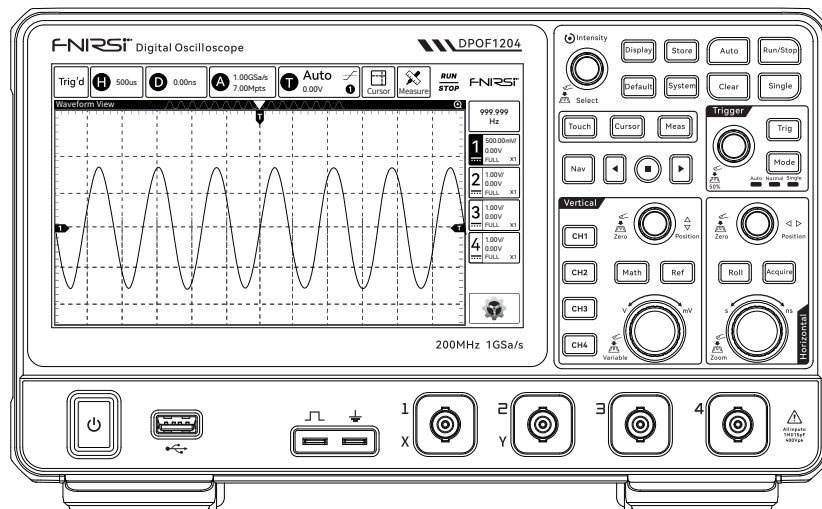


FNIRSI

DPOF1204

200 MHz Digital Phosphor Oscilloscope

Quick Start Guide v1.0



※Please read this instruction manual carefully before using the product and keep it properly.

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1. Safety Instructions

1.1 Safety Requirements

Read the following safety precautions carefully to prevent personal injury and avoid damage to this product or any other equipment connected to it. To prevent potential hazards, always use this product as instructed.

- **Use appropriate power cords:** Only use the power cord approved for this product in your country.
- **Proper grounding:** This product is grounded through the protective earth conductor in the power cable. To prevent electric shock, ensure the product is properly grounded before connecting any input or output.
- **Correct signal connections:** Signal lines and ground lines share the same potential. Do not connect the ground to high voltage.
- **Check all terminal ratings:** To avoid fire or electric shock, verify the ratings and markings of all terminals on this product. Read the manual before connecting the product to understand detailed rating information.
- **Use appropriate overvoltage protection:** Ensure no overvoltage (e.g., from lightning) reaches the product, as this may cause electric shock.
- **Electrostatic discharge (ESD) protection:** Static electricity can damage the instrument. Whenever possible, perform testing in an ESD-safe area. Before connecting cables to the instrument, briefly discharge any static on conductors.
- **Maintain proper ventilation:** Poor ventilation may cause the instrument to overheat and become damaged. Ensure good airflow during operation and periodically check vents and fans.
- **Do not operate with the cover removed:** Never operate this product with the chassis open.
- **Do not operate in wet, humid, or flammable/explosive environments.**

- **Handle with care:** To prevent damage to keys, knobs, or connectors, handle the instrument carefully during transport and avoid dropping or striking it.
- **Do not operate if malfunction is suspected:** If a malfunction is suspected, do not operate the instrument. Contact FNIRSI authorized service personnel. Any maintenance, adjustments, or part replacement must be performed by FNIRSI authorized personnel only.

1.2 Safety Terms and Symbols

The following terms may appear on the product:

- **DANGER:** Indicates an immediate hazard that could result in serious injury.
- **WARNING:** Indicates a potentially hazardous situation that could result in injury.
- **CAUTION:** Indicates a potential hazard to the product or other property.

The following symbols may appear on the product:



High Voltage



Measurement
Ground

2. Quick Start

2.1 General Inspection

- ① Check the Shipping Package

- If the shipping package is damaged, keep the damaged packaging and foam cushioning until the product has been fully inspected and successfully passed electrical and mechanical tests.
- Any damage caused during shipping should be claimed with the shipper or carrier. FNIRSI does not provide free repair or replacement for shipping damage.

②Check the Instrument

- If there is any mechanical damage, missing parts, or if the instrument fails electrical or mechanical tests, please contact your FNIRSI authorized dealer.

③Check the Accessories

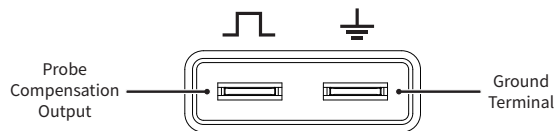
- Verify the included accessories against the packing list. If any items are missing or damaged, contact your FNIRSI authorized dealer.

2.2 Power-On Check

With the oscilloscope connected to power, press the power key located at the lower-left corner of the front panel to turn on the instrument. During startup, the oscilloscope performs a series of self-tests, and relay switching may be heard. After self-test is complete, the user interface will appear on the screen.

2.3 Connecting the Probe

- ①Connect the probe's BNC connector to the corresponding channel BNC input on the front panel.
- ②Connect the probe tip to the test point of the circuit under measurement, and attach the probe's ground clip to the circuit ground.



2.4 Function Check

- ① Press **[Default]** to restore the oscilloscope to its default settings.
 - ② Connect the probe's ground clip to the ground terminal below the probe compensation output.
 - ③ Connect the probe's BNC connector to the oscilloscope channel input, and connect the probe tip to the probe compensation output.
 - ④ Press **[Auto]**.
 - ⑤ Observe the waveform on the oscilloscope display. Under normal conditions, the waveform should appear as shown in the figure below.
 - ⑥ Repeat the same procedure for other channels. If the square waveform does not match the reference figure, perform the "Probe Compensation Adjustment" described in the next section.
- ! Note:** To avoid electric shock when using the probe, ensure the probe's insulation is intact, and do not touch any metal parts when connected to high-voltage sources.



2.5 Probe Compensation

When using a probe for the first time, perform probe compensation to match the probe to the oscilloscope input channel. An uncompensated or improperly compensated probe may cause measurement errors or deviations. The steps for probe compensation are as follows:

- ① Perform steps 1–4 in the previous section "Function Check."
- ② Observe the displayed waveform and compare it with the figure below.



Under
Compensated



Properly
Compensated

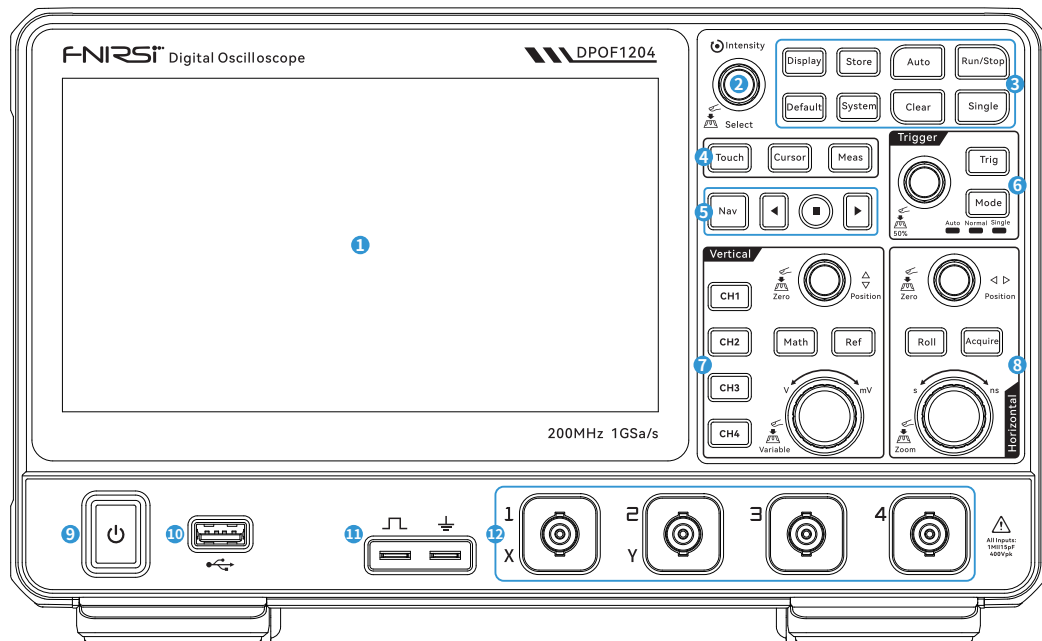


Over
Compensated

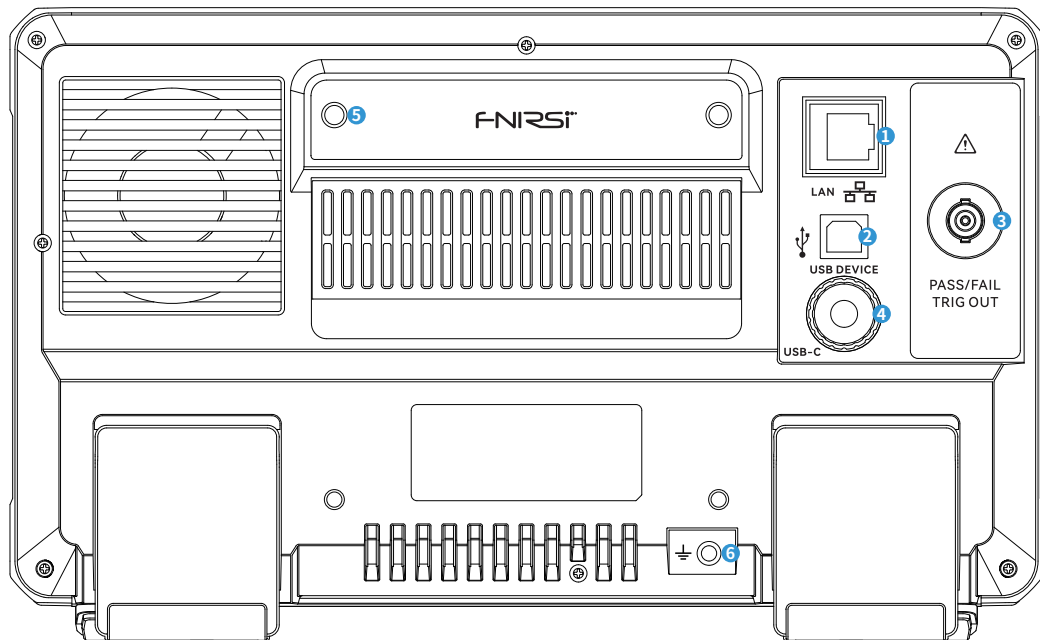
③ Using a non-metallic screwdriver, adjust the low-frequency compensation on the probe until the displayed waveform matches the “Properly Compensated” figure.

2.6 Front Panel Overview

- ① User Interface Display Area
- ② Multi-Function Knob
- ③ Shortcut Menu (Display / Store / Auto / Run / Stop / Default / System / Clear / Single)
- ④ Shortcut Menu (Touch / Cursor / Meas)
- ⑤ Navigation Controls
- ⑥ Trigger System
- ⑦ Analog Channel Vertical Controls / Math / Reference Waveform / Digital Channels
- ⑧ Horizontal Control System
- ⑨ Power Button
- ⑩ USB Host Port
- ⑪ Probe Compensation Output
- ⑫ Analog Channel Input

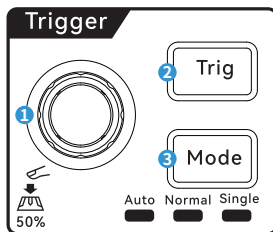


2.7 Rear Panel Overview



- ①LAN Port: Connects the oscilloscope to a network for remote control.
- ②USB Device Port: Allows control of the oscilloscope via USB connection.
- ③Pass/Fail or Trigger Out: Outputs a signal indicating the current waveform acquisition status, or a Pass/Fail test pulse.
- ④Power Input: 15 V, 3 A. Use the supplied power adapter and cord to connect to the power source.
- ⑤100 × 100 mm VESA Mounting Holes: For expansion brackets or wall mounting.
- ⑥Ground Terminal

2.8 Trigger System



- ① Level: Adjusts the trigger level. Turn the knob clockwise to raise the trigger level, and counterclockwise to lower it. During adjustment, the trigger level line moves vertically on the screen, and the trigger value in the right-side status bar updates accordingly. Press the knob to quickly set the trigger level to the center of the waveform.
- ② Trigger Type: Press this key to open the trigger settings menu. This oscilloscope provides a wide range of trigger types, including Edge, Slope, Pulse Width, HDTV, Window, Interval, Timeout, Runt, Pattern, and Serial triggers (IIC/SPI/UART/-CAN/LIN). The following sections briefly introduce HDTV, Interval, Runt, Pattern, and Serial trigger types.

- HDTV Trigger

Supports triggering on NTSC and PAL analog video signals, as well as HDTV digital video signals (720P/1080P/1080i). Users can manually configure the line and field selections for video triggering.

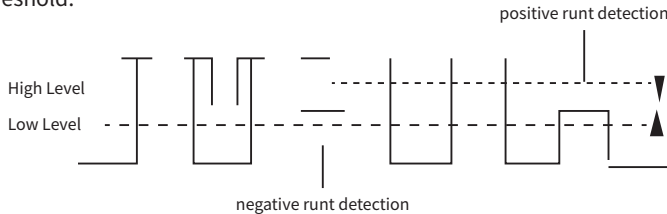
- Interval Trigger

The oscilloscope triggers when the time interval (Δt) between two consecutive rising or falling edges—measured from the first crossing of the trigger level to the next crossing—meets the user-specified condition (<, >, >=, <=).

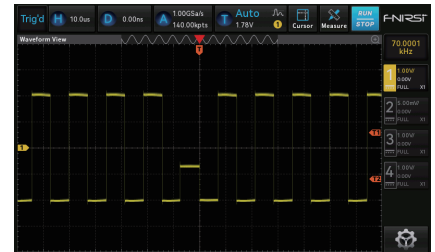
※ The diagram on the right illustrates triggering when the interval Δt between two adjacent rising edges meets the configured condition (<=).

- Runt Trigger

Runt triggering includes positive and negative runt detection. A positive runt pulse crosses the lower threshold but does not reach the upper threshold. A negative runt pulse crosses the upper threshold but does not reach the lower threshold.



※ The diagram on the right illustrates a positive runt pulse trigger.



- Pattern Trigger

Pattern triggering identifies trigger conditions based on a logical combination of channels (AND, OR, NAND, NOR). Each channel can be set to High (1), Low (0), or Invalid.

※ The diagram on the right illustrates a NAND pattern trigger, where Channel 1 is set to Low and Channel 2 is set to Low.



- IIC Bus Trigger

After setting up the oscilloscope for IIC decoding, you can trigger on Start/Stop conditions, Repeated Start, No-Acknowledge (NACK), EEPROM Reads, or Read /Write Frames with specific device addresses and data values.

Specify the SCL and SDA sources in the decode menu when setting up IIC triggers.

※ The diagram on the right shows an IIC signal triggered under the “7-bit address+ data” condition.



- SPI Bus Trigger

When the serial trigger channel is set to SPI, any data on MISO or MOSI can be used for triggering. Data length can be set from 4 to 32 bits.

- UART/RS232 Bus Trigger

When the serial trigger channel is set to UART/RS232, triggering can occur on start signal, stop signal, error signal, or any data on RX or TX. Data length can be set from 5 to 8 bits.

- CAN Bus Trigger

When the serial trigger channel is set to CAN, triggering can be configured on CAN-H or CAN-L signals based on frame start condition, remote frame ID, data frame ID, data frame ID + arbitrary data (supports 2 bytes), or frame errors.

- LIN Bus Trigger

When the serial trigger channel is set to LIN, triggering can be configured on the start signal, frame ID, frame ID + data, or frame errors of the LIN signal.

③ Trigger Mode: Press this key to switch between Auto, Normal, and Single modes.

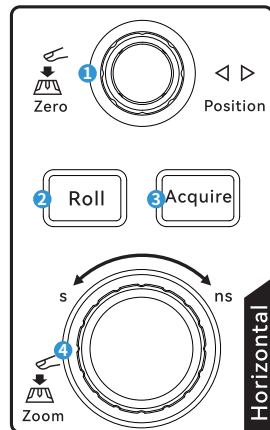
2.9 Horizontal Control

①Horizontal Position: Adjusts the trigger position. Rotating the knob moves the trigger point left or right relative to the center of the screen. During adjustment, all channel waveforms move simultaneously, and the horizontal position value displayed at the top of the screen updates accordingly. Press the knob to reset the horizontal position to zero.

②Scroll: Press this key to quickly enter Scroll mode. In Scroll mode, the timebase ranges from 50ms/div to 100s/div.

③Sample: Press this key to quickly access sampling rate and record length settings.

④Horizontal Timebase: Adjusts the horizontal timebase. Rotate clockwise to decrease the timebase (faster sweep) and counterclockwise to increase the timebase (slower sweep). During adjustment, all channel waveforms are stretched or compressed, and the timebase value at the top of the screen updates accordingly. Press the key to quickly enable the Zoom function.



2.10 Vertical Control

① Analog Channel Control Buttons

Each channel is color-coded, and the waveform color on the screen matches the input channel connector label. Pressing the button enables the corresponding channel and opens its menu.

② Vertical Position

Adjusts the vertical position of the selected channel waveform. Rotate clockwise to move the waveform upward, and counterclockwise to move it downward. During adjustment, the waveform moves accordingly, and the vertical position value displayed at the bottom of the screen updates in real time. Press the button to reset the vertical position to zero.

③ Math Function Button

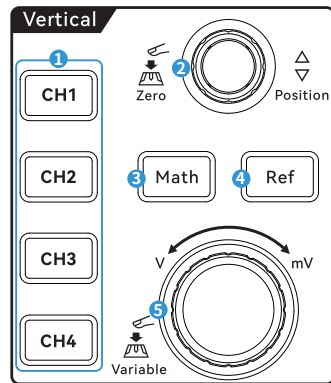
Press this button to open the Math menu, which supports operations such as Add, Subtract, Multiply, Divide, FFT, Differentiation, Integration, and Square Root. Use the multi-function knob to adjust the vertical scale and position of the math waveform.

④ Reference Waveform Button

Press this button to open the Reference Waveform menu. You can store reference waveforms and compare live waveforms with them to identify circuit faults. The oscilloscope can store up to 4 reference waveforms, and the multi-function knob can adjust the vertical scale and position of the Ref waveform.

⑤ Vertical Scale (Voltage per Division)

Adjusts the vertical scale of the selected channel. Rotate clockwise to decrease the scale (more volts per division) and counter-



clockwise to increase the scale (fewer volts per division). During adjustment, the waveform amplitude visually changes, and the vertical scale value displayed on the right side of the screen updates accordingly. Press the knob to quickly switch between Coarse and Fine scale adjustment modes.

2.11 Run Control

- Auto

Press this button to perform automatic waveform setup. The oscilloscope automatically adjusts the vertical scale, horizontal timebase, and trigger settings to display the waveform optimally.



- Run/Stop

Press this button to switch the oscilloscope between Run and Stop modes. In Run mode, the button backlight is on; in Stop mode, the backlight is off.

2.12 Multifunction Knob

- Use this knob to adjust waveform brightness (0%–100%), grid brightness (0%–100%), or on-screen transparency (20%–80%). First press **【Display】** → select Waveform Brightness / Grid Brightness / Transparency, then rotate the knob to adjust.
- When navigating menus, press a soft key. If the indicator above the knob lights up, rotate the knob to select any option within that menu. Press the knob to confirm the selection, and the indicator will turn off. The knob can also be used to modify parameter values.



2.13 Common Function Menus

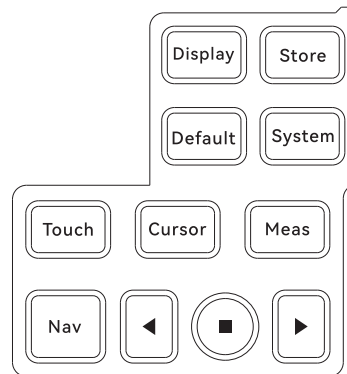
- **Display:** Press this button to quickly enable persistence and open the Display Settings menu. You can set waveform display type, color temperature, persistence, grid type, waveform brightness, grid brightness, and transparency. Transparency refers to the opacity of on-screen pop-up boxes—for example, the info box that appears in Cursor mode can be adjusted using the Multi-Function Knob.
- **Store:** Press this button to open the File Store / Recall menu. Supported file types include setup files, waveform files, image files, and CSV files.
- **Default:** Press this button to restore the oscilloscope to its default settings. In the File Store / Recall menu, users can also customize system defaults.
- **System:** Press this button to enter the System Settings menu, where you can configure system functions such as interfaces, sound, and language. Advanced features, including Pass/Fail testing, self-calibration, and firmware upgrades, are also available.

Touch: Press this button to enable or disable touch functionality.

Cursor: Press this button to enter the Cursor Measurement menu. Two cursor types are provided: Voltage and Time.

Measure: Press this button to enter the Measurement menu, where you can set measurement parameters and enable statistical functions. Selecting All Measurements displays all parameters simultaneously. The Statistics function shows the current value, average, minimum, maximum, standard deviation, and count for each displayed parameter.

Navigate: Press this button to enter the Navigation menu, allowing you to search results by event or time, or navigate through historical frames.



2.14 User Interface

①Status: Includes Arm (acquiring pre-trigger data), Ready (waiting for trigger), Trig'd (triggered), Stop (sampling stopped), and Auto (automatic acquisition).

②Horizontal Timebase: Shows the time represented by each horizontal division. Use the Horizontal Timebase knob to adjust this parameter. Range: 1ns – 100s/div.

③Horizontal Position: Adjust using the Horizontal POSITION knob. Rotate right to move the arrow (initially at screen center) right, decreasing trigger offset; rotate left to move the arrow left, increasing trigger offset. Press the knob to reset trigger offset to zero, returning the arrow to the screen center.

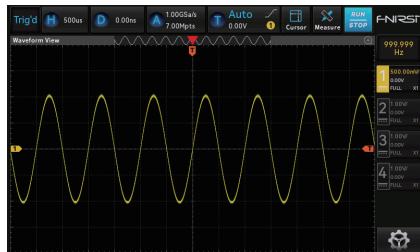
④Acquisition: Displays the current sample rate and memory depth. Use the Horizontal Timebase knob to adjust sample rate and memory depth.

⑤Trigger:

- Trigger Source **[1]**: Shows the selected trigger source. Different sources are indicated by distinct icons and colors.
- Trigger Coupling: Displays the current trigger coupling mode. Options: DC, AC, LF Reject, HF Reject.
- Trigger Level [0.00V]: Shows the current trigger level. Press the knob to quickly set the level to the waveform center.
- Trigger Type : Displays the selected trigger type and condition settings. Selecting a different type updates the icon and color.

⑥Cursors: Displays cursors used for waveform measurement. Allows precise positioning on the waveform.

⑦Measurements: Supports Voltage, Time, and Delay measurements.



- Voltage Measurements: 17 parameters available.
 - Time Measurements: 11 parameters available.
 - Delay Measurements: 10 parameters available.
- ⑧ Run/Stop: RUN (blue) – oscilloscope acquires and updates waveforms in real time; STOP (red) – oscilloscope stops real-time acquisition.
- ⑨ Brand
- ⑩ Frequency Counter: Displays the frequency of the waveform on the currently triggered channel.
- ⑪ Channel:
- Displays channel ON/OFF status
 - Displays probe attenuation ratio
 - Displays channel coupling type
 - Displays vertical scale value
 - Displays vertical offset value
- ⑫ Settings: Click this icon to open the Settings menu. Press each function key to access the corresponding configuration menu.
- ⑬ Trigger Position: Displays the waveform's trigger position on the screen.
- ⑭ Channel Markers / Waveforms: Each channel is represented by a unique color; the marker matches the waveform color.
- ⑮ Trigger Level Position: Displays the trigger level position on the screen for the current trigger channel. Press the knob to reset the trigger level to the waveform center.

3. Troubleshooting

The following lists possible issues that may occur during oscilloscope use and their corresponding troubleshooting methods.

Follow the steps below when encountering any issue. If the problem persists, contact FNIRSI.

① If pressing the power button does not turn on the oscilloscope and the screen remains black:

- Verify that the power connector is properly connected.
- Ensure the power switch is fully pressed.
- After performing the above checks, restart the oscilloscope.
- If the oscilloscope still fails to start, contact FNIRSI.

② After acquiring a signal, the display does not show the waveform:

- Verify that the probe is correctly connected to the test point.
- Check that the signal cable is properly connected to the oscilloscope's BNC input.
- Ensure the probe is properly connected to the device under test.
- Confirm that the device under test is generating a signal.
- Acquire the signal again.

③ The measured voltage amplitude is higher or lower than the actual value (typically occurs when using a probe):

- Verify that the channel attenuation factor matches the actual probe attenuation ratio.

④ Waveform is displayed but cannot be stabilized:

- Check the trigger source: Ensure the trigger source selected in the Trigger menu corresponds to the channel carrying the input signal.
- Check for false waveforms: At high frequencies (typically in the MHz range), false waveforms may appear. Ensure the current time base is appropriate for stable triggering.
- Check the trigger type: Most signals should be triggered in Edge mode. The waveform remains stable only when the proper trigger type is selected.

- Adjust the trigger holdoff as required.
- ⑤ No waveform displayed after pressing **[Run/Stop]**:
- Check that trigger mode is Normal or Single, and trigger level is within the waveform range. Adjust trigger level to center, or set mode to Auto.
- ⑥ Waveform displays with a staircase appearance:
- The horizontal time base may be too fast. Increase the time base to improve the display.
 - If the display type is set to Vector, points are connected by straight lines, which may produce a staircase effect. Switch the display type to Dot mode.
- ⑦ USB flash drive cannot be recognized:
- Verify that the USB drive is functioning properly.
 - Check that the oscilloscope's USB Host port is functioning correctly.
 - Ensure a flash-type USB drive is used; hard-disk-type USB drives are not supported.
 - Restart the oscilloscope and reconnect the USB drive.
 - If the USB drive still cannot be used, contact FNIRSI.

4. Maintenance

- **Maintenance:**

When storing or placing the instrument, avoid exposing the LCD screen to direct sunlight for extended periods.

- **Cleaning:**

Clean the instrument regularly according to usage as follows:

①Wipe dust from the instrument and probe exterior with a soft cloth. When cleaning the LCD screen, take care not to scratch the protective film.

②Use a soft cloth dampened with water to clean the instrument, ensuring the power is disconnected. For more thorough cleaning, a 70% isopropyl alcohol solution may be used.

• **Note:**

To prevent damage, do not expose the instrument to moisture, liquids, or solvents.

Do not use corrosive or chemical cleaning agents.

Ensure the instrument is completely dry before powering it on to avoid electrical short circuits or personal injury.

5. Contact Us

Product Name: 200 MHz Bench Oscilloscope

Model: DPOF1204

Manufacturer: Shenzhen FNIRSI Technology Co., Ltd.

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Tel: +86 755 28020752

Service Email: support@fnirsi.com

Business Email: business@fnirsi.com

Website: www.fnirsi.com

Standard Implemented: GB/T 7157-2019



<http://www.fnirsi.com/>

6. Warranty Information

※**This page serves as the basic warranty card. Please keep it properly.**

Thank you for choosing our products. The warranty period of this product starts from the date of sale. During the product warranty period, if the product is installed and used according to the user manual, under normal conditions, and the fault is caused by defects in original materials or workmanship, you are entitled to free repair services according to the terms of this warranty. Please keep this warranty card properly as proof of warranty. No replacement will be issued if it is lost.

The following situations will incur paid repair services:

- Failure to present a valid original warranty card;
- Damage caused by improper installation not complying with product requirements, standards, or related regulations;
- Damage caused by accessories in the installation environment that do not meet product requirements, standards, or related regulations;
- Damage caused by improper use, poor maintenance, unauthorized disassembly, or unauthorized repairs;
- Warranty period has expired.

Warranty Card



Product Model	DPOF1204	Qty.	
Distributor Name (where to buy)		Address	
Contact		Invoice Number (Order Number)	
Purchase Date (as per invoice)	Year	Month	Day
User Name:	Address:		
			
Contact:	Fault Description:		
			



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