

Transducer Measurement Range

Transducer Type	Measuring Range(steel)	Indication Error	Using Mode
5MHz dual element narrowpulse transducer	1.2~225.0mm 3.0~100.0mm	H<10mm: $\pm 0.05\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+0.5\%H)\text{mm}$	Standard Echo-Echo
5MHz single element contacttransducer	5.0~225.00mm 5.0~100.00mm	H<10mm: $\pm 0.05\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+0.5\%H)\text{mm}$	Standard Echo-Echo
TSTU32 2MHz Double elementtransducer	3.0~300.00mm	H<10mm: $\pm 0.1\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+1\%H)\text{mm}$	Standard
1MHz single element contacttransducer	10~500.00mm	H<10mm: $\pm 0.1\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+1\%H)\text{mm}$	Standard
15MHz Single element delayblock transducer	3.0mm~20.0mm 0.25m~10.0mm	H<10mm: $\pm 0.05\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+0.5\%H)\text{mm}$	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 negative electrode. However, in special applications where low acoustic impedance materials bonded to high acoustic impedance materials are measured (eg, plastic or rubber is adhered to the metal), the echoes appear to be phase inverted.	Not applicable
Mode 2 uses a delay line transducer or a immersion transducer	When measuring materials with high impedance such as metals and ceramics, the interface echo is usually positive, while when measuring low-impedance materials like most plastics, the echo is negative.	The back-wall echo is typically the negative electrode unless it is from an interface between a low acoustic impedance material and a high acoustic impedance material that are bonded together.
Mode 3 uses a delay line transducer or a immersion transducer	For high impedance materials, the interface echo is usually positive.	The back echo is usually the negative electrode. However, in special measurement applications for some irregular geometry materials, the bottom echo is set to the positive electrode due to the phase distortion causing the positive electrode of the bottom echo to be clearer than the negative electrode.

Connecting Cable



5PΦ10 for TIME®211 series



5PΦ10/90° for for TIME®211 series, TIME®213 series



7PΦ6 for for TIME®211 series, TIME®2130



TSTU32 for TIME®2134



SZ2.5P for for TIME®211 series



ZW5P for TIME®2132

Technical Specification

Transducer	Feature	Testing range	Contacting diameter	Frequency	Tested surface temperature
5PΦ10	Standard straight	1.2~225.0mm(steel)	10mm	5MHz	-10°C~+60°C
5PΦ10/90°	Standard angle	1.2~225.0mm(steel)	10mm	5MHz	-10°C~+60°C
7PΦ6	Small diameter	0.75~60mm, 15×2.0mm (steel)	6mm	7MHz	-10°C~+60°C
ZW5P	High-temperature	4.0-80.0mm(steel)	12mm	5MHz	-10°C~+300°C
SZ2.5P	High penetration	3.0-300.0mm(steel)	12mm	2.5MHz	-10°C~+60°C
TSTU32	High penetration	5.0~40.0mm (cast iron)	22mm	2MHz	-10°C~+60°C

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°C Steam Pipe



500°C Tank



Grey Cast Iron Material



Curved Surface of Stamping Parts



Stainless Steel Valve Glass



Steel Tanker



300°C Tank



Hull Inspection



60mm Thickness Rubber Tires



Steel/Stainless Steel Composite Pipe



Paint Thickness Test of FRP Pipe Inner Wall



FRP Sulfuric Acid Tank