

AFD850 Digital Ultrasonic Flaw Detector





Introduction

This portable digital ultrasonic flaw detector is a color TFT LCD display, reflecting the most advanced technology, light and small size of the weight of the instrument, only 1.4Kg., Which featured not only a superior digital ultrasonic flaw detector, is a square wave generator, and also as an image of the detection equipment, and is equipped with a variety of interfaces, to meet user needs a variety of detection.

The instrument's color TFT LCD screen, even in direct sunlight glare environment, but also clearly show high-resolution B-scan, TOFD sweep and other image-based waveform; instrument uses the domestic industry-leading tunable square wave excitation technique for detection of high attenuation or a thick piece has good penetration and SNR; unique interface provides the user with the instrument as a separate square-wave generator uses; high-speed network interface provides remote data transmission and control function; high-speed USB host interface can not only high-capacity external storage devices such as USB mouse can also be connected to an input device to facilitate the efficient analysis of the image of the waveform; two-dimensional incremental encoder interface, the unique design allows either redundant instruments used in voltage or current-type encoder can be as to achieve the detection position, obtain excellent B ultrasonic waveform sweep or TOFD image.

Features:

- 1. The maximum sampling rate of up to 640MHz, the measurement resolution 0.1mm, minimum range 2mm.
- 2. Operating frequency $0.5 MHz \sim 20 MHz$, sensitivity margin of up to 62dB, low frequency there is a better signal to noise ratio.

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- 3. High brightness, high-resolution (800x480) color TFT LCD display, the best reading test results.
- 4. High-performance pulse square wave generator with adjustable options, and the probe to achieve the best match (non-inductive coil probe can be achieved excellent incentive), high attenuation material either detect or thin work pieces can bring optimal performance.
- 5. Small size, light weight, battery, can work for more than eight hours.
- 6. With LAN network interface, remote instrument control and data transmission. When the instrument is as a square wave transmitter, it can provide control of the instrument parameters.
- 7. Two-dimensional incremental encoder interface for accurate position detection imaging (B, TOFD sweep).
- 8. Simultaneous analog RF waveform output, output impedance $50\,\Omega$, can be used as source data acquisition and probe tests.
- 9. High-speed USB interface to an external U disk data storage and dump.
- 10. Built-in charging function; battery and DC power supply automatically detects the display; charging, automatic switching power supply, charging temperature dual protection.
- 11. A variety of software features, covering all aspects of testing; unique originality universal knob to adjust the way to make testing more easily worry; humanized menu design, Chinese and English language menus
- 12. Automatic test probe frequency, automatically optimizing the width of the square wave, with the probe and optimal instrument.
- 13. Images of the thickness of the alarm function, waveform storage function and a variety of continuous waveform measurement mode.
- 14. Fixed index measuring instruments function and waveform envelope function to achieve the peak memory.

Specifications

Items	Parameters	
Transmitted Pulse	Square wave, Emitter voltage of 25V ~ 400V continuously	
	adjustable, Stepping 25V, Continuously adjustable width 30ns ~	
	1000ns, Continuously adjustable width 30ns ~ 1000ns, Stepping	
	5ns. Under 400 Ω /200V, both edges of less than 10ns,	
	Automatic optimization for high-frequency excitation pulse.	
Work Mode	Single, double, penetration	
Launch Damping	400,100 Ω	
Operating	0.5 ~ 20MHz, broadband and narrowband two types	
Frequency		
Gain Range	0.0 ~ 110.0dB	

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Gain Step Value Velocity Range 1000 ~ 15000 m / s. Continuously adjustable in steps of 1, 10, 100m / s. Built-in 8 velocity values commonly used materials Detection Range 2.0 ~ 10000mm (longitudinal wave in steel). Continuous adjustable, step value 0.1, 1, 10, 100mm Detection Methods Alarm Detection Methods Alarm Two-way real-time hardware-driven alarm signal Optional: gate alarm (into the wave, wave loss), the thickness of the alarm, DAC curve Alarm, AVG curve alarm, the alarm signal optional buzzer (sound), light-emitting diode (light) Display 7-inch high-resolution TFT color LCD screen, big screen, dot-matrix 800×480 Pulse Shift -45 ~ 9999mm Probe Zero Value 0 ~ 999.99 μ s Pulse Repetition Frequency Vertical Linearity Error Sensitivity Margin > 62dB (200 Φ 2 flat bottom hole) Resolution > 36dB Dynamic Range Rejection RF Output Impedance Electrical Noise Level Probe Interface BNC or Lemo USB interface Data Port USB interface Power High-capacity lithium battery, no memory effect; 220V AC (with adapter). Working Time Continuous work more than eight hours Ambient emperature Relative humidity Veright 1.4kg (including battery)				
Velocity Range 1000 ~ 15000 m / s. Continuously adjustable in steps of 1, 10, 100m / s. Built-in 8 velocity values commonly used materials Detection Range 2.0 ~ 10000mm (longitudinal wave in steel). Continuous adjustable, step value 0.1, 1, 10, 100mm Detection Methods Positive half wave, negative half wave, full-wave, RF Alarm Two-way real-time hardware-driven alarm signal Optional: gate alarm (into the wave, wave loss), the thickness of the alarm, DAC curve Alarm, AVG curve alarm, the alarm signal optional buzzer (sound), light-emitting diode (light) Display 7-inch high-resolution TFT color LCD screen, big screen, dot-matrix 800 × 480 Pulse Shift -45 ~ 9999mm Probe Zero Value 0 ~ 999.99 μ s Pulse Repetition Frequency 25~1000Hz, automatic or manual adjustment mode Vertical Linearity ≤3% Error 25~1000Hz, automatic or manual adjustment mode Level Linearity ≤0.3% Error 5-26B (200 Φ2 flat bottom hole) Resolution > 36dB Dynamic Range ≥32dB Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance Electrical Noise <10%	Gain Step Value	0.1, 1.0, 2.0, 6.0 dB. 0.1dB gear acceleration provides intelligent		
Detection Range 2.0 ~ 10000mm (longitudinal wave in steel). Continuous adjustable, step value 0.1, 1, 10, 100mm		regulation		
Detection Range 2.0 ~ 10000mm (longitudinal wave in steel). Continuous adjustable, step value 0.1, 1, 10, 100mm Detection Methods Positive half wave, negative half wave, full-wave, RF Alarm Two-way real-time hardware-driven alarm signal Optional: gate alarm (into the wave, wave loss), the thickness of the alarm, DAC curve Alarm, AVG curve alarm, the alarm signal optional buzzer (sound), light-emitting diode (light) Display 7-inch high-resolution TFT color LCD screen, big screen, dot-matrix 800×480 Pulse Shift -45 ~ 9999mm Probe Zero Value 0 ~ 999.99 μ s Pulse Repetition Frequency 25~1000Hz, automatic or manual adjustment mode Vertical Linearity Error ≤3% Level Linearity Error ≤0.3% Sensitivity Margin > 62dB (200 Φ 2 flat bottom hole) Resolution > 36dB Dynamic Range ≥32dB Rejection (0-99)%, does not affect the linearity and gain SF Output Impedance Electrical Noise Level <10%	Velocity Range	1000 ~ 15000 m / s. Continuously adjustable in steps of 1, 10,		
adjustable, step value 0.1, 1, 10, 100mm Detection Methods Positive half wave, negative half wave, full-wave, RF Alarm Two-way real-time hardware-driven alarm signal Optional: gate alarm (into the wave, wave loss), the thickness of the alarm, DAC curve Alarm, AVG curve alarm, the alarm signal optional buzzer (sound), light-emitting diode (light) Display T-inch high-resolution TFT color LCD screen, big screen, dot-matrix 800×480 Pulse Shift 45 ~ 9999mm Probe Zero Value 0 ~ 999.99 μ s Pulse Repetition Frequency Vertical Linearity Error Level Linearity Error Sensitivity Margin > 62dB (200 Φ 2 flat bottom hole) Resolution > 36dB Dynamic Range ⇒ 32dB Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance Electrical Noise Level Probe Interface BNC or Lemo Data Port USB interface Power High-capacity lithium battery, no memory effect; 220V AC (with adapter). Working Time Continuous work more than eight hours Ambient -30 °C ~ 50 °C temperature Relative humidity (20-95)% RH		100m / s. Built-in 8 velocity values commonly used materials		
Detection Methods Positive half wave, negative half wave, full-wave, RF Alarm Two-way real-time hardware-driven alarm signal Optional: gate alarm (into the wave, wave loss), the thickness of the alarm, DAC curve Alarm, AVG curve alarm, the alarm signal optional buzzer (sound), light-emitting diode (light) Display 7-inch high-resolution TFT color LCD screen, big screen, dot-matrix 800×480 Pulse Shift -45 ~ 9999mm Probe Zero Value 0 ~ 999.99 μ s Pulse Repetition Frequency 55~1000Hz, automatic or manual adjustment mode Vertical Linearity Error ≤3% Level Linearity Error ≤0.3% Sensitivity Margin > 62dB (200 Φ 2 flat bottom hole) Postivity Margin > 62dB (200 Φ 2 flat bottom hole) Passolution > 36dB Dynamic Range ≥ 32dB Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance Electrical Noise <10%	Detection Range	2.0 ~ 10000mm (longitudinal wave in steel). Continuous		
Alarm Two-way real-time hardware-driven alarm signal Optional: gate alarm (into the wave, wave loss), the thickness of the alarm, DAC curve Alarm, AVG curve alarm, the alarm signal optional buzzer (sound), light-emitting diode (light) Display 7-inch high-resolution TFT color LCD screen, big screen, dot-matrix 800×480 Pulse Shift -45 ≈ 9999mm Probe Zero Value 0 ~ 999.99 μ s Pulse Repetition Frequency 25~1000Hz, automatic or manual adjustment mode Vertical Linearity Error ≤3% Level Linearity Error ≤0.3% Sensitivity Margin > 62dB (200 Φ 2 flat bottom hole) Resolution > 36dB Dynamic Range ≥ 32dB Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance Electrical Noise Level <10%		adjustable, step value 0.1, 1, 10, 100mm		
Optional: gate alarm (into the wave, wave loss), the thickness of the alarm, DAC curve Alarm, AVG curve alarm, the alarm signal optional buzzer (sound), light-emitting diode (light) Display 7-inch high-resolution TFT color LCD screen, big screen, dot-matrix 800×480 Pulse Shift 45 ~ 9999mm Probe Zero Value 0 ~ 999.99 μ s Pulse Repetition Frequency Vertical Linearity Error Level Linearity Error Sensitivity Margin > 62dB (200 Φ 2 flat bottom hole) Resolution > 36dB Dynamic Range Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance Electrical Noise Level Probe Interface BNC or Lemo Data Port USB interface Power High-capacity lithium battery, no memory effect; 220V AC (with adapter). Working Time Continuous work more than eight hours Ambient enable 1 - 30 °C ~ 50 °C temperature Relative humidity (20-95)% RH	Detection Methods	Positive half wave, negative half wave, full-wave, RF		
the alarm, DAC curve Alarm, AVG curve alarm, the alarm signal optional buzzer (sound), light-emitting diode (light) 7-inch high-resolution TFT color LCD screen, big screen, dot-matrix 800×480 Pulse Shift	Alarm	Two-way real-time hardware-driven alarm signal		
Signal optional buzzer (sound), light-emitting diode (light) Display		Optional: gate alarm (into the wave, wave loss), the thickness of		
Display 7-inch high-resolution TFT color LCD screen, big screen, dot-matrix 800×480 Pulse Shift $-45 \sim 9999 \mathrm{mm}$ Probe Zero Value $0 \sim 999.99 \mathrm{\mu s}$ Pulse Repetition 5-25-1000Hz, automatic or manual adjustment mode 7-25-1000Hz, automatic or manual adjustment mode 8-25-1000Hz, automatic or manual adjustment mode 8-25-1000Hz, automatic or manual adjustment mode 9-25-1000Hz, automatic or manual adjustment mode 9-25		the alarm, DAC curve Alarm, AVG curve alarm, the alarm		
Pulse Shift		signal optional buzzer (sound), light-emitting diode (light)		
Pulse Shift Probe Zero Value Pulse Repetition Frequency Vertical Linearity Error Level Linearity Error Sensitivity Margin Polynamic Range Rejection RF Output Impedance Electrical Noise Level Probe Interface BNC or Lemo Data Port Working Time Continuous work more than eight hours Ambient Ambient Error Varical Linearity 50 ~ 999.99 μ s 25~1000Hz, automatic or manual adjustment mode 83% Easolution ranual adjustment mode 25~1000Hz, automatic or manual adjustment mode 25~1000Hz, automatic or manual adjustment mode 26% 28% 299.99 μ s 20% 20% 20% 20% 20% 20% 20% 20	Display	7-inch high-resolution TFT color LCD screen, big screen,		
Probe Zero Value 0 ~ 999.99 μ s Pulse Repetition Frequency 25~1000Hz, automatic or manual adjustment mode Vertical Linearity Error ≤3% Level Linearity Error ≤0.3% Sensitivity Margin > 62dB (200 Φ 2 flat bottom hole) Resolution > 36dB Dynamic Range ≥32dB Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance 50 Ω Electrical Noise Level <10%		dot-matrix 800×480		
Pulse Repetition Frequency 25~1000Hz, automatic or manual adjustment mode Vertical Linearity Error ≤3% Level Linearity Error ≤0.3% Sensitivity Margin > 62dB (200 Φ 2 flat bottom hole) Resolution > 36dB Dynamic Range ≥ 32dB Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance 50 Ω Electrical Noise Level <10%	Pulse Shift	-45 ~ 9999mm		
Frequency Sa% Error ≤0.3% Error Sensitivity Margin > 62dB (200 Φ 2 flat bottom hole) Resolution > 36dB Dynamic Range ≥ 32dB Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance Electrical Noise Level <10%	Probe Zero Value	0 ~ 999.99 μ s		
Vertical Linearity Error Level Linearity Error Sensitivity Margin > 62dB (200 Φ 2 flat bottom hole) Resolution > 36dB Dynamic Range ≥ 32dB Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance Electrical Noise Level Probe Interface BNC or Lemo Data Port USB interface Power High-capacity lithium battery, no memory effect; 220V AC (with adapter). Working Time Continuous work more than eight hours Ambient -30 °C ~ 50 °C temperature Relative humidity (20-95)% RH	Pulse Repetition	25~1000Hz, automatic or manual adjustment mode		
Error Level Linearity	Frequency			
Level Linearity Error ≤0.3% Sensitivity Margin >62dB (200 Φ 2 flat bottom hole) Resolution > 36dB Dynamic Range ≥32dB Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance 50 Ω Electrical Noise Level <10%	Vertical Linearity	≤3%		
ErrorSensitivity Margin> 62dB (200 Φ 2 flat bottom hole)Resolution> 36dBDynamic Range≥ 32dBRejection(0-99)%, does not affect the linearity and gainRFOutput ImpedanceElectrical Noise Level< 10%	Error			
Sensitivity Margin> 62dB (200 \oplus 2 flat bottom hole)Resolution> 36dBDynamic Range≥ 32dBRejection(0-99)%, does not affect the linearity and gainRFOutput ImpedanceElectricalNoise LevelProbe InterfaceBNC or LemoData PortUSB interfacePowerHigh-capacity lithium battery, no memory effect; 220V AC (with adapter).Working TimeContinuous work more than eight hoursAmbient temperature-30 °C ~ 50 °CRelative humidity(20-95)% RH	Level Linearity	≤0.3%		
Resolution > 36dB Dynamic Range ≥ 32dB Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance Electrical Noise Level < 10%	Error			
Dynamic Range ≥32dB Rejection (0-99)%, does not affect the linearity and gain RF Output Impedance Electrical Noise Level <10%	Sensitivity Margin	$>$ 62dB (200 \oplus 2 flat bottom hole)		
Rejection $(0-99)\%$, does not affect the linearity and gain RF Output Impedance 50Ω Electrical Noise Level Probe Interface BNC or Lemo Data Port USB interface Power High-capacity lithium battery, no memory effect; 220V AC (with adapter). Working Time Continuous work more than eight hours Ambient $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$ temperature Relative humidity $(20-95)\%$ RH	Resolution	> 36dB		
RF Output Impedance 50Ω Electrical Noise Level 20% Probe Interface BNC or Lemo Data Port USB interface Power High-capacity lithium battery, no memory effect; 220V AC (with adapter). Working Time Continuous work more than eight hours Ambient $-30 ^{\circ}\!$	Dynamic Range	≥32dB		
Impedance Electrical Noise <10% Level Probe Interface BNC or Lemo Data Port USB interface Power High-capacity lithium battery, no memory effect; 220V AC (with adapter). Working Time Continuous work more than eight hours Ambient -30 °C ~50 °C temperature Relative humidity (20-95)% RH	Rejection	(0-99)%, does not affect the linearity and gain		
Electrical Noise Level Probe Interface BNC or Lemo Data Port USB interface Power High-capacity lithium battery, no memory effect; 220V AC (with adapter). Working Time Continuous work more than eight hours Ambient temperature Relative humidity (20-95)% RH	RF Output	50 Ω		
LevelBNC or LemoData PortUSB interfacePowerHigh-capacity lithium battery, no memory effect; 220V AC (with adapter).Working TimeContinuous work more than eight hoursAmbient-30 °C ~ 50 °C temperatureRelative humidity(20-95)% RH	Impedance			
Probe Interface Data Port USB interface Power High-capacity lithium battery, no memory effect; 220V AC (with adapter). Working Time Continuous work more than eight hours Ambient temperature Relative humidity Relative humidity Relative humidity Power High-capacity lithium battery, no memory effect; 220V AC (with adapter).	Electrical Noise	<10%		
Data PortUSB interfacePowerHigh-capacity lithium battery, no memory effect; 220V AC (with adapter).Working TimeContinuous work more than eight hoursAmbient-30 °C ~ 50 °C temperatureRelative humidity(20-95)% RH	Level			
Power High-capacity lithium battery, no memory effect; 220V AC (with adapter). Working Time Continuous work more than eight hours Ambient $-30 ^{\circ}\!$	Probe Interface	BNC or Lemo		
(with adapter). Working Time Continuous work more than eight hours Ambient $-30 ^{\circ}\text{C} \sim 50 ^{\circ}\text{C}$ temperature Relative humidity (20-95)% RH	Data Port	USB interface		
Working Time Continuous work more than eight hours Ambient $-30 ^{\circ}\text{C} \sim 50 ^{\circ}\text{C}$ temperature Relative humidity (20-95)% RH	Power	High-capacity lithium battery, no memory effect; 220V AC		
Ambient $-30 ^{\circ}\text{C} \sim 50 ^{\circ}\text{C}$ temperature Relative humidity (20-95)% RH		(with adapter).		
Ambient $-30 ^{\circ}\text{C} \sim 50 ^{\circ}\text{C}$ temperature Relative humidity (20-95)% RH	Working Time	Continuous work more than eight hours		
Relative humidity (20-95)% RH				
Relative humidity (20-95)% RH	temperature			
	•	(20-95)% RH		
	•			

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Standard Accessories:

No.	Item	Quantity
1	Main Body	1
2	Straight Beam Probe	1
3	Angle Probe	1
4	Machine-probe Cable	1
5	Power Adapter (Charger)	1
6	Data proceeding Software	1
7	USB communication Cable	1
8	Manual	1
9	Instrument Case	1
10	Guarantee Card	1
11	Packing List	1



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