Product instructions

DSO FNIRSI PRO

A good test tool

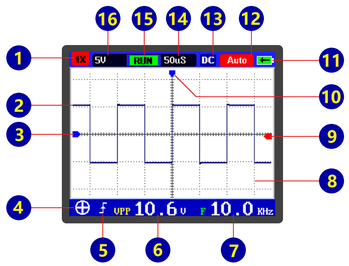
Designed by FNIRSI

Superior quality

Product introduction

DSO FNIRSI PRO is a full function, high utility, high performance and cost-effective handheld oscilloscope for the maintenance industry and the R & D industry. The oscilloscope has a real-time sampling rate of up to 20MS/s and a 5MHz analog bandwidth. With complete triggering function (single, normal, automatic), both the periodic analog signal and the aperiodic digital signal can be used freely. Large time base scanning mode can monitor slow level changes. Equipped with high efficiency one button AUTO, the measured waveform can be displayed without complicated adjustment. Display the High Definition LCD screen equipped with 2.4 inch 320*240 resolution. Extremely convenient and fast waveform storage function, built-in 16M storage space, the maximum storage of 500 waveform pictures. Powerful waveform file manager, support thumbnail browsing, viewing, details view, flip, delete and other functions. Built in 1200mAh rechargeable lithium battery can be continuously charged for 3 hours at one time. Day mode and night mode can be changed according to their own preferences.

Screen indicator



trigger condition, such as a burst signal, single trigger and normal touch. The trigger can be captured, but the single trigger only captures the first signal, and the normal trigger is the last signal.

Set automatic trigger: directly press the TRIG button on the keyboard to display "Auto" in the red area above the right side of the screen, which means switching to automatic trigger mode, automatic triggering is the most common and simplest, mainly used to measure the periodic signal, such as the sine wave square wave, Zhong Bo PWM wave and so on, no matter whether the signal is satisfied or not. The trigger condition will always update the waveform, but the waveform will be synchronized (no left or right) when the trigger condition is satisfied.

Display / hide more measurement parameters: press the MENU button to enter the upper left corner menu page, select the first "more parameter" to set, the position of the front black point indicates the current setting. Then the Exit menu page will see the left gray box is much / less 9 parameters.

Display / hide the background grid: press the MENU button to enter the upper left corner menu page, select second "display grid" to set, the position of the front black point indicates the current setting. Then you exit the menu page and you will see that the background grid is displayed / hidden.

Set each time automatically 50% triggers: press the MENU button to enter the upper left corner menu page, select the third "automatic 50%" to set, the front black point indicated the location of the current settings. After setting up, under the automatic trigger mode, the waveform of each measurement is half of the peak voltage.

Set the afterglow series (residual shadow): press the MENU button to enter the right top menu page, select Fourth "multiple buffers" to set, the front of the black point indicated the location of the current settings. The more series of afterglow is the multi buffer, the less the series, the more the effect of the afterglow, the faster the wave refresh; the greater the series, the stronger the afterglow effect, the slower the reflection, which usually needs to be observed to increase the series of afterglow (multi buffer) as much as possible when a certain part of the signal occurs at a certain time.

Storage waveform: enter the top right menu page according to the MENU button, select fifth "waveform storage", then click [OK] Click "save waveform" and then press [OK], at this time the current screen wave is saved, save time is very short, very convenient, the stored parameters include 11 kinds of measurement data, vertical Sensitivity, time base and background grid

Check the saved waveform: press [MENU] button to enter the top right menu page, select fifth "waveform storage", then click [OK] Click "view waveform" below and then press [OK] to enter the waveform file manager. The waveform will be displayed in the form of thumbnail, which is very convenient for lookup. After the waveform you want to view, click [OK] to view the waveform in full screen, and then [OK] can also see the other 9 measurement parameters of the current waveform (only the automatic trigger mode is available, and the time base of the automatic mode must be between 500mS~250nS).

Delete the saved waveform: press the MENU button to enter the top right menu page, select the fifth "waveform storage", click [OK] Click the "view waveform" below and then press [OK] to enter the waveform file manager, then select the waveform that needs to be deleted, delete the current selected waveform by the 1X/ 10X button, or Press [50%] button to delete all waveforms, in the thumbnail view interface and full screen view interface.

Analysis of common problems

1: why don't you get the machine after you get it ?

Answer: maybe after the final test finished, the tester forgot to turn off the machine and put it in stock until it runs out. After receiving the goods, there is no electricity. Please use USB to charge for 5 minutes before recharging. Do not use the computer USB to charge, the USB power of the computer will be recharged, and the charge head of the mobile phone will be charged.

2: why is there no waveform in the test, and there is only one line on the screen ?

Answer: please check if it is pause, if not, if not, if not, if not, if not, may be the input signal source has no signal output problem, also may be the probe line short circuit or circuit breakage, please use the multimeter to check the probe and signal source is normal, and then contact the manufacturer for after-sales service.

3: why the voltage value data is 0 ?

Answer: please adjust the vertical sensitivity and time base (sampling rate). At least a clear and complete periodic waveform is displayed on the screen, and the top and bottom of the waveform should be fully displayed on the screen, and the top is not chipped. The voltage value is correct at this time.

4: why is the frequency value of 0 ?

Answer: first, you need to ensure that the trigger mode is Auto, and the time base range is between 500mS~250nS. If it is in the required range, please adjust the vertical sensitivity and time base (sampling rate). At least a clear and complete periodic waveform is displayed on the screen, and the waveform should be triggered (fixed, not sloshing), the number of frequency values. It's just right.

5: why the duty ratio is 0 ?

Answer: first, you need to ensure that the trigger mode is Auto, and the time base range is between 500mS~250nS. If it is in the required range, it may be triggered without adjustment to the waveform, the trigger line is adjusted to the waveform between the waveform and will be fixed, and the screen needs to display at least 1 clear periodic waves, occupying the space ratio on the screen. The data is correct

6: Why are AC and DC coupled waveforms the same ?

Answer: if the input signal is a symmetric AC signal (signal generator output signal), then whether the AC coupling or the DC coupling waveform is the same, if it is an asymmetrical AC signal or a DC pulsating signal, then the waveform will move up and down when the coupling is switched.

7: why is the waveform beating up and down when testing the signal ?

Answer: set the trigger mode for "Auto" and press a "AUTO" button. If it is not solved, it may be that the clip on the probe is not grounded, or the probe clip end is broken. Please check the probe with a multimeter.

8: why does the waveform of the test keep shaking and can not be fixed ?

Answer: you need to adjust the trigger voltage. In the trigger mode, you can adjust the trigger voltage by pressing the up and down keys. You need to hit the trigger line between the wave and the bottom. The waveform is triggered, and it is fixed, or into the MENU page, open "automatic 50%".

9: why can not capture the sudden pulse waveform, or digital logic signal ?

Answer: press "TRIG" into "Single" single trigger mode or "Normal" normal trigger mode, then adjust the trigger voltage.

10: why do you measure a battery without a waveform ?

Answer: the battery voltage signal is a stable DC signal, there is no curve waveform, in the DC coupling mode, and then adjust the vertical sensitivity, there will be a upwards or downward offset straight lines, if it is AC coupling, no matter how to adjust the waveform.

11: why charge resentment ?

Answer: it may be charged by laptop USB, and the output power of notebook USB is too small to fill up with 5V/1A.

12: why is the measurement of 220V power frequency 50Hz AC waveform very carton ?

Answer: oscilloscope to display 50Hz low frequency signal, sampling rate needs very low to capture the 50Hz signal, the sampling rate is low, the oscilloscope will enter the waiting, so the performance is "changed card", all the oscilloscopes will change when the 50Hz signal will be changed, not because of the oscillograph card.

13: why is the VPP peak data below 220V V, not 220V or 310V ?

Answer: the city electricity 220V is a symmetric AC signal, the positive peak voltage (Vmax) is +310V, the negative peak voltage (Vmin) is -310V, so the peak value of the VPP peak is 620V, the Vrms in the more parameters is the valid value, the effective value is 220V, the city electricity 220V is a symmetric AC signal, the positive peak voltage (Vmax) is +310V, the negative peak voltage (Vmin) is -310V, so the peak value of the VPP peak is 620V, the Vrms in the more parameters is the valid value, the effective value is 220V, the city electric voltage Vrms is in the 180~260V fluctuation, so the peak and peak value are in 510~733V range.

14: why the measured 220V waveform is not very standard sine wave, distortion ?

Answer: the city electric power grid generally has pollution, contains more high order harmonic components, these harmonics superposition on the sine wave will show a distorted sine, normal phenomenon, the general city wave form is distorted, and the oscilloscope itself is not related.

15: why does the screen baseline (0V) and the left arrow (0V indicator) differ from each other in the absence of signal input ?

Answer: please pull out the probe, pull out the USB line, press MENU to enter the menu page, and select "baseline calibration" for correction.

Strong warning

When the input signal is >40V, do not forget to switch the switch on the probe handle to the 10X position, otherwise it may burn out the oscilloscope, especially measuring the 220V household electricity.

1 1X/10X mode indicator icon, this must be consistent with the 1X/10X switch settings on the probe handle, if the probe is 1X, then the oscilloscope will also be set to 1X, 1X input is the most able to measure the 40V voltage, 10X can measure 800V, do not enter the 40V voltage under the 1X probe, otherwise the oscilloscope will burn out.
2 measured signal waveform
3 baseline indicator icon, which indicates the position indicates the current position is 0V voltage.
4 direction keyboard mode icons
5 trigger edge indication Icon
Peak and peak of 6 measured waveforms
7 the frequency of the measured waveform
8 background dashed grid can be set or closed in MENU.
9 trigger voltage indicator icon
10 horizontal position of waveform
11 residual power icon, green indicates residual power, contains arrows indicating that it is currently charging.
12 trigger mode indicator icon, Single means single trigger, Normal means normal trigger, Auto means auto trigger.
13 input coupling mode indicator, AC means AC coupling, DC means DC coupling.
14 horizontal time base, which represents the length of time in a horizontal direction.
15 run the pause indicator icon, RUN means running, STOP indicates a pause.
16 vertical sensitivity, representing the voltage represented by a large grid in the vertical direction.

Direction keyboard mode description

Click the "MODE" button to turn the function of the upper and lower left and right keyboard in turn, and the display of the corresponding function icon in the lower left corner of the screen will be divided into three modes.

for the zoom mode of the waveform, that is to adjust the vertical sensitivity and time base. Under this mode, the upper and lower keys adjust the vertical sensitivity (the amplification or attenuation of the signal), and the left and right keys adjust the time base (sampling rate)

as the movement mode of the waveform, the waveform moves along with the direction indicated by the key, but only the vertical moving wave can not move right and left in the single / normal trigger mode, because the trigger point clock starts at the left starting point.

In this mode, the upper and lower keys adjust the voltage threshold, the left key set triggers the edge as the drop edge, and the right keys sets the trigger edge to the rising edge.

Parameter index

Model	DSO FNIRSI PRO	Maximum test voltage	1X:40V 10X:800V
Channels	1	Cursor Type	level X,level Y,Trig Y
Screen size	2.4 inch	Scanning mode	Support
Screen resolution	320 * 240	One key AUTO	Support
Display technology	TN	Waveform storage	Maximum storage of 500 waveforms
bandwidth	5MHz	Waveform Manager	Support
sampling rate	20MSps	Voltage precision	± 2%
rise time	< 50nS	Frequency accuracy	± 0.01% High-precision
Storage depth	40KB	Measure parameter	A total of 11 kinds
Input impedance	1MΩ	Battery capacity	1200mah
Vertical sensitivity	50mV ~ 200V	Standby time	3 hours
Time range	50S ~ 250nS	Afterglow effect	1 ~ 8 Adjustable
Trigger mode	single/normal/auto	Charging	5V/1A/2A/3A/4A
Trigger edge	Rising/Descent	Fuselage size	107 * 70 * 24
Coupling mode	AC/DC	parts	alligator clip USB, Instructions

Operation description

Amplify wave shape: set the direction keyboard to zoom mode by pressing the MODE button, press the up key vertically and amplify the waveform, and amplify the waveform according to the right key level.

Reduce the waveform: through the MODE button to set the direction keyboard to zoom mode, press the key vertically to reduce the waveform, and narrow the waveform according to the left key level.

Mobile waveform: through the MODE button, the directional keyboard is set to the mobile mode, and the waveform is moved along the corresponding direction according to the upper and lower keys.

Adjust the trigger voltage: set the direction keyboard to the trigger line adjustment mode by pressing the MODE button, and increase or decrease the trigger voltage by pressing the up and down keys.

Set the trigger edge: set the direction keyboard to the trigger line through the MODE button, switch to the rising edge by right key and switch to the drop edge by the left key.

Set input coupling: press the AC/DC button directly on the keyboard to switch between AC and DC coupling mode.

Set the probe input multiplying ratio: first, you need to move the 1X 10X switch on the probe handle to the corresponding position, then switch to the corresponding input ratio according to the 1X/10X button on the oscilloscope, such as the probe dialing to the 10X position, then the oscilloscope is also set to 10X mode, and the data anomaly is abnormal.

Pause display: you can suspend / run waveform display directly by pressing the RUN/STOP button on the keyboard.

Set a single trigger: directly press the TRIG button on the keyboard to display the "Single" in the red area above the right side of the screen, that is, to switch to a single trigger mode. First, the trigger line is adjusted according to the initial state signal, and then the signal is released. The oscilloscope automatically suspends this frame signal after the signal is conformed to the triggering condition, such as the signal. The fruit needs to be tested again, and the next frame sample can be started according to [RUN/STOP]. The use of single triggering is more complicated than automatic triggering. It is necessary to have some technical experience and collect more information if it can collect the signal of demand very well.

Set normal trigger: directly press the TRIG button on the keyboard to display the "Normal" in the red area above the right side of the screen, that is, to switch to the normal trigger mode. The normal trigger mode is to update this frame waveform when the input signal satisfies the