SADT ULTRASONIC THICKNESS GAUGE SA40

OPERATION MANUAL

Contents

1. Overview

SA 40 is a miniaturized ultrasonic thickness gauge which can measure thickness and velocity with a memory capacity of 400 data.

2. Keypad

| ON | - Turn on the gauge |

| OFF | - Turn off the gauge |

△
READ   - Increase parameters, read measured data stored in memory

▽
MEM   - Decrease parameters, save measured data in memory

| CAL/MENU | - Menu key. Circularly press to enter into different mode |

| ENTER/mm/in | - Confirm the change of parameters conversion between mm and in |

3. LCD display
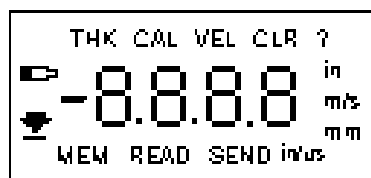
THK- thickness measurement
CAL-calibration function
VEL-velocity setting
CLR-clear the memory
MEM-memory mode
READ-read the data
THK+CAL-velocity measurement

4. Calibration

4.1.   Press menu key $\boxed{\textbf{CAL/MENU}}$ until CAL displays on LCD.
4.2.   Take the probe to measure the block of 3.00mm attached on the panel of gauge.
4.3.   After 3.00mm displays, the calibration is finished and the display will come back into the mode of thickness measurement automatically.
If there is change of batteries or probes, the instrument should be recalibrated on the 3mm block on the instrument before measurement.

5. Change velocity

5.1.   Press menu key $\boxed{\textbf{CAL/MENU}}$ consecutively until VEL and current velocity value displays on LCD.
5.2.   Press key Δ or ∇ to change the value of velocity to the velocity required.
5.3.   Press $\boxed{\textbf{ENTER/mm/in}}$ key to confirm and the display will enter into measurement mode with new velocity.

Note: Press and hold Δ or ∇ to change the number quickly.

6. Measuring velocity

If we do not know the velocity of the measured material but know the thickness of the material, we can measure the velocity.

6.1.   Press key $\boxed{\textbf{CAL/MENU}}$ consecutively until both THK and VEL display on LCD. The last stored thickness value will also be displayed.
6.2.   Press Δ or ∇ to change the number to the thickness value of measured sample.
6.3.   Press $\boxed{\textbf{ENTER/mm/in}}$ to store this value in memory if necessary.
6.4.   Put the probe on the sample making sure there is a correct coupling. The value of the velocity which appears on the screen will correspond to the velocity of the measured sample. The gauge will automatically save this velocity and go into the mode of thickness measurement.
Please note in order to make the measured velocity more accurate, we suggest the thickness of the sample block is more than 10mm.

If the setting thickness value is much different from the actually thickness value, E01 will appear. And the gauge can not get the new velocity.

7. Data memory and read

In measuring mode, after taking a measurement of thickness, press the **MEM** key, the value will be stored in memory. At the same time an address number PXX will display and MEM displays on LCD which means this value has been stored. Repeat the procedure to store the second value, the third value and so on. If PPPP displays on LCD, it means the memory is full.

In measuring mode, press key **READ** to recall the data in memory. The last stored value will be displayed after its address number flashes. At the same time, "READ" displays on LCD which means this value is a recalled value. Press key **READ** continually, all stored values will display one by one from the end to the head.

To clear the memory, press key **CAL/MENU** consecutively until CLR displays on LCD, then press **ENTER/mm/in**, a ? displays to ask you if you want to clear the memory. Press **ENTER/mm/in** again to clear all memory. After "- - - -"displays, the gage will automatically enter into the measurement mode.

8. Optional probes

PT-5	5MHz	Dia. ∅10mm	For standard applications
XT-5	5MHz	Dia. ∅6mm	For tubes with small diameter
GT-5	5MHz	Dia. ∅12mm	For high temperature up to 400°C
CT-2.5	2.5MHz	Dia. ∅12mm	For unfavorable attenuation cast

9. Attached table

Reference velocity of various materials

Material	Sound Velocity (L wave, m/s)	Acoustic impedance (Lwave, 10^6kg/m^{2}s)
Al	6260	16.9
Zn	4170	29.6
Ag	3600	38.0
Au	3240	62.0
Su	3230	24.2
Fe	5900	46.0
Cu	4700	41.8
Brass	4640	39.6
SUS	5790	45.7

Acrylic resin	2730	3.2
Water(20°C)	1480	1.48
Oil	1390	1.28
Glycerin	1920	2.43
Water glass	2350	3.99

10. Notes

Accurate readings cannot be guaranteed unless COUPLANT is applied between (a) probe and test block or (b) probe and the material to be measured, for accurate results, we recommend Vaseline is used as the couplant.

The Probe sleeve can be removed if it is prohibiting any particular measurement in a difficult area.

When measuring on pipes ensure that the "Separator" (i.e. the line on the face of the probe between the Transmitter & the Receiver) is at 90 deg. (Right Angles) to the length of the pipe.

Avoid shock, heavy dust and damp. Remove the batteries from the gauge when not   in use for long time.

11.   Specifications

Display: 4 digital LCD with back light
Measurement frequency: 5MHz
Measurement range: 0.70--300.0mm(steel)
Resolution: 0.01mm @0.70—99.99mm
                                0.1mm @100.0—300.0mm
Adjustment of velocity: Max. 9999m/s
Memory: 400 data can be stored and re-readable
Automatic power off: 3 minutes of non-use
Power: DC 3V x 2 (two AA batteries)
Low voltage indicating with BAT display
Size: 124X67X30mm
Weight: 240g
Environments for use: Temperature:0-40°C
                                Humidity:40°C(20—90)%RH