



Ultrasonic Thickness Gauge

Apply the ultrasonic technology to measure metal and nonmetal material, it is fast, accurate and non-polluting. It is used for measuring the wall thickness of various plate, pipe, boiler vessel and corrosion, rust conditions. So it plays an important role in inspection and safe operation of metallurgy equipment, shipbuilding, machinery, chemical industry, power stations, atomic energy and other industrial sectors.

- H1** Ultrasonic Thickness Gauge TT100/110/ 120/130
- H2** Ultrasonic Thickness Gauge TT140/150
- H3** Ultrasonic Thickness Gauge TT300/300A/ 310/320/340
- H4** Ultrasonic Thickness Gauge TT500
- H5** Precision Ultrasonic Thickness Gauge TT700
- H6** Ultrasonic Thickness Gauge TT900
- H7** Optional Accessories For Ultrasonic Thickness Gauge



Supplied by :

Tel: +27 (011) 683 4365

Test and Measurement Instruments C.C.

www.instrumentsgroup.co.za



Features:

- Portable size and easy operation
- Suitable for any metallic and non-metallic materials ultrasonic can go through
- Self-compensating of nonlinearity function is supplied for correction of pickup nonlinearity
- Optional 2.5MHz, 5MHz and 7MHz transducers are available
- Clear 4-Digit LCD display with backlight
- 5 pre-set sound velocities for repeating applications
- 10 measuring values recorded for TT100/110/120/130
- mm / inch selectable
- TT100 and TT130 are suitable for thickness testing of various materials with sound speed range 1000-9999m/s
- TT110 and TT120 are easy-operation models with only two keys suitable for thickness testing of steel
- TT120: high-temperature model with range up to 300°C

Technical Specification

Model	TT100	TT110	TT120	TT130
Measuring range	0.75~300.00mm (steel) (depends on probe)			
Measuring range for steel pipes	φ20×3.0mm			
Diameter of transducer	φ10 (standard) φ6 (optional) φ12 (optional)			
Display resolution	0.1mm			0.01mm
Calibration	4.0mm steel base plate integrated			
Tolerance	± (1%H+0.1) mm (H means the thickness of tested piece)			
Measuring units	mm/inch			
Sound velocity range	1000-9999m/s	5900 m/s		1000-9999m/s
Display	4-Digital LCD			
Surface temperature	-10°C to +60°C		-10°C to +300°C	-10°C to +60°C
Battery indicator	Low battery voltage indicator			
Power supply	2Pcs.AA batteries 1.5V			
Working time	250 hours			
Dimensions (mm)	126×68×23			
Weight (g)	Approx.250 including batteries			

Standard Delivery

- Main unit 1
- 5MHz straight transducer (for TT100/110/120/130) 1
- 5MHz angle transducer (for TT100/110/130) 1
- ZW5P high temperature transducer (for TT120) 1
- Integrated steel calibration plate 4.0mm 1
- Batteries AA1.5V 2
- Couplant 1
- TIME certificate 1
- Warranty card 1
- Instruction manual 1

Optional Accessory

- Optional accessories (see page H7)

Ultrasonic Thickness Gauge TT140/150



ISO 9001



Features:

- Portable size and easy operation
- Suitable for any metallic and non-metallic materials ultrasonic can go through
- Self-compensating of nonlinearity function is supplied for correction of pickup nonlinearity
- Optional 2.5MHz, 5MHz and 7MHz transducer are available
- Large LCD screen display and auto shut down
- Low battery indication
- Low frequency transducer is selectable for testing
- TT140: with backlight

Technical Specification

Model	TT140	TT150
Measuring range	0.8~225mm	
Display resolution	0.1mm	
Sound speed	1000~9999m/s	
Workpiece temperature	-10~60°C	
Display	Backlight	4 digital LCD
Measuring accuracy	± (1%H+0.1) mm	
Probe	φ6mm (optional) φ10mm (Standard) φ12mm (optional)	
Calibration plate	4.0mm (Steel)	
Power	AA batteries 1.5V (2Pcs)	
Working time	250h	
Dimensions (mm)	126×68×23	149×72×32
Weight (g)	170	200 (with battery)

Standard Delivery

- Main unit 1
- 5MHz transducer 1
- Integrated steel calibration plate 4.0mm 1
- Batteries AA1.5V 2
- Couplant 1
- TIME certificate 1
- Warranty card 1
- Instruction manual 1

Optional Accessory

- 2.5MHz transducer (3~300mm)
- 7MHz transducer (0.75~60mm)



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TT300/TT300A



TT310



TT320



TT340

Features:

- Advanced handheld ultrasonic thickness gauge
- Suitable for most metallic and non-metallic materials ultrasonic can go through
- Auto-calibration of zero point, correction of system error
- Display current thickness or minimum thickness (menu selectable)
- Upper-lower limits setting and sound alarm
- Memory of 500 readings
- Two point calibration for high accuracy
- Display resolution 0.1mm/0.01mm selectable
- Display in mm or inch
- Large LCD display with adjustable backlight
- Low battery indicator
- TT300: Equipped with RS232 interface for connecting with printer and PC with optional software. 5PΦ10 transducer for normal purpose and optional TSTU32 transducer for casting iron
- TT300A: Can be equipped with low frequency transducer for thickness testing of thin work piece, and auto-calibration is available
- TT310: Economical model with easy operation
- TT320: high-temperature model with range up to 300°C
- TT340: equipped with TSTU32 transducer for casting iron

Technical Specification

Model	TT300	TT300A	TT310	TT320	TT340
Measuring range	1.2~225mm (steel) (depends on probe)	0.75-225mm (steel) (depends on prose)	1.2-225.0mm (steel)	1.2-225.0mm (steel) 5.0-80.0mm (steel, high-temp)	1.2-225.0mm (steel)
Tolerance	±1% H +0.1mm (H means the thickness of tested piece)	±0.5%H+0.01mm (H means the thickness of tested piece)	±1% H +0.1mm (H means the thickness of tested piece)		
Measuring range of steel pipes	φ20mm x 3.0mm For 5MHz and 7MHz transducer	φ15mm x 2.0mm (For 7MHz transducer) φ20mm x 3.0mm (For 5MHz transducer)	φ20mm x 3.0mm		
Display resolution	0.1/0.01mm or 0.01/0.001 inch	0.01mm/0.001 inch	0.1mm/0.01 inch		
Data output	RS232		-		
Power supply	AA batteries 1.5V (2Pcs)				
Battery life	100 hours without backlight				
Sound speed	1000m/s~9999m/s				
Measuring units	mm/inch				
Dimensions (mm)	152×74×35				
Weight (g)	370	250	370		
Surface temperature	-10℃~+60℃	-10℃~+300℃	-10℃~+60℃	-10℃~+300℃	-10℃~+60℃

Ultrasonic Thickness Gauge TT300/300A/310/320/340



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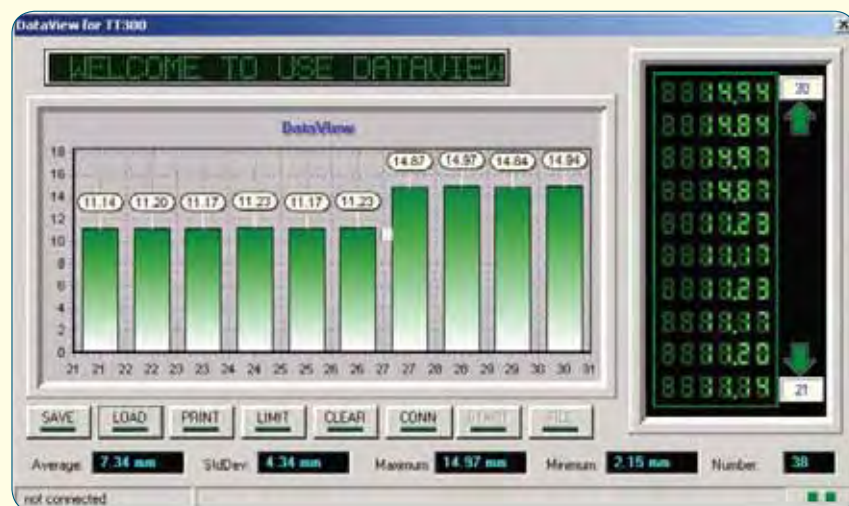
Dataview for TT300



Data management

ID	Time	Velocity	Sensor	Material	Comments
2	2001-10-29 17:49:21	2960	5MHz		
3	2001-10-29 17:50:29	4399	10MHz		
4	2001-10-29 17:58:33	4399	5MHz		tttt
7	2001-10-29 18:07:40	4400	2MHz		
9	2002-05-09 17:06:04	5900	2MHz		

Buttons: Load data, Modify parameters, Delete data, Quit



Set Overbound Prompt

☒ Set Prompt

Upper limit: 3000.00 mm

Lower limit: 0.00 mm

Buttons: OK, Cancel

Comm Port

Please select the port: COM1

Buttons: OK, Cancel

Save Data

2003-02-26 10:24:32 5000

Time Velocity (m/s)

2M Hz Sensor Material

Comments

Buttons: Save, Quit

Standard Delivery

- Main unit 1
- Transducer 5PΦ10 1
- Transducer ZW5P for TT320 1
- Transducer TSTU32 for TT340 1
- Rubber jacket 1
- Couplant 1
- Batteries AA 1.5V 2
- Screwdriver 1
- Instruction manual 1
- TIME certificate 1
- Warranty card 1

Optional Accessory

- Optional transducers (See page H7)
- Printer TA230 (see page Z1)
- Dataview software for TT300



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Ultrasonic Thickness Gauge TT500



Features:

- A scan thickness measuring, easy for users to identify the measuring errors by analyzing the waveform on screen
- Function of echo-echo measurement is available. It is used for measuring the distance between echo to echo, and thus users will get to know the thickness of steel plate even though it is covered by coating, such as inspection of oil tanks
- Min. and Max. mode function is supplied for users to find out the Min. (or Max.) value from a group of measuring results. It is very useful for inspecting the wall thickness of pipes and pressure vessels
- D-value mode function. It comprises normal D-value mode and percentage D-values mode. It will enhance operator's working efficiency greatly. Specially, users working with exact and changeless process requirements will benefit from TT500 immensely
- Large memory up to 100 A-scan images and 10000 thickness values
- Manual gain adjustment/auto gain selectable
- Up and low limits alarm is available

Technical Specification

Measuring range	0.75~508.00mm
Sound speed	1000~9999m/s
Scanning mode	A scan
Gain range	20~70db step: 1db
Rectification	Positive half wave, negative wave, full wave, and RF
Testing mode	Standard mode: testing from primary pulse to the first echo Testing between two echoes
Resolution	Standard: 0.01 low: 0.1
Memory	100 A scan graphs and 10000 thickness values in 100 groups
Communication	RS232 port to PC or printer
Printer	TP UP-NH-S thermal printer
Tolerance (steel)	1. when resolution is 0.01mm and thickness $H < 10\text{mm}$, the tolerance is $\pm 0.05\text{mm}$
	2. when resolution is 0.01mm and thickness $H < 10\text{mm}$, the tolerance is $\pm (0.5\%H \ 0.01\text{mm})$
	3. when resolution is 0.1mm, the tolerance is $\pm (1\%H \ 0.1\text{mm})$
Low limits for steel pipes	1. $\phi 20\text{mm} \times 3.0\text{mm}$ tolerance is less than $\pm 0.1\text{mm}$ (resolution = 0.01mm, 5MHz transducer)
	2. $\phi 20\text{mm} \times 3.0\text{mm}$ tolerance is less than $\pm 0.2\text{mm}$ (resolution = 0.1mm, 5MHz transducer)
Pulse frequency	1KHz
Working temperature	0°C~40°C
Dimensions (mm)	234 × 127 × 38
Weight (kg)	1

Standard Delivery

• Main unit	1
• Transducer 5P ϕ 10	1
• Screw driver	1
• Protection sheath	1
• Battery box	1
• Power adapter	1
• Test block	1
• AA battery	4
• Couplant	1
• Instruction manual	1
• Warranty card	1
• TIME certificate	1

Optional Accessory

- Optional transducers (See page H7)
- Printer TP UP-NH

Precision Ultrasonic Thickness Gauge TT700



ISO 9001



Features:

- Especially suitable for testing the thin workpieces
- I-E testing mode and E-E testing mode
- Sound velocity testing and single point calibration
- Sound alarm and differential mode are available
- mm/inch are selectable
- Data store, view and delete
- Result can be print out and transfer to PC

Technical Specification

Measuring range	0.15~20mm
Display resolution	0.001 mm and 0.01 mm selectable
Sound velocity range	1000m/s~9999m/s
Operating temperature	0~40°C
Weight (g)	220
Power supply	AA batteries 1.5V (2Pcs)
Dimension (mm)	152×74×35

Standard Delivery

- Main unit 1
- Transducer 15Pφ6 1
- Screw driver 1
- Protection sheath for main unit 1
- Connecting protection sheath 1
- Cover protection sheath 1
- AA battery 1.5V 2
- Couplant 1
- Instruction manual 1
- Warranty card 1
- TIME certificate 1

Optional Accessory

- Communication cable
- Standard test block
- 20MHz transducer
- TA230 printer (see page Z1)



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Ultrasonic Thickness Gauge TT900



NEW



Features:

- With function of echo-echo (E-E) measurement and auto gain control (AGC), users will get to know the thickness of substrate, even though it is covered by coating
- Difference mode and velocities setting
- Vibration alarm and sound & light alarm settings
- Velocities calibration and zero calibration
- Measurement units inch, mm and microsecond
- Measurement results holding
- Easy operating keypad by left/right switch
- High frequency scanning technique available
- Superior waterproof and dustproof plastic shell

Technical Specification

Measurement range	0.75~508mm
Velocity range	508~18699m/s
Measurement rate	4/s and 20/s in fast mode
Bandwidth	0.5MHz~20MHz (-3dB)
Resolution	0.01mm (0.001"), 0.1mm (0.01")
Velocity calibration range	0.508mm/ μ s~18.699mm/ μ s (0.0200 in/ μ s -0.7362in/ μ s)
Display	128×64 Graphics LCD monochrome
Battery life	Up to 200 hours (40 hours with backlight on)
Operating temperature	-20°C~+50°C
Measuring temperature	-20°C~+500°C (according to the probes)
Dimensions (mm)	127×76×32
Weight (kg)	0.23

Standard Delivery

- Main unit 1
- 5P ϕ 10/90 ° transducer 1
- Batteries AA 1.5V 2
- Couplant 1
- Time certificate 1
- Warranty card 1
- Instruction manual 1
- Carrying case 1

Optional Accessory

- Optional transducers

Optional Accessories For Ultrasonic Thickness Gauge



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Optional Transducers



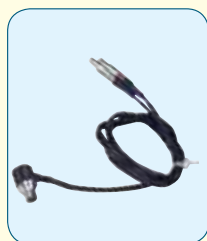
5Pφ10 for TT1 series, TT3 series and TT900



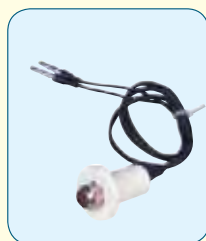
5Pφ10/90° for TT1 series



5Pφ10/90° for TT3 series



7Pφ6 for TT1 series and TT900



ZW5P for TT120, TT300A, TT320 and TT900



SZ2.5P for TT1 series



TSTU32 for TT300 & TT340



5Pφ10 for TT500



5Pφ10/90° for TT500



7Pφ6 for TT500



TSTU32 for TT500 and TT900

Transducer Parameters

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, φ15×2.0mm (steel)	6mm	7MHz	-10°C~+60°C
ZW5P	High-temperature	5.0~80.0mm (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)							
Aluminum	6260	Gold	3240	Nickel	5630	Tin	3230
Brass	4640	Inconel	5720	Platinum	3960	Titanium	6070
Cast iron	4500	Iron	5900	Silver	3600	Tungsten carbon	5650
Copper	4700	Lead	2200	Steel, mild	5900	Tungsten	5400
Cadmium	2800	Manganese	4700	Steel, low carbon	5850	Zinc	4200
Chromium	6200	Magnesium	6310	Steel, stainless	5790	Zirconium	4650
Non-metals (m/sec)							
Acrylic Resin	2730	Ice	3980	Polyamide	2380	Rubber (butyl)	1900
Aluminum oxide	8700	Neoprene	1600	Polyethylene	1900	Rubber (soft)	1450
Ceramic	5631	Nylon	2620	Polyurethane	1900	Rubber (vulc.)	2300
Diamond	17500	Paraffin	2200	Polystyrene	2400	Silicone rubber	948
Epoxy resin	2650	Perspex	2850	Porcelain	5600	Teflon	1350
Glass	5440	Plexi glass	2700	PVC	2400	Water (20°C)	1480



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