ACOUSTIC CONTROL SYSTEMS

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

# A1550 IntroVisor

## AN ALL-PURPOSE PORTABLE ULTRASONIC FLAW DETECTOR-TOMOGRAPH WITH DIGITALLY FOCUSED ARRAY AND TOMOGRAPHIC DATA PROCESSING FOR TESTING OF METALS AND PLASTICS


## TO SEE INSIDE METAL... IT'S EASY NOW!

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# A1550 IntroVisor

**IS AN ULTRASONIC FLAW DETECTOR-TOMOGRAPH WITH AN ANTENNA ARRAY DIGITALLY FOCUSED TO ALL POINTS OF VISUALIZED CROSS-SECTION**


**A LIGHT AND EASY-TO-USE DEVICE IS DESTINED FOR RESOLVE MOST TASKS OF ULTRASONIC FLAW DETECTION OF METALS AND PLASTICS**

**PROVIDES QUICK, EASY AND RELIABLE LOCATION OF FLAWS**

**THE INTERNAL STRUCTURE OF THE TESTING OBJECTS IS REPRESENTED IN REAL TIME AS CROSS-SECTION IMAGES TO MAKE RESULTS INTERPRETATION MUCH EASIER AS COMPARED TO A TRADITIONAL FLAW DETECTOR**

## ADVANTAGES OF TOMOGRAPHY

### QUICKNESS AND EFFICIENCY

- Efficient and high-performance location of flaws in welding joints, metal objects, plastics and composite materials with documenting results in details.
- The internal structure of the testing objects is represented in real time as cross-section images with 25 frames per second.
- Possibility to perform ultrasonic flaw detection along the welding joint line without cross scanning, due to big aperture of the digitally focused array and scanning with virtual focus on long distances, which considerably reduces time for preparing the near-welding surface, increasing the testing productivity.
- High frame rate on the screen provides scanning speed along the welding joint up to 50 mm/s.

### TESTING RELIABILITY

- The flaw detector-tomograph works basing on the digitally focused array method (DFA) reconstructing tomograms focused in every point of the cross-section, ensuring the best spatial resolution and maximum sensitivity at the whole visualized area, and also high testing productivity.
- Sensitivity to different types of flaws.
- Images of vertically-oriented flaws.

### EASY DATA INTERPRETATION

- Visualization of an inner structure of the testing object as illustrative and accurate cross-section images (B-Scan) in real time with easy-to-use scales of length and depth, which makes the results much easier to analysis.
- Automatic and manual measuring of signal levels and coordinates and sizes of flaws.
- Ranging the distance between images of flaws on the screen.


### EASY TO SET UP AND TO USE

- Simple and user-friendly MENU of settings and configurations for every testing object.
- Intuitive interface with shortcuts to main settings and parameters to master the device in short time.
- Specialists of any qualification level can operate the device, even without introducing training.
- Quick switching between TOMOGRAPH, SCANNER and FLAW DETECTOR modes. DFA is changed to a classic transducer respectively.
- Replaceable acoustic modules of DFAs.

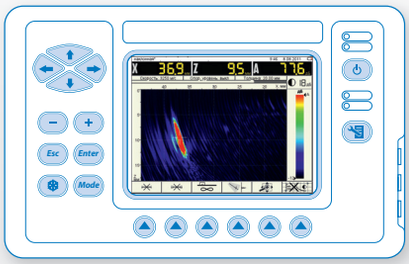

### OMNITUDE AND PORTABILITY

- Operating in tomograph mode (B-Scan) or in traditional flaw detector mode (A-Scan).
- Scanning along welding line (C-Scan) and saving results.
- Small size.
- The device weights only 1,8 kg.
- Easy detachable lithium battery providing 8 hours of work.
- Large color display showing cross-section graphic images, coordinates and signal levels.
- Protective cover and a set of «hands free» belts make this device a handy tool for work in hard-to-reach places.
- Works at the temperature range from – 10° to +55 °C to perform testing indoor, in laboratories or outside in severe conditions.
- Nonvolatile memory for tomograms and echo-signals with the possibility to overview on a PC without special software.
- USB connection for information output to an external PC.
- Special software for receiving data from the device, processing, documenting in the form of tomograms and echo-signals and archiving.

# OPERATION MODES

**A1550 IntroVisor has three basic operation modes and a function of setting a configuration for every particular object to be promptly selected later:**

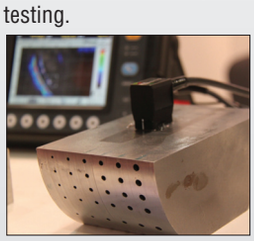
## TOMOGRAPH MODE

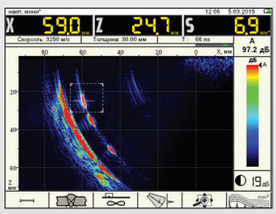


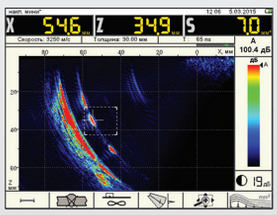
- Provides work with arrays and real-time construction of tomograms. At this mode not only tomogram (B-Scan) is displayed but all service information as well, including gates, cursors, digital indicators etc.
- When a flaw is located, it is evaluated and estimated by the following methods: classical (comparing to the reference reflectors signal amplitude) and by direct point measuring proximately by the flaw image.

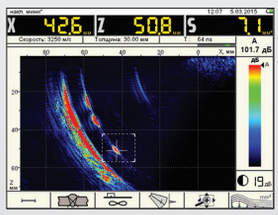
**TWO-DIMENSIONAL DGS - DIAGRAM IN TOMOGRAPH MODE**

This is automatic calculation of the equivalent area of discontinuity, recounted in flat bottom hole.
This function allows operator to correctly estimate the validity of the detected defects, according to the current normative and methods of ultrasonic testing.

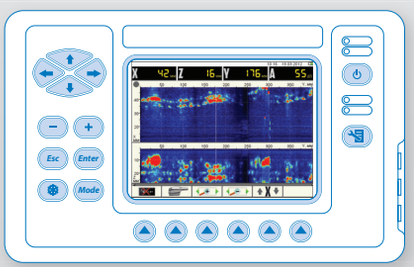






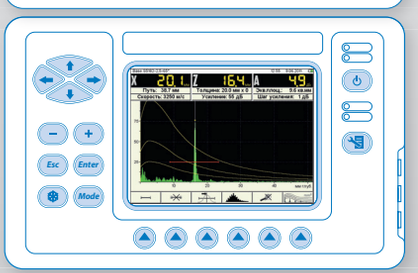


## SCAN MODE



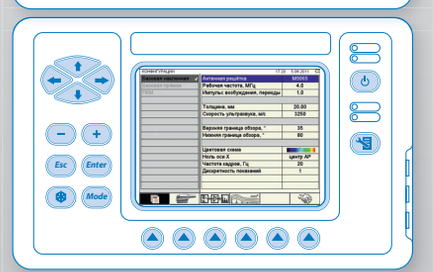
- Provides work with the DFA and the encoder while scanning along a welding joint.
- C- and D-tomograms are displayed in real time.
- When a flaw is located its real size can be evaluated with a cursor moving in three coordinates (distance, length, depth). It makes much easier to get information about the location and conventional length of the detected flaw.
- B-tomograms can be displayed by moving the vertically oriented cursor along the reconstructed image for a graphic view of the inner structure of the testing object.

## FLAW DETECTOR MODE



- At this mode the device operates as a tradition flaw detector with classic normal or angle transducers. Signals are displayed as A-Scan.
- The device has all features of a modern flaw detector (built-in DGS-diagrams, TCG and DAC, multilevel digital monitor, programmable form of the emission pulse, etc).
- This mode provides correct evaluation of detected flaws according to actual regulations and documents.

## SETUP MODE



- This mode is used to set and select parameters and working configuration.
- It is possible to create a number of working configurations for various objects of inspection saving them under unique names. The required configuration is selected from the list right at the object.

# SPECIFICATIONS

| | |
|---|---|
| Size of image in pixels | 256 x 256 |
| Tomogram reconstruction interval, mm | 0.1 – 2.0 |
| Operation frequencies, MHz | 1.0 – 10.0 |
| Velocity range, m/s | 1000 – 10000 |
| Gain range, dB | 0 – 100 |
| Flaw depth measuring range with a normal transducer S3568 2.5, mm | 7 – 7200 |
| Flaw depth measuring range with an angled transducers, mm: | |
| S5182 2.5 | 2 – 1600 |
| S5096 5.0 | 2 – 1300 |
| Flaw depth measuring range with DFA M9060, mm | 7 – 300 |
| Flaw depth measuring range with DFA M9065 and M9170, mm | 2 – 300 |
| Type / resolution display | TFT / 640 x 480 |
| Power | lithium accumulator |
| Operation time with the accumulator, h | not less than 7.5 |
| Rated power voltage, V | 11,1 |
| Size of the electronic unit, mm | 260 x 166 x 80 |
| Weight of the electronic unit, kg | 1.8 |
| Operation temperature, $^0$C | from -10 to +55 |