Standard Delivery

● Main unit	1
● 5MHz double element transducer	1
● Couplant	1
● AA battery	3
● TIME certificate	1
● Warranty card	1
● Instruction manual	1

Optional Accessory

● Standard block
● Optional transducers (see next page)

Features

● A-scan waveform can be displayed for echo analysis and measurement of complex workpiece
● Compatible with many types of transducers, both single and dual element transducers
● Users can set blanks to shield aftershocks or clutter
● Echo-echo measures the true metal thickness while ignoring the thickness of coating layer.
● Thru-coat technology measures metal and nonmetallic coating thickness.
● Signal auto-amplification function
● Adjustable voltage variable pulse width square wave pulse generator
● Single value B-scan display function
● Fast measurement mode up to 20 times per second
● Set upper and lower limits and alarm
● Data can be output to a removable MicroSD memory card. Can store up to 500,000 measured values and waveforms.

Technical Specification

Measurement range	0.20~500mm
Velocity range	508m/s~18699m/s
Display screen	Color TFT LCD, 320x240 pixels
Pulse generator	Adjustable Square Wave Pulse Generator
Resolution	0.001mm or 0.01 or 0.1mm optional
Emission voltage	60V, 110V, 150V, 200V optional
Emission pulse width	varies with transducer frequency
Gain range	0-99dB, 1dB step
Frequency range	0.5 Mhz~20Mhz
Measurement rate	standard (4Hz), fast (20Hz)
Transducer settings	10 sets of fixed transducer setting and 22 sets of custom transducer setting
Data Storage	500 data files, each capable of storing 1000 measurements and waveforms
Working temperature	0°C~40°
Power	three AA battery or n iMH batteries
Dimensions (mm)	187mm×87 mm×43 mm
Weight (g)	360g

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Transducer Measurement Range

Transducer Type	Measuring Range(steel)	Indication Error	Using Mode
5MHz double element narrow pulse transducer DK537EE-5MHZ	1.2~225.0mm 3.0~100.0mm	H<10mm: ±0.05mm H≥10mm: ±(0.01+0.5%H)mm	Standard Echo-Echo
5MHz single element contact transducer DEFM1-SE-5MHZ	5.0~225.00mm 5.0~100.00mm	H<10mm: ±0.05mm H≥10mm: ±(0.01+0.5%H)mm	Standard Echo-Echo
TSTU32 2MHz double element transducer TSTU32-2.0MHZ	3.0~300.00mm	H<10mm: ±0.1mm H≥10mm: ±(0.01+1%H)mm	Standard
1MHz single element contact transducer DEFM1-SE-1MHZ	10~500.00mm	H<10mm: ±0.1mm H≥10mm: ±(0.01+1%H)mm	Standard
15MHz single element delayblock transducer DEFM2-SE-15MHZ	3.0mm~20.0mm 0.25m~10.0mm	H<10mm: ±0.05mm H≥10mm: ±(0.01+0.5%H)mm	Interface-echo Echo-echo
2.5MHz double element transducer SZ2.5P-2.5MHZ	2.0mm~300.0mm	H<10mm: ±0.1mm H≥10mm: ±(0.01+1%H)mm	Standard
7MHz double element transducer 7PD6-7.0MHZ	0.75mm~75.0mm	H<10mm: ±0.05mm H≥10mm: ±(0.01+0.5%H)mm	Standard Echo-echo
5MHz double element narrow pulse transducer 5P8Sj -5.0MHZ	0.8mm~225.0mm 3.0m~50.0mm	H<10mm: ±0.05mm H≥10mm: ±(0.01+0.5%H)mm	Standard Echo-echo
5MHz high-temperature double element transducer ZW5P-5.0MHZ	1.2mm~225.0mm 4.0m~80.0mm (high-temperature)	H<10mm: ±0.1mm H≥10mm: ±(0.01+1%H)mm	Standard
1MHz double element transducer DC175-1.0MHZ	3.0mm~500.0mm	H<10mm: ±0.1mm H≥10mm: ±(0.01+1%H)mm	Standard
15MHz single element pen type transducer DLK1225-15MHZ	3mm~8.0mm 0.2m~3.3mm	H<10mm: ±0.05mm	Interface-echo Echo-echo

Detecting Modes

●The standard echo detection mode measures the thickness based on the time interval between the excitation pulse and the first back wall echo. User can measure uncoated materials in this mode.

●Automatic echo-echo detection mode allows thickness measurement of materials with paint or coating because the time interval between two successive back-wall echoes eliminate paint or coating thickness.

●Paint thickness measurement can simultaneously display layer thickness and substrate thickness.

●The instrument includes three detection modes (Mode 1, Mode 2, and Mode 3)

　Mode 1: Measures the time interval between the main pulse signal and the first back-wall echo with direct contact transducer.

　Mode 2: Measure the time interval between the interface echo (or delay line echo) and the first back-wall echo with a delay line or immersion transducer.

　Mode 3: Measure the time interval between two successive back-wall echoes with a delay line or a immersion transducer.

Measuring Mode	Echo 1	Echo 2
Mode 1 uses contact transducer	The back echo is usually the negativeelectrode. However, in specialapplications where low acousticimpedance materials bonded to highacoustic impedance materials aremeasured (eg, plastic or rubber isadhered to the metal), the echoes appearto be phase inverted.	n ot applicable
Mode 2 uses a delay line transducer or a immersion transducer	When measuring materials with highimpedance such as metals andceramics, the interface echo is usuallypositive, while when measuring low-impedance materials like most plastics,the echo is negative.	The back-wall echo is typicallythe negative electrode unless it isfrom an interface between a lowacoustic impedance material anda high acoustic impedancematerial that are bonded together.
Mode 3 uses a delay line transducer or a immersion transducer	For high impedance materials, theinterface echo is usually positive.	The back echo is usually thenegative electrode. However, inspecial measurementapplications for some irregulargeometry materials, the bottomecho is set to the positiveelectrode due to the phasedistortion causing the positiveelectrode of the bottom echo tobe clearer than the negativeelectrode.

Guideline to standard velocity in materials

Metals (m/sec)				non-metals (m/sec)			
Aluminum	6320	nickel	5630	Acrylic resin	2730	Polyamide	2380
Brass	4640	Platinum	3960	Aluminum oxide	8700	Polyethylene	1900
Cast iron	4500	Silver	3600	Ceramic	5631	Polyurethane	1900
Copper	4700	Steel, mild	5900	Diamond	17500	Polystyrene	2400
Cadmium	2800	Steel, low carbon	5850	Epoxy resin	2650	Porcelain	5600
Chromium	6200	Steel, stainless	5790	Glass	5440	PVC	2400
Gold	3240	Tin	3320	Ice	3980	Rubber (butyl)	1900
Inconel	5720	Titanium	6070	neoprene	1600	Rubber (soft)	1450
Iron	5900	Tungsten carbon	5650	nylon	2620	Rubber (vulc.)	2300
Lead	2200	Tungsten	5400	Paraffin	2200	Silicone rubber	948
Manganese	4700	Zinc	4170	Perspex	2850	Teflon	1350
Magnesium	6310	Zirconium	4650	Water glass	2350	Water (20°C)	1480

Applications

500℃ Steam Pipe

500℃ Tank

Grey Cast Iron Material

Thinning of Stamping Parts

Stainless Steel

Oil & Gas Tank

300℃ Tank

Measure through coating

60mm Thickness Rubber Tires

Steel/Stainless Steel Composite Pipe

Paint Thickness Test of FRP Pipe Inner Wall

FRP Sulfuric Acid Tank