



OKOndt GROUP



# UDS2-73 RSUI

Ultrasonic double-rail flaw detector for nondestructive testing of :

- standard profile rails
- rails for metro infrastructure

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# The flaw detector UDS2-73 RSUI ensures inspection along the entire length and cross-sections of rails except for rail foot flanges by echo impulse and echo-image techniques

UDS2-73 RSUI testing speed is up to 5 km/h.

Ergonomic, lightweight and robust design of the flaw detector with the possibility of control for all existing track gauge (in the range of 950 - 1676 mm) and adaptation to any regional standards governing gauge tolerances.



The position of the electronic control and visualization unit (monitor) can be adjusted in three axes. The electronic unit has protection class IP65 according to EN60529

Functional adjustments of the measuring wheel position in three directions, ensure stable acoustic contact and optimal ultrasonic rail inspection.

The design of the wheel scanner is isolated (galvanic isolation) from interference that can be caused by the rail electrical potential, and the measurement electronics has a number of physical filters to prevent the impact of interfering frequency on the quality of the received signals.

# Flaw detector's key features:

- Scanning of two rails in one pass in one direction
- Control according to AREMA, EN 16729-1
- The step of sounding the rail at a testing speed of up to 5 km/h is no more than 2,5mm
- Representation of test results in the form of A-scan, multi-A-scan, B-scan for all channels
- Real-time display of test results in the form of B-scan
- Data recording (operator's name, track name/number, control section (interstation), initial track coordinate, date, time, final track coordinate)
- Screenshot saving (PrintScreen)
- Saving of test results in the form of data array (B-scan) to the internal memory
- Use of USB flash drive for transmitting the test results to PC
- Saving track coordinate (Encoder) and global coordinate (GPS or GNSS)
- Availability of two measuring gates with possibility to work in echo and echo-image techniques
- Post-viewing of test result on the flaw detector with the possibility to measure sizes of defects
- Possibility to put the track markers (e.g. "Bridge", "Crossing", "Bolt hole", etc.).
- Signaling about the presence of defects: sound, light, visual indication
- The continuous operation time of the flaw detector from a fully charged battery is at least 8-12 hours.
- Availability of 10-inch railway high resolution screen for quality test results display in the form of B-scan with color amplitude gradation
- During operation the flaw detector is resistant to the impact of the following climate factors: temperature range from -30° to +55°C and humidity 95%.

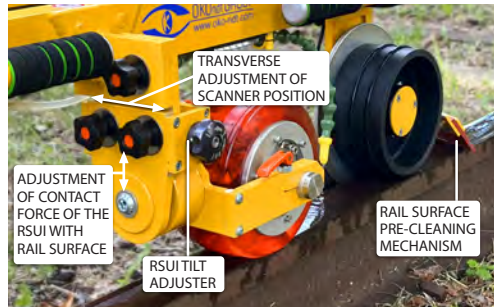
## RSUI (immersion probe system)

The probe unit is immersion wheel with diameter of 160 mm

Probe type and frequency: 0°/4MHz, 3 x ± 70°/2 MHz, ↑ ↓ 50°/2 MHz, ± 45(37°)/2MHz.

Control channel quantity - 11 probes/ rails (total 22 )

Ensures a scanning step of 2.5 mm at a speed of 4-5 km/h.



Positioning of each wheel scanner is accomplished by mechanical adjustments.

- Adjustment of the RSUI pressure with the rail surface allows the operator to quickly adjust the optimum pressure to achieve quality acoustic contact.
- Adjustment of the transverse position of the RSUI on the rail head surface allows the operator to make quick adjustments to the transverse position of the measuring wheel. This adjustment is required when changing the track type and rail head wear.
- Adjustment of the RSUI angle to the inside or outside of the track allows the operator to quickly make adjustments to the wheel angle which ensures quality control during the inspection of curved track sections and heavily worn rails.

# Design features of UDS2-73 RSUI

The flaw detector frame and adjacent elements are made of high-quality aluminum profile with a coating resistant to atmospheric precipitation, ultraviolet radiation and mechanical loads. All elements of the structure are made as lightweight as possible to ensure comfortable use of the flaw detector.



The design includes the system of constant dynamic track gauge repetition whereby the measuring wheel (RSUI) is always in the optimal position relative to the rail head during the inspection.



For metro track inspection and inspection of railway tracks in conditions of insufficient light, the flaw detector can be equipped with a lighting system: the front and rear lights are installed on the frame to illuminate the front part of the track and operator's walking zone, LED lamps to illuminate inspection area, measuring devices and wheels (RSUI), as well as bar lighting.

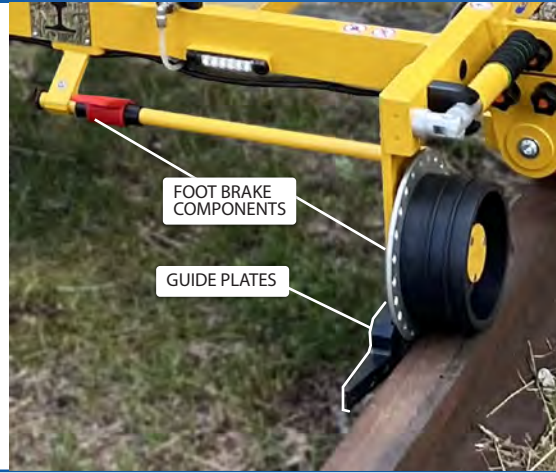


Illumination of the scanners area simplifies ultrasonic inspection process, and the main directional lighting placed on the retractable bar lighting, significantly increases the level of safety for personnel during ultrasonic inspection and provides long-range illumination of the direction of movement.



The flaw detector is equipped with special devices that ensure the reliable trajectory of the flaw detector`s movement on switches and crosspieces regardless of the direction of movement. This function allows to perform unstoppable testing of all railway track elements.

For flaw detector`s braking and parking on the rail track, as well as for its transportation a simple and functional foot brake ensures stopping and securing.



## ADDITIONAL OPTIONS

With the help of GPS or GNSS modules, geolocation coordinates of the defects can be additionally recorded, which facilitates the identification of defective railroad track section during post-processing.



## RSUI Setup Post.

Used for adjustment (calibration) and inspection of wheel-type scanners (RSUI). Setup Post consists of a frame, a rail fragment with artificial defects in accordance with AREMA, EN16729-1 or others, and RSUI fixing and moving device.

# REPORTS

The user has access to 3 types of quick (instrument) reports generated from the instrument menu, as well as 4 analytical reports (post-processing), which can be generated on any computer using special pre-installed software "RailInspector". In any of these reports, the descriptive part of the registered defect parameters contains the following basic information:

- track and global coordinate of the defect (saved automatically);
- defect number according to the catalog (entered manually by the operator);
- the length of the defect (saved automatically during B-scan measurement or entered manually by the operator during visual inspection);
- features of the railway transport (filled in manually by the operator);
- The type of rail according to the marking (for example: S60, S49 or others; entered manually by the operator);
- Type of rails according to manufacturing technology (U – hardened; S – raw; C – cold drawn; manually entered by the operator or selected from the list);
- comments (filled in manually by the operator);

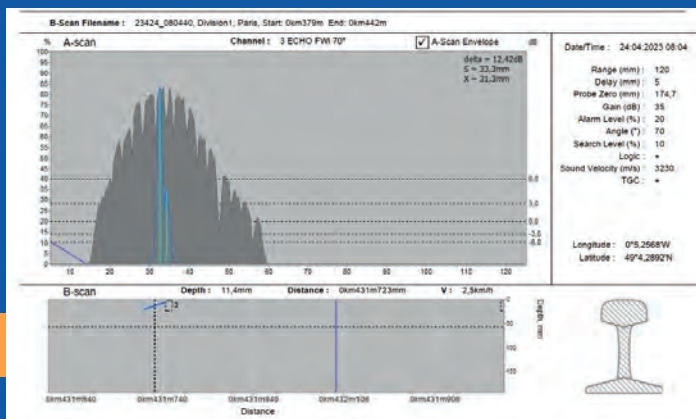
## EXAMPLES OF SOME "INSTRUMENT" REPORTS

## EXAMPLES OF SOME POST-PROCESSING REPORTS USING THE "RAILINSPECTOR" PROGRAM



Date/Time: 08.28.2023 07:02  
 SRT serial numbers: Sr.No. - 2308337  
 Operator: User\_#0  
 Division: Division #0  
 Block Section: Block Section #0  
 Line: Up  
 Current Position: 0Km 0m  
 Start Position: 0Km 0m  
 Rail: LH  
 Rolling mark: 5236 Location defect:

Probe type:  
 GPS: 50° 28.6'  
 Flaw Code: 235 Webs, cracks at hole  
 Peak details:  
 Classification of defect: 235 Rail/Weld 2  
 Rail/Weld No: 25  
 Previous Classification: 135





# UDS2-77

Ultrasonic single rail flaw detector  
Complies with: EN 16729

You can choose the search system type:  
Roller search unit or Slide probe unit



# ETS2-73

Eddy current double rail  
flaw detector  
Complies with: EN 16729-2



# OKOSCAN 73HS

High-Speed Ultrasonic Testing  
System For Track Rails

Compliant with:  
AREMA  
EN 16729-1  
EN 13977



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