Standard Delivery

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

Optional Accessory

●Standard block
●Optional transducers (see next page)
●Software

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 (depend on probe)
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 NiMH batteries
Dimensions (mm)	187mm×87 mm×43 mm
Weight (g)	360g

TIME®2190 NEW

ULTRASONIC THICKNESS GAUGE

Transducers of TIME2190

Transducer Type	Measuring Range in Steel(mm)	Frequency	Picture	Remark
DK537EE	1-508	5.MHz Double element		Standard delivery
DC250	2.5-508	2.25MHz Double element		Measure 225mm with coating
DLK1025	0.5- 12.7	10Mhz Single element with delay block		Measure 0.8mm with coating
DCC110	7.62-508	1MHz Single element		Measure FRP material
DLK1225	0.5-5.08	15MHz Single element		Measure very small workpiece
DHT-537	1-508	5.MHz Double element		High temperature up to 500℃
DC175	3.81-508	1MHz Double element		
DEFM2-SE	0.15-20	15MHz Single element		Measure thin workpiece
SZ2.5P	3-300	2.5MHz Double element		
TSTU32	5-40（cast iron）	2MHz Single element		Cast iron
ZW5P	4-80	5MHz Double element		High temperature up to 300℃

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.	Not 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.

Applications

Pipe

φ3 Thin Tube

Grey Cast Iron Material

Thinning of Stamping Parts

Tetrafluoroethylene

Casting Valve

Casting

LLDPE664

LPG tank

Oil Pipeline

FRP Valve

FRP Oil Tank