

TECHNICAL SPECIFICATIONS

Range of measurable thickness values: - with the S3850 5.0A0D8ES transducer	0.6 – 50 mm
Operational frequencies range	2.5 – 5.0 MHz
Main accuracy of X thickness measurement, mm, no more than:	$\pm(0.01X+0.1)$
Velocity range	1 000 – 9 999 m/s
Size and type of the display	TFT, antiglare, color, 3.5"
Number of recordable results	50 000 measurements 4 000 A-Scans
Nominal accumulator voltage	13.2 V
Period of continuous operation of the instrument powered by the accumulator, no less than	9 h
Instrument-PC communication interface	USB
Overall dimensions of the electronic unit, mm	190 x 87 x 40
Weight of the electronic unit, no more than	900 g
Operating temperature range	from – 30 to +50 °C

DELIVERY KIT

- A1270 – electronic unit of the EMA thickness gauge
- S3850 5.0A0D8ES EMA transducer with a built-in cable
- Net adaptor with cable 220V-15V
- USB A- Micro B cable
- CD with documentation and software
- Bag

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**ACOUSTIC
CONTROL
SYSTEMS**

Devices for non-destructive
testing of metals, plastics
and concrete

A1270

ELECTRO-MAGNETIC ACOUSTIC THICKNESS GAUGE



THE WORLD'S FIRST EMA THICKNESS GAUGE WITH AN INNOVATIVE ELECTRO - MAGNETIC BIASING TECHNOLOGY

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A1270 | ELECTRO-MAGNETIC ACOUSTIC THICKNESS GAUGE

A modernized EMA thickness gauge with an innovative electro - magnetic biasing technology implemented in EMA transducers is designed to measure thickness of objects made of steel and aluminum alloys without the use of coupling liquid.

Substantial advantage of the new technology represents absence of a permanent magnet in the EMA transducers thus allowing sidestepping of strong adhesion of the transducer to the surfaces of the objects made of ferromagnetic steel; allowing scanning of the object being inspected, and preventing metal chips from sticking to the transducer's protector, thus extending its service life.

PURPOSE

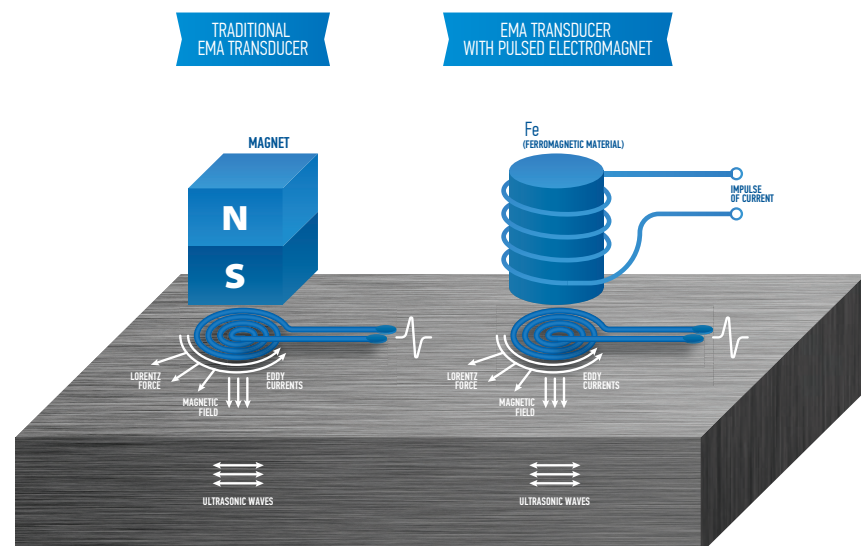
- Thickness measurement of the walls of steel pipes and steel objects, parts and nodes made of metals and alloys without the use of coupling liquid.
- Thickness measurement of the sheet products.
- Thickness measurement of the ship bottom without pretreatment of the surface.
- Evaluation of anisotropy degree of the material.

FEATURES

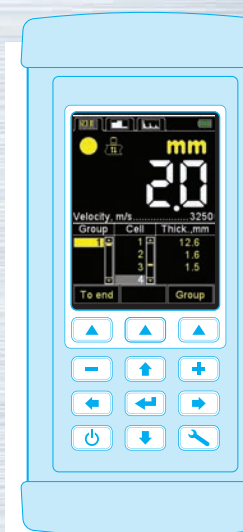
- Range of the measurable thickness values is from 0.6 to 50 mm.
- Quick access to control functions.
- Parameters of the selected transducer can be adjusted using an integrated calibration sample.
- Automatic determination of ultrasonic velocity on the object of known thickness.
- Pre-installed database of transverse velocities of the basic materials suitable for adding more velocity values.
- Non-volatile memory can store 50 000 digital measurement results and 4 000 A-Scans.
- Large informative color TFT display.
- Changeability of image orientation when the instrument is rotated by 90 degrees.
- Instrument backlighting control.
- Built-in lithium rechargeable battery (accumulator).
- Indicator of the accumulator charge level.
- Continuous work time is 9 h.
- Sound, light and vibro- indication.
- Indication discreteness of thickness measurement is 0.01 or 0.1 mm.
- Data transfer to PC via USB.
- Software to receive data from the instrument and save them into the PC.
- Special-purpose case – holder suitable for fastening of the instrument's electronic unit for convenient operation in hard-to-reach places and for working at elevated conditions.

FUNCTIONALITY

- An innovative technical solution frees the design of the EMA transducer from strong permanent magnets hence they are replaced with pulsed electromagnets. It excludes an effect of strong adhesion of the transducer to the ferromagnetic materials, as well as ensures safe operation of the transducer and simplifies scanning procedure, thus simplifying practical use of the thickness gauge during manual UT inspection.
- Two types of transverse wave EMA transducers – with radial and linear polarization, based on the developed pulsed electromagnet technology, are used.
- Operation with the permanent magnet transducers S7392 and S7394 by connecting a special adapter.
- Measurements can be conducted without pretreatment of the surfaces of the inspected objects and without use of coupling liquid.
- Thickness measurement of metal objects through corrosive and paint coatings of up to 1.5 mm in thickness. Instrument's screen displays a thickness value of the metal object without considering the coating if the coating thickness is 1.5 mm and thickness value of the object being inspected is up to 15 mm.
- Scanning the object being inspected.
- Ultrasonic thickness measurement of the objects through air gap, by means of fastening of the EMA transducer in the special-purpose movable carriage.
- Small aperture of the EMA transducer (8 mm) allows to inspect of the small-diameter pipes (from 15 mm).
- Operation in the display mode representing the measurement results in the form of digital values or in the mode with graphic imaging of A-Scan of the signal.
- B-Scan mode to display a profile of the object being inspected on the instrument's screen.

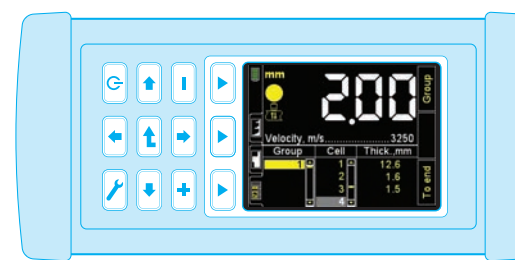


OPERATION MODES



The mode is used for thickness measurement of the object on-the-spot along with display of the previously saved resulted (groups - cells in the groups - results) on the instrument's screen.

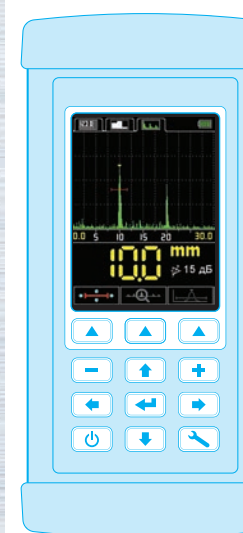
Representation of digital values of the measurement results for the horizontal and vertical positions of the display.



MEMORY MODE

Features:

- Pre-selection of the group into which a result will be saved in any measurement mode. Grouping of the results simplifies further viewing and analysis of the received results.
- Correction of the saved results, by means of repeated measurements followed by recording of new data into the correctable memory cell. Any doubtful result can be overwritten.

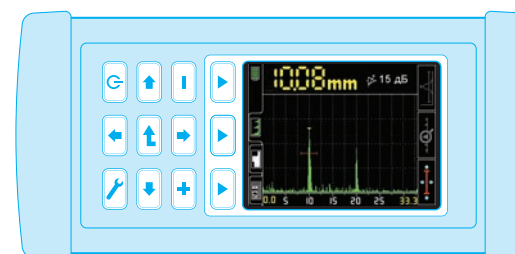


The mode is used to perform measurements with graphic imaging of the signal on the instrument's screen in the form of A-Scan.

Representation of A-Scan of the signal for horizontal and vertical positions of the display.

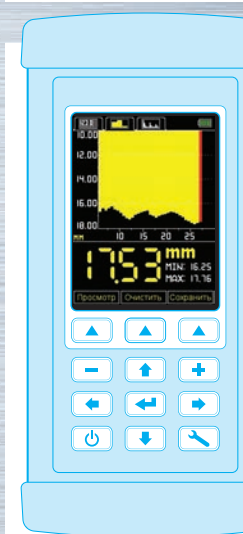
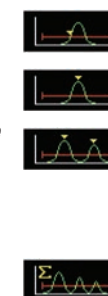
Features:

- The mode allows elimination of measurement uncertainties caused by presence of discontinuities in material of the object being inspected. The signals shall be displayed on the screen in the form of A-Scans; measurement terms shall be set directly in the working process.



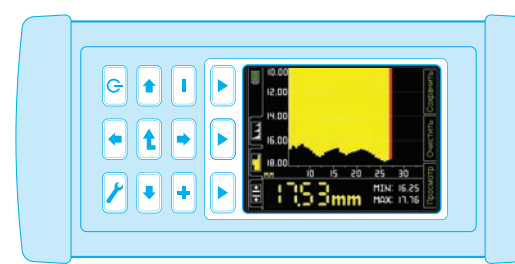
A-SCAN MODE

- Selection of the measurement way:
 - by the first signal excess over the gate level
 - by maximum value of the signal in the gate;
 - between two peak signals in the strobe (it allows to conduct of ultrasonic thickness measurement of the metal through the paint coatings without removing);
 - signals combining in the gate (ACF function).
- Viewing the selected sections of the signal, current parameters and settings.
- Saving the A-Scan image together with the digital measurement result.



The mode is used to search for corrosion failures during scanning of the object being inspected along with representation of the graphic image of the B-Scan.

Representation of the B-Scan for horizontal and vertical positions of the display corresponding to the thickness profile of the object being inspected.



B-SCAN MODE

Features:

- Imaging of the B-Scan graphic image on the instrument's screen when performing measurements at the rate of up to 10 frames per second.
- Setting up a moving velocity of the transducer.
- Setting up a number of measurements for a fixed distance.
- Representation of the current measurement result, as well as a minimal/maximal measurement result.