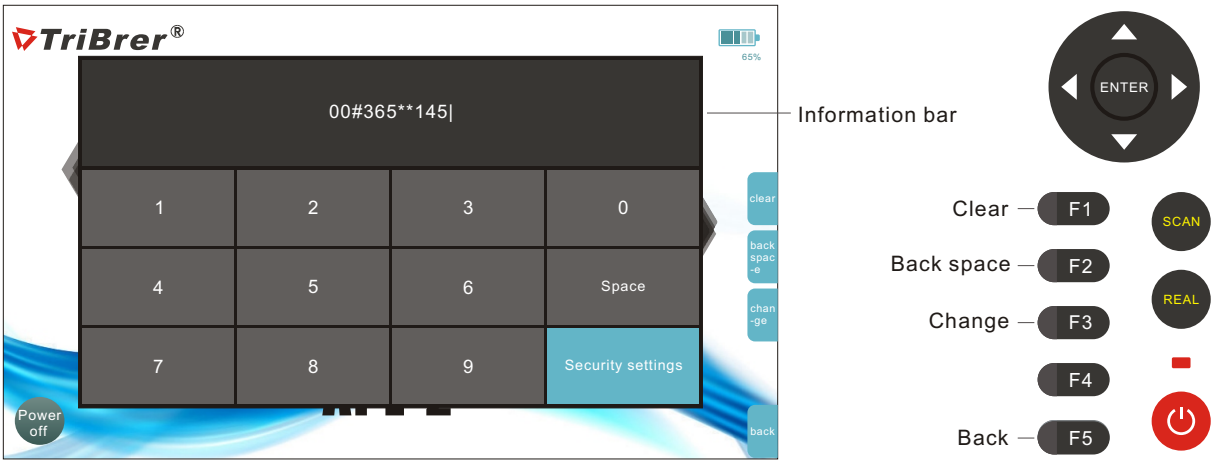
Click on "Version information" to check the CPU ID, hardware version, firmware version and software version.





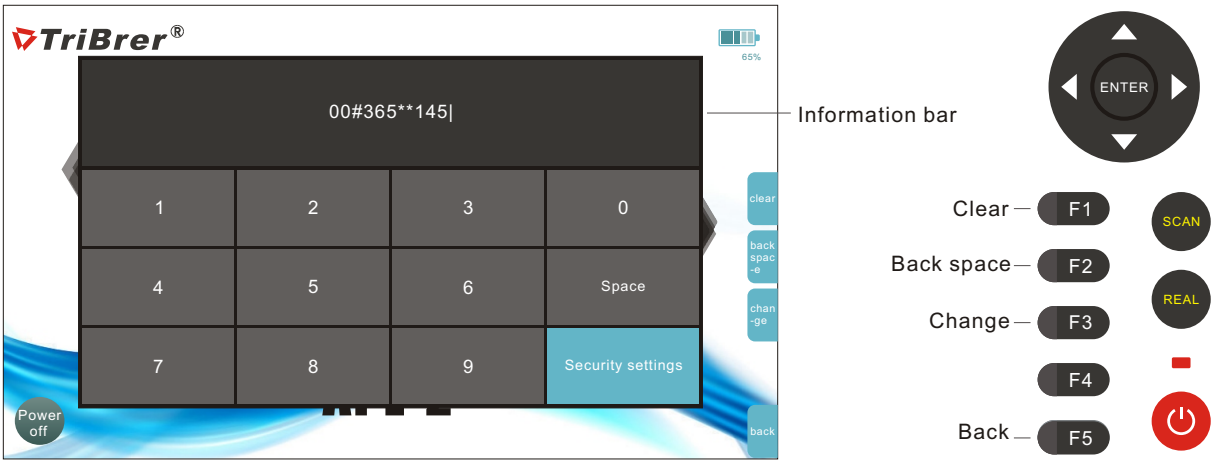
System settings- Security settings

Security settings is used in the process of production and maintenance. All the code displayed is internal code, user should not operate by themself, otherwise may cause the device abnormal.



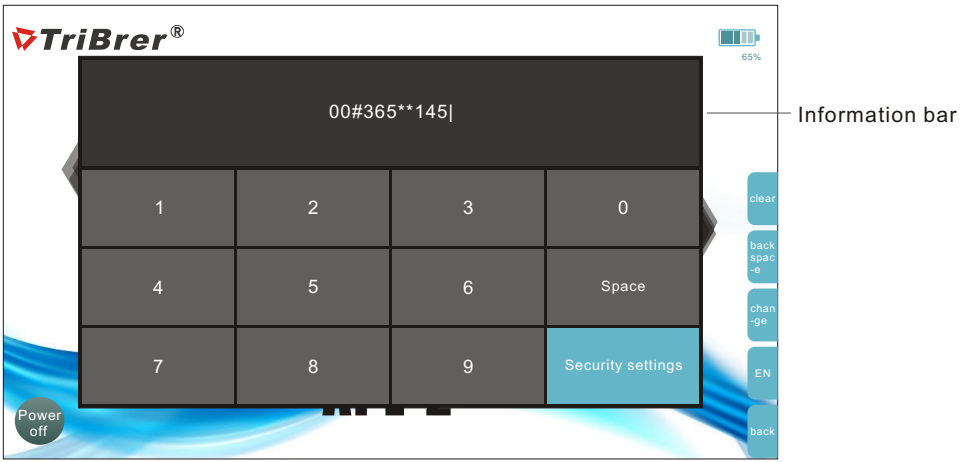
System settings- Security settings

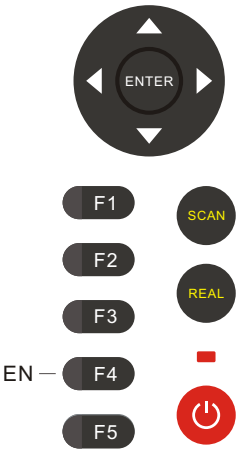
Click on "Security settings" to display the project menu, Press" F3" to switch between digital, English, and symbolic input.



System settings- Security settings

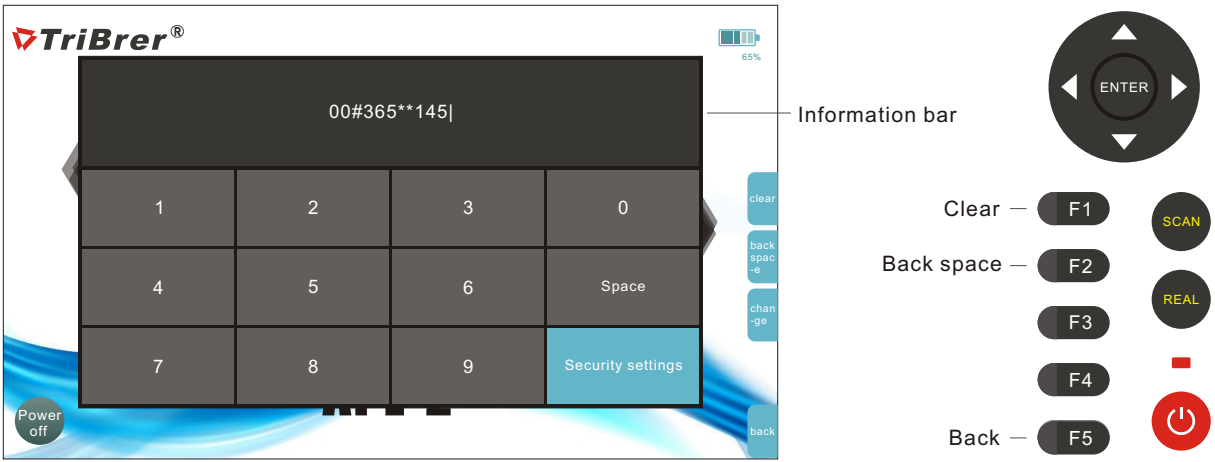
In the English input interface, you can press "F4" button to switch the input of the case.





System settings- Security settings

Press "F1" to clear all content, and press "F2" to enter the content one by one to clear, press "F5" or click "Security Settings" again to exit the security Settings.



Parameters

Basic parameters	
Display	7-inch color screen with a resolution of 1024 * 600
Touch Type	Multi-touch capacitive screen
USB HOST	USB ×2
Number of Internal Stores (SOR)	>10000
Network port	RJ45, 10M / 100M
Audio port	3.5mm headphone jack
Buzzer	14mm voltage buzzer
Backlight adjustment	Ten levels
Energy saving mode	No operation auto power off and backlight dim (can cancel)
Language	English
Power supply	7.4V, 5200mAh lithium polymer battery (A more powerful battery can be selected)
Battery life	Standby> 15 hours, measurement> 8 hours (A more powerful battery can be selected)
Size	245mm ×170mm ×70mm
Weight	1.55kg