Eddy Current Flaw Detector

User manual

Version: V1.0

1. Product Introduction



The unique feature of the eddy current testing instrument lies in the use of the most advanced microelectronics digital processing technology, real-time dual frequency eddy current testing technology, and microprocessor technology, which can effectively detect defects in metal material components in real time. It adopts the most advanced design concept, with dual position adjustment of buttons and shuttle, which can greatly improve the efficiency of parameter setting.

This instrument is compact, easy to operate, and has an IP65 waterproof rating. It is waterproof, dustproof, and drop resistant, and can adapt to very harsh working environments

2. Parameter Comparison

Model	Vertex-60	Vertex-80	Vertex-80A
★Supported Probe Types	bridge type	Single ended, bridge type	Single ended, bridge type, coupled
★Excitation Frequency	10Hz ~ 12MHz		10Hz ~ 20MHz
★ Excitation Voltage	0-10v continuously adjustable(0.1 Step)		
★ High Gain Amplification	0-50(1- step adjustable)		0-100(1-stepadjustable)
Drive Level	4	8	
★ Microprocessor	32-bit (dual core)		64 bit (dual core)
★ Pre-storable Parameters	10,000	100,000	1,000,000
★ Memory	8GB (non expandable)		64G (expandable up to 1TB)
★ Waterproof Grade	no	IP54	IP65
★ Low Amplification Gain	0-250, step 1 continuously adjustable		
★ Low End Frequency	0-120, step 1 continuously adjustable		
★ High End Frequency	0-120, step 1 continuously adjustable		
★ Raster Grayscale	10 levels adjustable		
X-axis gain	-100 ~ 100		
Y-axis gain	-100 ~ 100		
High-pass Filter	0 ~ 500Hz		
Low-pass Filter	10Hz ~ 10KHz		

Digital Filter	1 ~ 100

★ Filter Type	HR filter, smooth filter(optional)
★ Pre Amplification	1x, 2x, 5x, 10x selectable
★ Refresh Time	Levels 1-10 are optional, step 1
★ Bandwidth Limitation	High, medium, and low adjustable
★ Amplitude and Phase Measurement	One click automatic phase adjustment/or manual adjustment
★ Zero Adjustment	One click adjustment of zero position
Freeze	Can pause image detection at any time for better analysis
Phase	0-360 degrees
★ Gate Type	Circular, rectangular, straight, intelligent (automatically ignores non defect signals)
Gate Alarm	audible alarm
Balanced Approach	Digital electronic balance
★ Screen Display Mode	Normal and strong light modes (suitable for working under strong sunlight)
★ Data Recording and Management	Stores images and videos, and can directly connect to a PC to export images/videos without requiring software installation. Other Performance Indicators
Other performance indicators	
★ Interface Support	Two USB Type-A/B ports
★ Display Screen	5.0 "high brightness TFT color LCD screen, 800 * 480 pixels
Working Temperature Range	-10～ +50℃
★ Size and Weight	135 (L) × 54 (W) × 205mm (H); Total weight with battery ≤1kg (~0.95 kg)

External Power Supply	AC:100-240V DC:15V3.8A

3. Functional information

★ The unique dual adjustment mode of buttons and shuttle knob makes it simple, convenient, and easy to use.

★ Three probe modes (single ended, bridge type, coupled) can be selected.

★ 10k-10M ultra wide excitation frequency range.

★ In addition to the conventional adjustable excitation frequency, the high-end and low-end frequencies are also adjustable to meet the requirements of special material flaw detection.

★ In addition to the conventional adjustable gain, both high amplifier gain and low amplifier gain can be adjusted in segments.

★ Double directional gain compensation or suppression for X-axis and Y-axis (can be performed independently).

★ The gate has a unique intelligent gate mode (automatically ignoring non defect signals) in addition to the conventional circular, rectangular, and straight lines.

★ Impedance plane diagram and time base scanning diagram display.

★ Data storage and video can be directly connected to a computer for export, without the need to install software, making it easy to use.

★ High definition and high sensitivity.

★Easy to operate, with both Chinese and English operating interfaces (optional).

★ Multiple filtering methods

★ Data transmission adopts USB communication interface

★ Built in lithium battery, can work continuously for more than 8 hours

★ Ip65 waterproof rating. Anti fall and shockproof, suitable for harsh working environments

★ Weight of the whole machine: 0.95kg (including battery)

4、Introduction to Key Functions



：Used to open or close gates, refresh time, system time settings in the [Settings] menu, and enable or disable note information in the [Parameter Access] menu.



：The instrument can enter the detection interface with one click using this key on any parameter interface



：When the phase menu  is selected in the vertical bar on the right, press this key to adjust the phase to horizontal.



： If the signal deviates from the center point, press this key to adjust the signal to the center zero point.



：Click this button to open or close the gate (if different gate methods are required, they need to be pre selected in the settings)



：save or select pre-set parameters.


：Press this key to switch between normal mode or working screen display mode under strong light。



： Language, Raster grayscale, alarm switch, gate type, key sound, sensor type, preamplifier, filter type, bandwidth limitation, refresh time, and time can be set up here.



：Can be used to delete parameters in the 【Parameter Access】 menu, or to delete saved images or videos in the【 Playback 】menu.


：Pause or unpause the current screen image interface.



：The current screen image was saved with a beep and successfully stored.


：Record the current detection screen, click on it, and the REC in the upper right corner of the screen will flash to indicate that recording is in progress. Press again to end the recording.


：Press the ▲▼ keys to select the video or image you want to view, press the 

to view the data, and press again to return to the viewing interface.

【▲】The menu interface is used as an up arrow, and the detection interface can directly select the vertical function that needs to be adjusted.

【▼】The menu interface is used as a down arrow, and the detection interface can directly select the vertical function that needs to be adjusted.

【◄ 】The menu interface is used as the left arrow, and the detection interface can adjust the numerical value of the selected function.

【► 】The menu interface is used as a down arrow, and the detection interface can adjust the numerical value of the selected function.



： OK/Confirm button is required to confirm the function menu adjustment before it can take effect.

【●】The shuttle knob on the top left of the instrument can be rotated left and right to replace the ▲▼ keys, and Press down to use as a confirmation key.

5、Instrument operation guide:

1.1. The instrument can be optionally supplied with either an iron or an aluminum standard block. By default, the steel/iron parameters are set in Parameter No. 0, and the aluminum parameters are set in Parameter No.1. If the workpiece being tested is steel/iron or aluminum, the corresponding parameters can be directly used. The calling method is as follows:

Press the SAVE, then press the ▲▼ keys to select the data that needs to be called, and press ▸ Key to [Set Parameters], then press

OK, at this time the called parameter will be set to the current parameter of the device, as shown in Figure A1

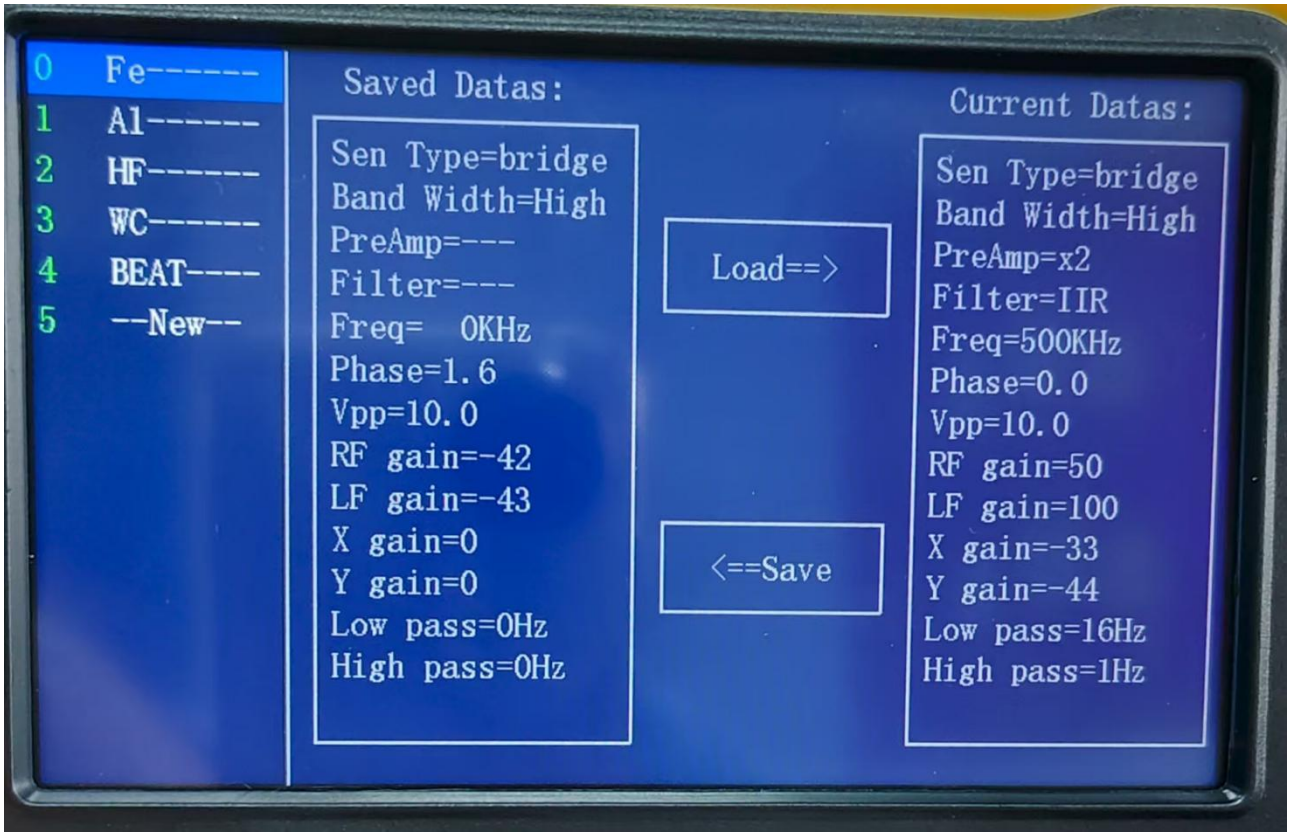


Figure A1

2. Press the TEST to perform normal detection. During detection, the probe needs to move steadily and vertically on the workpiece. To open the gate, click the GATE, and then click again to close the gate.

3. Gate setting: During the detection process, auxiliary flaw detection can be achieved by setting the gate. Method:

A. Find the gate type in the [Settings] menu.

B. Press◂ ▸ Press OK to select the desired gate type

C. Confirm.

4. Identification of defects:

4.1 The signal wave at the defect free position is very small, with an amplitude not exceeding that of the gate, and the time base signal is stable without any sharp forks, as shown in Figure A2 below.



Figure A2

4.2. By detecting and observing through the time base signal column, if a waveform signal with a peak appears and a defect wave is repeatedly confirmed at the current position, it is judged as a defect. Refer to Figure A3

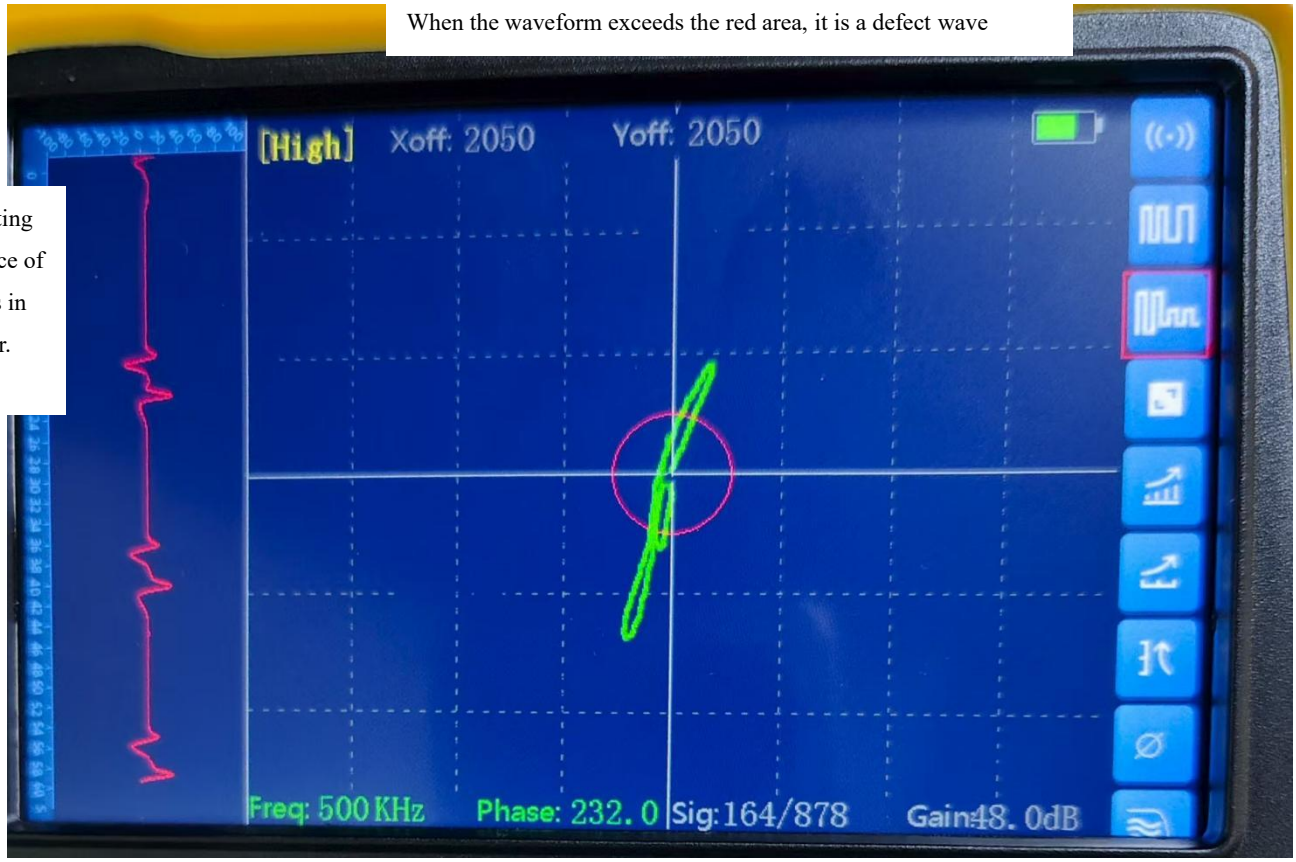


Figure A3

4.3. Defects can be confirmed by setting gates in the signal area, as shown in Figure A3.

5. Graphic storage and viewing: First, when the graphic to be saved appears, press  to pause the screen. Then press 

and a beep sound will appear to save the image to the instrument. If you need to view it, press the  to view it, and press again to return.
The numbering of image files is explained as follows:
P240301142839，representing
The image is numbered 39 at 14:28 on March 1, 2024, as shown in Figure A4.

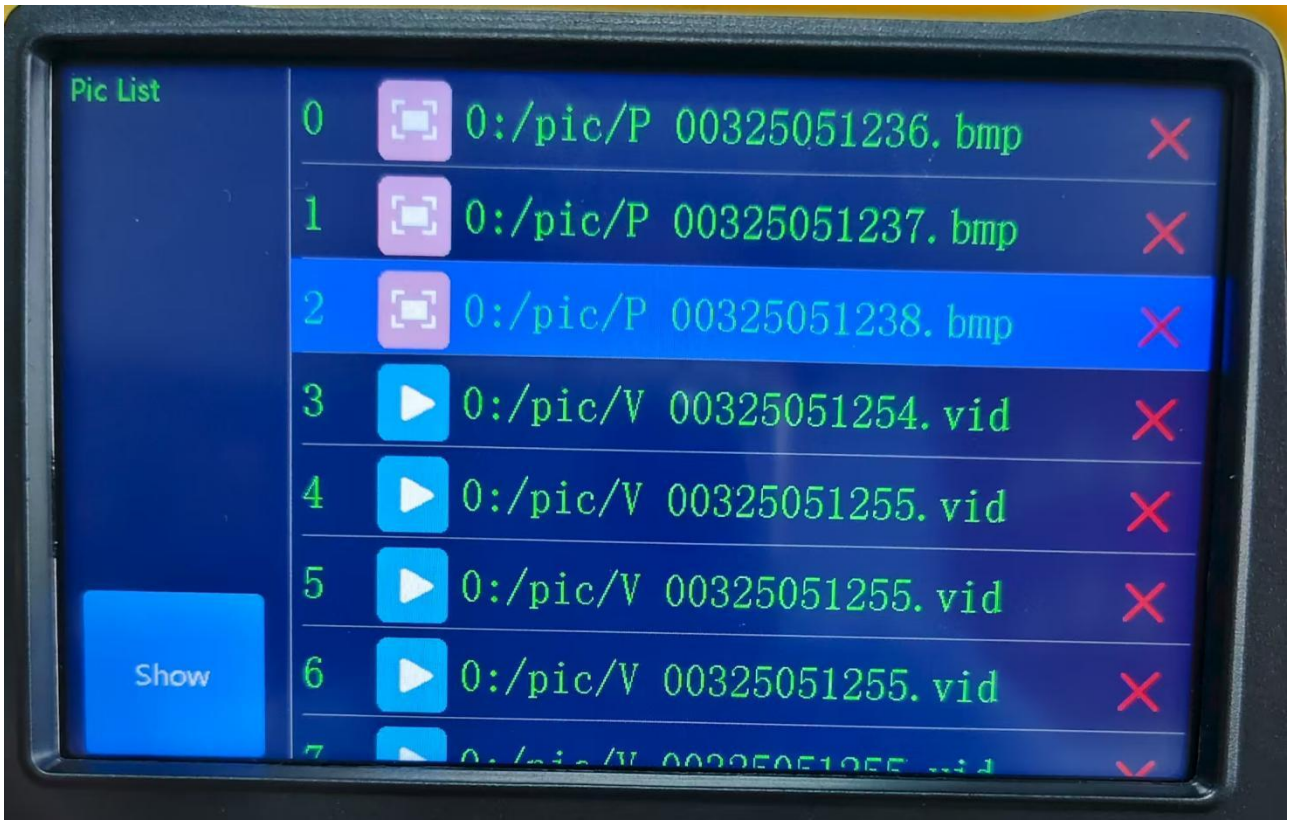


Figure A4

6. Video storage and viewing: After pressing the , the REC in the upper right corner of the screen flashes, and video recording begins. After pressing again, the recording ends. When you need to view, press the  to view, and press again to return. The numbering of the image and video files is explained as follows:
V240301145024, representing
On March 1, 2024 at 14:45, the image is numbered 024, as shown in Figure A5 below

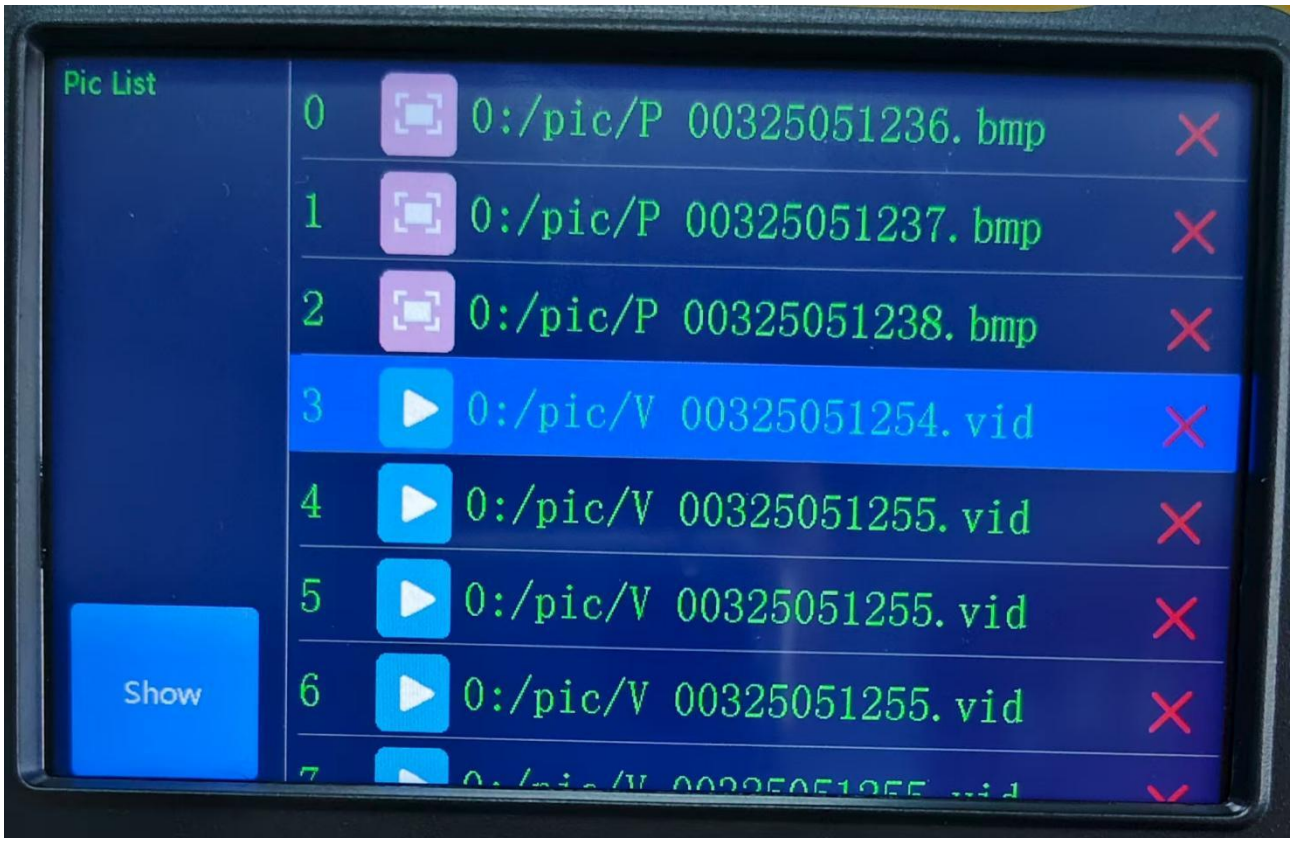


Figure A5

7. Non default parameter adjustment method: Add a new parameter

8. Data export: After the instrument is turned off and connected directly to the computer using the original data cable, a new drive letter will appear in the computer. Open the new drive letter, find the [pic] folder, and export the image and video data inside.

Attention: Do not delete or move files in other folders, otherwise it may cause system operation errors!

9. Instrument charging: Please use the original charging adapter for charging. When charging, align the red dot with the red dot, plug and unplug directly without turning. The charging light is red when charging, and turns green when fully charged.

Attention: This instrument operates on the principle of eddy current induction and should not be used during charging to prevent electromagnetic interference!