

- Curved Surface Correction: Used for flaw detecting for the curved surface workpiece, it can display the defect circumferential position and depth in real time.
- Digital-analogy dual-use: without needing do AVG curve, using the bottom wave gain method to measure dB value to achieve the dual-use for digital-analogy, it is easy to operate.
- $\Phi$ Value Calculation: It can auto-calculate and display the defects equivalent size after finding the peak echo of defect when the straight probe detecting to the forgings.
- DAC/AVG: Automatic produced curves without limitation for sampling point, it can do offset and correction for the curves. The curves float automatic with the gain and expand automatic with sound path as well as move automatic with time delay. It can show any aperture AVG curve.
- Gain: 0 dB to 110 dB adjustable in selectable steps 0.1 dB, 1 dB, 2dB and 6dB. Unique automatic gain adjustment and scanning gain function make the flaw detecting fast and accurate.
- AWS D1.1/1.5: The American Welding Society standard provides a dynamic reflector "defect level" for all types AWS weld inspection applications. It can avoid manual calculation and improve the detection efficiency.
- Crack Depth: with endpoint diffraction wave, it can measure and calculate the crack depth automatically.
- Envelope in Gate: Amplify the echo details, easy for echo analysis
- Continuous Record: real-time record the waveform, save and playback it.
- Waveform freeze: freeze the waveform showed on the screen for conveniently analysis the defect.
- Echo Code: Display 1-6 times echo display area in different colors, distinguish the first and second wave better, easy to determine the defect position.
- Common B Scan: real-time scanning, cross section display, make the detecting result more visually

## Configuration

	No.	Item	Qty	Remarks
Standard config.	1	Main unit	1	
	2	Straight Beam Probe	1	4 MHz, $\Phi$ 10
	3	Angle Beam Probe	1	4 MHz, 8 mm $\times$ 9 mm, 60°
	4	Probe Cable	1	BNC-LEMO00
	5	Battery Module	1	or LEMO01-LEMO00
	6	Power Adapter	1	MB-02
	7	Power Cable	1	
	8	Instrument Case	1	
	9	Support pillar	1	
	10	Data Proceeding Software	1	
	11	USB Communication Cable	1	
	12	Attached files		
Optional config.	1	Protective Cover for Main Unit		
	2	Various Probes		

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Note: All above indicators are got with 2.5MHz probe and full wave detecting method.

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## Features

### Gate Alarm

Gate position, gate width and gate height can be adjustable at will. The B gate can chose to set wave-getting alarm or wave-losing alarm. The beep in gate and LED light can be alarmed or closed (the LED light alarm is very effective under the noise environment).

### Data Storage

The instrument is built with mass storage. The data and files will not be lost because of instrument power breakdown. The storage contents included channel parameters, waveform pictures and video files. It supports 100 groups of flaw detecting parameters channels. It can preset well for the combination parameters of various types of probes and instruments as well as set testing standards for each industry freely. It can save 10000 pictures of detecting echo signals and parameters. It can realize to save, read and transfer the data via the USB port.

### Video Function

The instrument supports for saving the inspection process as video file and save it to the internal storage card. Video file can be replayed through the instrument. The instrument can support 2 minutes video.

### Real-Time Clock

Record and save the tracking record of detecting date and time in real time

### Communication

With USB2.0 high speed communication interface, It also can use special software to upload and download data through the USB port.

### Battery Module

The large capacity lithium battery module is easy to be assembled and disassembled. It can be charged independently but also charged by inserting wire. Its continuously working time is more than 8 hours

## Flaw Detecting Function

- Flaw Detecting Standard: Built-in the commonly used flaw detecting standards for each industry. It can be directly called for using convenient and fast.
- Welding Figure: It can set the weld parameters, show the welding figure and defects as well as echo path directly during testing.
- Automatic Calibration: Automatic calibration for P-Delay and probe angle (K value), automatic measuring function for sound velocity.
- Peak Memory: real-time search the defect with highest wave and record the defect peak echo.
- Defect Positioning: real-time display the defect level, depth (vertical) and sound path position.
- Defect quantify: real-time display the defect equivalent dB value
- Defect quality: With echo envelope waveform, it is convenient for judging according to artificial experience.

# ULTRASONIC FLAW DETECTOR MFD350B

## Product Overview

Based on ultrasonic principle, digital ultrasonic flaw detector MFD350B with 320\*240 TFT LCD, it can test, orient, evaluate and diagnose various flaws such as crack, lard, air hole in workpiece's interior swiftly and accurately without any destruction. It can be used in Laboratory as well as in engineering filed. With range of 0-6000mm, it can meet the requirement for general defect inspection in manufacturing industry, metallurgical industry, metal processing industry, chemical industry and so on. Low power design with large capacity and high performance lithium battery module, it can be long standby for months. High quality with low price, it is the first choice for the practical economic model for ultrasonic testing equipment.

## Technical Parameters

- Measuring Range: (0 ~6000) mm in steel
- Bandwidth: 0.5 to 10MHz automatic matching according to the probe frequency.
- Material Velocity: (1000 ~ 9999) m / s
- Dynamic Range:  $\geq 36$ dB
- Vertical Linear Error:  $\leq 3.0\%$
- Horizontal Linear Error:  $\leq 0.2\%$
- Resolution:  $> 40$ dB (5P14)
- Sensitivity Leavings:  $>60$ dB (flat-bottomed deep hole 200mm $\Phi 2$ )
- Rejection: (0 to 80)% Linear without affecting the linearity and gain.
- Noise Level:  $\leq 10\%$
- Probe Type: Straight beam probe, angle beam probe, dual element probe, through-transmit probe.
- Gates: Wave-getting Gate, Wave-losing Gate, Single Gate Reading, Dual Gate Reading.
- Alarm: Beep Alarm and LED light Alarm.
- Power Supply: DC 9V
- Working Time:  $>8$  hours
- Overall Dimensions: 263 × 170 × 61(mm)
- Operating Temperature: (-10 ~ 50) °C
- Relative Humidity: (20 ~ 95)% RH
- Pulse Energy: Low(300V), Medium(500V) and High(700V) selectable, suitable for various probe
- Pulse Width: (0.1 ~ 0.512)  $\mu$  s range with continuous adjustment to match the different frequency probes
- Probe Damping: 100  $\Omega$  , 200  $\Omega$  、 400  $\Omega$  selectable to meet different requirements for resolution and sensitivity.
- Sampling: 10 digits AD Converter at the sampling speed of 160MHz, waveform of highly fidelity.
- Rectification: Positive half wave, negative half wave, full wave, RF.
- Gate Reading: Optional for single gate and double gate reading mode, peak readings within the gate
- Gain: 0 dB to 110 dB adjustable in selectable steps 0.1 dB, 1 dB, 2dB and 6dB

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<b>Pulse Energy</b>	<b>Low, Medium and High spike pulse selectable, suitable for various probe</b>
<b>Pulse Width</b>	<b>(0 ~ 99.99)<math>\mu</math>s range with continuous adjustment to match the different frequency probes</b>
<b>Probe Damping</b>	<b>100<math>\Omega</math>, 200<math>\Omega</math>, 400<math>\Omega</math> selectable to meet different requirements for resolution and sensitivity</b>
<b>Sampling</b>	<b>10 digits AD Converter at the sampling speed of 160MHz, waveform of highly fidelity.</b>
<b>Rectification</b>	<b>Positive half wave, negative half wave, full wave, RF</b>
<b>Gate Reading</b>	<b>optional for single gate and double gate reading mode, both peak and edge can trigger it</b>
<b>Gain</b>	<b>0 dB to 110 dB adjustable in selectable steps 0.1 dB, 1 dB, 2dB and 6dB</b>
<b>Transducer Connections</b>	<b>BNC or LEMO</b>

<b>Communication Interface</b>	<b>High Speed USB2.0 port</b>
<b>DataPro Software</b>	<b>Y</b>
<b>Working Language</b>	<b>freely switch between Chinese and English</b>
<b>Total Weight</b>	<b>6.0KG</b>
<b>Measuring Range</b>	<b>(0 ~ 6000) mm at steel velocity</b>
<b>Bandwidth</b>	<b>0.5 to 10MHz automatic matching according to the probe frequency</b>
<b>Material Velocity</b>	<b>(1000~ 9999) m / s</b>
<b>Dynamic Range</b>	<b>≥ 36dB</b>
<b>Vertical Linear Deviation</b>	<b>≤ 3.0%</b>
<b>Horizontal Linear Deviation</b>	<b>≤ 0.2%</b>
<b>Resolution</b>	<b>&gt; 40dB (5P14)</b>
<b>Sensitivity Leavings</b>	<b>&gt; 60dB (flat-bottomed deep hole 200mmΦ2)</b>
<b>Rejection</b>	<b>(0 to 80)% Linear without affecting the linearity and gain</b>
<b>Noise Level</b>	<b>≤ 10%</b>
<b>Probe Type</b>	<b>straight beam probe, angle beam probe, dual element probe, through-transmit probe</b>
<b>Gates</b>	<b>Wave-getting Gate, Wave-losing Gate, Single Gate Reading, Dual Gate</b>
<b>Alarm</b>	<b>Beep Alarm and LED light Alarm</b>
<b>Power Supply</b>	<b>DC 9V</b>
<b>Working Time</b>	<b>&gt; 8 hours</b>
<b>Overall Dimensions</b>	<b>263 × 170 × 61(mm)</b>
<b>Operating Temperature</b>	<b>(-10 ~ 50) °C</b>
<b>Relative Humidity</b>	<b>(20 ~ 95)% RH</b>

<b>Display Resolution</b>	<b>(320×240 pixels) multi-color TFT LCD</b>
<b>Blind Area</b>	<b>5MM</b>
<b>Flaw Sizing</b>	<b>Automatic flaw sizing using AVG/AVG or DAC, speeds reporting of defect acceptance or rejection.</b>
<b>Weld Figure Feature</b>	<b>Weld Figure feature can be enabled when detecting the weld parts using angle transducer.</b>
<b>Auto-Calibration</b>	<b>Automated calibration of transducer zero offset and/or material velocity</b>
<b>Memory</b>	<b>be able to store, recall the A-Scan patterns and instrument settings</b>
<b>Flaw Locating</b>	<b>Live display Sound-path, Projection (surface distance), Depth, Amplitude</b>
<b>Defect Quantification</b>	<b>directly display the result with db unit</b>
<b>Defect characterization</b>	<b>calculate the equivalent size of the flaw easily and quickly to facilitate the judgment of artificia</b>
<b>Curved Surface Correction</b>	<b>used to measure the surface distance and depth of defect on a curved surface</b>
<b>DAC/AVG</b>	<b>Y</b>
<b>AWS D1.1</b>	<b>one of the AWS ( American Welding Society ) standa</b>
<b>Crack Height Measuring</b>	<b>measure and display the height of a crack found inside the workpiece</b>
<b>Magnify Gate</b>	<b>spreading of the gate range over the entire screen width</b>
<b>Video Recording</b>	<b>more than 10 minutes</b>
<b>A Scan Freeze</b>	<b>Display freeze holds waveform and sound path data</b>
<b>Coded Echo Color</b>	<b>locate the flaw position</b>
<b>B-Scan</b>	<b>display a graphical cross-section of the workpiece</b>
<b>Power-Saving Method</b>	<b>low power consumption</b>
<b>Protection Level</b>	<b>IP54</b>