

# 2013 PRODUCT CATALOGUE



**NON DESTRUCTIVE TESTING DEVICES  
DIAGNOSTIC SYSTEMS**

**DEVELOPMENT AND PRODUCTION**



## MT-2007

## MAGNETIC COATING THICKNESS GAUGE

Magnetic coating thickness gauge MT-2007 is intended to measure thickness of painting, galvanic, fireproof and any other nonmagnetic current conducting and current nonconducting coatings on the ferromagnetic (steel, pig iron, etc.) bases.

### Details:

- Measures coating thickness on magnetic bases in a wide range from 2 to 30 000  $\mu\text{m}$
- Measures rust thickness on steel including inner tube walls (if special probes are applied)
- Measures thickness of electrocoating (zinc, chrome, cadmium, silver and other) on magnetic bases (steel, etc.)
- Both local (in a specific area) and continuous measuring – scanning mode when the operator is enabled to evaluate the distribution of coating over the metal in each scanned point
- Able to calculate arithmetic mean value and mean square deviation when the operator is required just to measure at least in three points to determine the uniformity of coating
- Displays the minimum and the maximum measured values at the indicator
- Up to 7 types of probes for various measuring ranges can be connected to a single electronic unit aimed to solve various tasks such as measuring in hard-to-reach places, measuring coating thickness of the parts with a small curve radius, etc.
- Non-volatile memory
- PC communication
- Automatic switching off when the work is paused
- Spring-loaded contact of probes and V-cut provides a reliable contact of the probe with the controlled coating surface and high repeatability of measurements for the curved units

### Application:

- Oil and gas industry
- Chemical and food industry
- Shipbuilding and shiprepairing
- Thermal and nuclear power industry
- Pipe mills, machine building and transport enterprises
- Public utilities

### Standard configuration:

- MT-2007 – thickness gauge electronic unit with batteries (AA – 4 pieces)
- Magnetic induction probe TM2-01
- Magnetic induction probe TM20-01
- Carrying case MT-2
- Precision shim
- Base sample
- Calibration certificate
- Passport



### Technical Data:

Parameters	Values		
	MT-M	TM2-01	TM20-01
Probe	MT-M	TM2-01	TM20-01
Measuring range, $\mu\text{m}$	2-500	5-2000	50-20000 *
Gauging error up to, $\mu\text{m}$	3%+1	3%+1	3%+10
Coating minimum thickness, mm	0.5	0.5	0.8
Minimum curve radius of convex / concave face, mm	25/200		
Diameter of the minimum controlled zone, mm	10	20	50
Memory	8 pages with 124 values in each		
Indicator light	available		
Electronic unit dimensions, mm	45 x 100 x 180		
Probe dimensions, mm	16 x 60	16 x 60	19 x 85
Operating temperatures range, $^{\circ}\text{C}$	-10...+40		
Weight of electronic unit, kg	0.3		
Weight of standard configuration, kg	0.75		

\* if requested by the customer the probe TM20-01 can be gauged in the range 1000 - 30000  $\mu\text{m}$

## NONCONTACT EDDY CURRENT THICKNESS GAUGE

# Sedge-42



Noncontact eddy current thickness gauge Sedge-42 is intended to measure thickness of non-ferrous metals products in an extremely narrow thickness range: from 1 to 2000  $\mu\text{m}$ .

### Details:

- Friendly intuitive interface with hot keys
- Probes can be replaced without adjustment to the electronic unit
- Semiautomatic gauging (electric conductivity determination) using the known sample thickness enables the operator to setup the meter quickly on site
- Official firmware with common types of metals
- Measuring object thickness under the layer (up to 1500  $\mu\text{m}$ ) for any dielectric coating
- Various types of eddy current probes can be used including solving non-typical tasks
- Noncontact measuring – no contact grease is required for measuring
- Eddy current probe is nearly ageless on the contrary to the probes applied in ultrasonic testing
- The gauge provides the sustained repeatability of results for 1  $\mu\text{m}$  measurement resolution
- Build-in non-volatile memory
- Capable to generate and store up to 32 presets for various materials
- Light impact-proof aluminum enclosure with rubber nonslipping laps on the sides
- Power supply - 6 batteries AA, both batteries and accumulator units charged immediately from the gauge using a charging unit
- Large display 133 x 64 pixels with a backlight
- PC USB interface
- The thickness of metal coating on the metal can be measured as well but both metals should be non-ferrous and their electrical conductivity should greatly vary (for example: copper coating over titanium)
- The reason of malfunction can be determined from the special code – the operator presses a key combination to reveal the faulty element of the thickness gauge

### Technical Data:

Parameters	Values
Thickness measuring range, $\mu\text{m}$	1-2000
Gauging error up to, $\mu\text{m}$	3%
Minimum curve radius of convex / concave face, mm	15/50
Thickness measurement resolution, $\mu\text{m}$	1
Diameter of the minimum controlled zone, mm	15
Electrical conductivity adjustment range, MS/m	1-60
Type of display	LCD 133x64 pixels
Time of continuous work at least, h	25
Power supply	6 batteries or accumulator units of AA type/ mains supply 220 V
Probe dimensions, mm	D15x80
Operating temperatures range, $^{\circ}\text{C}$	-10...+40
Electronic unit dimensions, mm	160x98x33
Weight of electronic unit, kg	0.4

### Application:

- Aviation and space industry
- Shipbuilding and shiprepairing
- Machine building
- Public utilities
- Food industry
- Chemical industry

### Standard configuration:

- Sedge-42 – electronic unit of eddy current thickness gauge with batteries (AA type 6 pieces)
- Sedge carrying bag
- Eddy current probe Sedge-1P
- CD with documentation and software
- PC USB cable
- Calibration certificate
- Precision shims set (optional)



# PRODUCT CATALOGUE

## AD-60K

## ACOUSTIC FLAW DETECTOR

New acoustic flaw detector AD-60K is intended for acoustic testing of the products of composite and other materials with big attenuation using impedance technique and free oscillation technique to reveal layering, starved spots, internal defects in the products made of laminated plastics, composite and honeycomb core materials. The detector is developed primarily for defense and aviation enterprises. In particular it is developed to test multi-layered products by an impact technique such as glued layers of metal/rubber/rubber/rubber with the ability to reveal starved metal spots in any layer.

### Details:

- Adjustment of amplitude-frequency response – programmable measurement of sensitivity in the spectrum range for 10 sections
- Detector memory allows to keep A signal, B signal, adjustment parameters and measurement results
- Store and call flaw detector settings – 100 settings
- Store and view results on the flaw detector screen – 1000 testing results
- Impedance and impact transformers are connected without adjustment to the electronic unit
- All transformers are equipped with wear proof corundum tips multiplying the service life of the transformer and making it unable to damage (scratch) the tested surface
- Individual gain adjustment in time and frequency fields
- Programmable change of sensitivity in the spectrum field
- Hamming window function
- Simultaneous display of real signal from probe and its spectrum with individual gain adjustment in time and frequency fields.
- Adjustment of strobe position in the time field and four independent testing zones in the frequency fields
- PC Ethernet interface

### Application:

- Aviation and space industry
- Defense industry
- Machine building
- Shipbuilding and shiprepairing
- Public utilities

### Standard configuration:

- Electronic unit of AD-60K flaw detector
- Build-in Li-Ion battery
- Power unit /charger
- Combined impedance probe (SP)
- Separately combined impedance probe (SP)
- Impact probe MIC-1 (option)
- Twisted pair cable - 2 pieces
- Ethernet hub (switch)
- Protective cover with belt and neck attachment
- PC software
- Documentation: Operation manual, calibration methodics, initial calibration certificate
- Carrying case



### Technical Data:

Parameters	Values
Excitation pulse	Radio impulse with amplitude 25/50V and programmable form
Gain adjustment range	100 dB, in increments of 0.5, 1, 2 and 6 dB in the time field + 30 dB in the frequency field
Signal display	Radio signal in the time field, spectrum
Testing zones	Four independent defect autoalarm zones in the frequency field adjustable according to position of strobes in the time field
Defect autoalarm	light and sound, individual logic of defect detection in the zone
Display	light and sound, individual logic of defect detection in the zone
A signal	480 x 300 pixels in standard mode
Interface	Ethernet
Memory	500 settings with A signal 1000 testing protocols (signal, curve, measuring results, device operation parameters, date, time and title of protocol)
Probe connection port	LEMO FGG.1B
Battery	Li-ion 8 A/h
Operation time	6-8 hours with battery
External power supply	Power unit from mains 220 V, 50 Hz AC
Supply voltage	18V/3,5A DC
Operating temperature range	from -30 C to +55 C
Dimensions (HxWxL)	190 mm x 285 mm x 50 mm
Weight	3.5 kg with batteries

## MAGNETIC COATING THICKNESS GAUGE

# MT-1008



Magnetic coating thickness gauge MT-1008 is intended to measure thickness of painting, galvanic, fireproof and any other nonmagnetic current conducting and current nonconducting coatings on the ferromagnetic (steel, pig iron, etc.) bases. Portable economic device for express testing.

### Details:

- Measures coating thickness on magnetic bases in the range from 5 to 2 000  $\mu\text{m}$
- Local (in specific places) and continuous measurements (scanning mode)
- Automatic switching off when the work is paused
- Spring-loaded contact of probes and V-cut provides a reliable contact of the probe with the controlled coating surface and high repeatability of measurements for the curved units

### Application:

- Oil and gas industry
- Chemical and food industry
- Shipbuilding and shiprepairing
- Thermal and nuclear power industry
- Pipe mills, machine building and transport enterprises
- Public utilities

### Standard configuration:

- MT-1008 thickness gauge electronic unit with batteries (AA – 4 pieces)
- Magnetic induction probe TM2-01
- Carrying case MT-1
- Precision shim
- Base sample
- Calibration certificate
- Passport

### Technical Data:

Parameters	Values
Main types of probes	TM2-01
Measuring range, $\mu\text{m}$	5-2 000
Gauging error up to, $\mu\text{m}$	3%+1
Coating minimum thickness, mm	0.5
Minimum curve radius of convex / concave face, mm	25/200
Diameter of the minimum testing zone, mm	20
Electronic unit dimensions, mm	45x100x180
Probe dimensions, mm	16x60
Operating temperatures range, °C	-10...+40
Weight of electronic unit, kg	0.3
Weight of standard configuration, kg	0.6

## MF-24FM

## MAGNETOMETER

Magnetometer MF-24FM is intended to measure the residual magnetic field of ferrous metal products and is essential to test the quality of products degaussing in course of electronic and electric arc welding works and of the parts after magnetic nondestructive testing. Besides it can be applied in magnetic memory testing to detect spontaneous magnetization spots.

### Details:

- Application of flux-gate transmitter providing the extended temperature range compared to Hall sensor
- High localization of measurements due to application of gradient meter probe
- High range of measured permanent fields
- Automatic switching off when the work is paused

### Application:

- Aviation
- Railway and aviation transport
- Oil and gas industry
- Chemical industry
- Shipbuilding and shiprepairing
- Thermal and nuclear power industry
- Pipe mills, machine building enterprises

### Standard configuration:

- MF-24FM magnetometer electronic unit with batteries (AA – 2 pieces)
- Ferroprobe Fp24
- Carrying case MT-1
- Gauging device Mf400
- Power unit from mains MF-24FM
- Calibration certificate
- Passport



### Technical Data:

Parameters	Values
Measuring range, $\mu\text{T}$	+2000
Measuring inaccuracy, %	5
Probe type	gradient meter probe
Power supply	2 AA batteries
Probe dimensions, mm	100 x 12
Electronic unit dimensions, mm	36 x 83 x 160
Operating temperatures range, $^{\circ}\text{C}$	0...+40
Weight of electronic unit, kg	0.25

## EDDY CURRENT COERCIMETER

# VS-2010



Eddy current coercimeter VS-2010 is intended for incoming inspection in implementation of continuous grading of ferrous rolled metal products: pipes, wire rods, strands and for grading according to thermal treating conditions of homogeneous parts. Presorting according to steel grade, hardness and ultimate stress limit.

The designed and supplied configuration of eddy current coercimeter VS-2010 is in accordance of the terms of reference where the specific objectives are described.

### Details:

- Gain-phase offset from hampering factors. Taught device, the gain-phase characteristics are set on the enterprise gauges, the coercimeter remembers it and then applies for grading.
- Build-in large color LCD display is comfortable for the operator
- Automatic balancing of differential transducer (zero setting)
- Stores up to 150 operation modes
- Automatic signal compensation
- Automatic selection of the maximum excitation current of the transducer
- Automatic setting of grading limits
- Testing statistics recording
- Blocking the control of continuous objects ends
- Graphic indication (signal, complex plane, bar graph of amplitudes and phases of 1,3 and 5 overtones)
- Sound indication (nondefective-defective) relieves the operator from permanent display watching and tracking testing results
- Testing results documenting
- Recording and storing of setting modes
- 19" enclosure with IP30

### Technical Data:

Parameters	Values
Diameter of tested objects, mm	1-300
Frequency range, kHz	0.05-1000
Operating temperatures range, °C	+5...+40
Electronic unit dimensions, mm	220x450x500

### Application:

- Metallurgical industry
- Machine building
- Roll mills

## GALS VD-103

## EDDY CURRENT FLAW DETECTOR – CRACK DEPTH METER

Eddy current flaw detector - crack depth meter GALS VD-103 is intended to detect and measure cracks and corrosion damages in the metals with specific electric conductivity from 0.5 to 60 MS/m, including ferromagnetic ones.

### Details:

- Friendly interface "plug and work"
- Small-sized pen-like probes with a wear proof tip
- Probes can be replaced without adjustment to the electronic unit
- Automatic tune-up according to the material of the object
- Manual adjustment of sensitivity
- Light and multitone alarm on detected defect
- Detection of defects under a layer (up to 500  $\mu\text{m}$ ) of any dielectric coating and/or rust
- Various types of eddy current probes can be used including solving non-typical tasks
- Wide range offset from hampering factors
- Complex plane<sup>®</sup> mode can be applied when connecting to PC through USB interface, setting parameters of the device (clearance, gain, high and low frequencies filters, phase angles) which can be stored in a non-volatile memory of the device
- Coating and/or rust thickness can be estimated in a "complex plane" mode

### Application:

- Aviation and space industry
- Shipbuilding and shiprepairing
- Machine building
- Public utilities

### Standard configuration:

- GALS VD-103 – electronic unit of eddy current detector – crack depth meter with batteries (AA type – 2 pieces)
- Ear phone for sound alarm in noisy premises
- GALS VD-103 carrying bag
- Eddy current probe GALS-1
- Connecting cable "probe – GALS VD-103"
- CD with documentation and software
- PC connecting cable
- EO-GALS – Express sample to test the performance of the device
- Calibration certificate
- Passport



### Technical Data:

Parameters	Values
Minimum sizes of detected defects (cracks), $\mu\text{m}$	Width 10 Depth 100 Length 1500-2000
Roughness of tested surface up to	Rz80
Test frequency, kHz	2000
Continuous work time with single set of batteries, at least hours	20
Power supply	2 accumulators or AA batteries or USB power supply
Weight up to, kg	0.3
Electronic unit dimensions, mm	35 x 60 x 140
Probe dimensions, mm	$\varnothing$ 6 x 115
Operating temperatures range, $^{\circ}\text{C}$	-10...+55



## POSITIVE DISPLACEMENT FERRITE CONTENT METER

## MF-510



Positive displacement ferrite content meter MF-510 is intended to measure ferrite content in founded ladle samples when founding corrosion-resistant stainless chromium-nickel austenitic steels and in metal samples of welding and alloying materials, welded joints, deposited corrosion coatings and in the base metal of blanks, parts and finished products of the indicated steel (destructive testing).

Application of ferrite content meter MF-510 enables to meet the requirements of Nuclear Power Rules and Regulations (PNAE) G-7-010-89 "Equipment and pipelines for nuclear power units. Welded joints and depositions. Testing rules." During ferrite content testing according to guiding document RMD 2730.300.08-2003 and guiding document of the operating company RD EO 1.1.2.19.0199-2010 approved by the Federal Service of Environmental, Technological and Nuclear Supervision of the Russian Federation and measurement procedure MVI.TsM.27.10.05.008-2003 approved by the Federal agency for technical regulation and metrology of the Russian Federation.

### Measurement procedure:

- First of all the device is gauged and the values are tested for correctness using ferrite content samples (diameter 5 mm, length 60 mm; diameter 7 mm, length 60 mm) supplied as the standard configuration of the device
- Then a cylindrical sample of the controlled metal is put to the holder to measure the ferrite content in the tested samples
- The values obtained on the tested samples allow to judge on the ferrite content in all casted sampled material
- The minimum number of samples from a single cast is according to guiding documents of the enterprise. If there are no such ones RMD 2730.300.08-2003 can be used as a guide.

### Details:

- Ferrite content meter can be used both in laboratories and shops of nuclear power and other enterprises
- The device can be gauged both in percents and in ferrite numbers (as requested)
- The standard samples used for gauging and calibration of the ferrite content meters are certified using precision method of magnetic saturation developed by TsNIITMASH according to GOST 26364-90

### Application:

- Oil and gas industry
- Chemical and food industry
- Thermal and nuclear power industry
- Pipe mills, machine building and transport enterprises
- Metallurgical industry

### Technical Data:

Parameters	Values
Ferrite content meter type	positive displacement
Measuring probe	flow magnetic induction
Ferrite content measuring range, %	0.5...20
Basic measurement inaccuracy, %	up to 5
Power supply, Hz, V	50, 220
Weight, kg	3.5
Dimensions, mm	230x160x260
Operating temperatures range, °C	5...40

### Standard configuration:

- MF-510 – electronic unit of positive displacement ferrite contact meter with a build-in probe
- Ferrite content sample (d15mm)
- Ferrite content sample (d7mm)
- Immersion-type holder (d5 mm)
- Immersion-type holder (d7 mm)
- Power cable
- Carrying case ID-91
- Calibration certificate
- Passport

## MF-51NC

## LOCAL FERRITE CONTENT METER

Local ferrite content meter MF-51NTs is intended to measure ferrite content in the welded joints, deposited corrosion coatings, blanks, parts and finished products of corrosion-resistant stainless chromium-nickel austenitic and austenitic-ferrite steels.

### Objective of ferrite content testing:

Ferrite content testing is important in various processes and essential in course of welding and depositing stainless steels especially in nuclear power industry and chemical machine building.

It is well-known that ferrite changes process and operational properties of steel and steel products. If there is no ferrite in the materials or its content is low the welded joint metal is apt to hot cracking.

In case of higher ferrite content with longer exposure the material is apt to reduced ductility and impact strength after exposure at higher temperatures (600-800°C). In most cases ferrite content should fall in the range 2 - 8%.

### Details:

- It can be used both in laboratories and shops of nuclear power and chemical machine building enterprises, shipbuilding enterprises and other to determine the quality of steel welding
- Magnetic induction probe
- Non-volatile memory
- Displays the minimum and the maximum measured values at the indicator
- Remote probe ensuring high locality of measurements
- Methodical and metrological service in course of device operation
- Extended measurement range up to 75% of ferrite content according to TsNIITMASH procedure
- The device can be gauged in ferrite numbers according to GOST R 53686-2009 and international standard ISO 8249-2000
- Delivering developed by TsNIITMASH quality control samples of ferrite content for routine monitoring of measuring quality in ferrite content range from 0 to 75 %

### Application:

- Nuclear and thermal power industry
- Oil and gas industry
- Chemical and food industry
- Pipe mills, machine building and transport enterprises
- Metallurgical industry

### Standard configuration:

- MF-51NTs – electronic unit of local ferrite content meter with batteries (AA type – 4 pieces)
- Magnetic induction probe MF2-01 with a build-in cable
- Carrying case MT-1
- Ferrite content express sample
- Calibration certificate
- Passport



### Technical Data:

Parameters	Values
Ferrite content meter type	local
Ferrite content measuring range, %	0.5...75
Basic measurement inaccuracy, % up to	5
Power supply	4 AA batteries
Weight up to, kg	0,3
Dimensions, mm	45x100x180
Probe dimensions, mm	16x60
Operating temperatures range, °C	-10...40

## PETROLEUM PRODUCTS MOISTURE METER

# IVN-3003

Petroleum products moisture meter IVN-3003 is intended for express testing of moisture of inverted emulsion samples made of petroleum product and water. It is a new upgraded version of popular moisture meter IVN-2003.

### Details:

- Quick substances analyzing
- Cable with great disruption strength
- Cable length up to 6 m to submerge the probe into deep reservoirs (option)
- Large graphic indicator (133x64 pixels) with backlight
- Comfortable graphical interface
- Memory for 32 substances
- Gauging requires two samples of petroleum product of equal type but of different moisture content
- Build-in temperature transmitter of the tested petroleum product
- Light impact proof aluminum case
- Petroleum residue quality testing probe of "nozh" (knife) type
- Probe can be replaced without adjustment to the electronic unit

### Application:

- Fuel power industry
- Refueling stations to monitor quality of petroleum residue, petroleum, diesel oil, engine oils and other petroleum products
- Public utilities
- Oil and gas industry
- Aviation and airfields

### Standard configuration:

- IVN-3003 – electronic unit of petroleum products moisture meter with batteries (AA – 4 pieces)
- Capacitive probe IVN-B1 (for liquid petroleum products testing) and capacitive probe
- Nozh-1 (for petroleum residue testing)
- PC connecting cable
- CD with documentation and software
- IVN-1 carrying bag
- Passport



### Technical Data:

Parameters	Values
Device operation conditions:	
Ambient temperature, °C	from +5 to +45
Relative humidity, %	84 at +25
Atmospheric pressure, kPa	from 84 to 106.7
Measured moisture range, %	0.5...20.00
Range of relative inductive capacity of "dry" product	1.8...2.7
Inaccuracy (abs), %	<0.6
Processing speed (measurements/sec):	0.5
Power supply	4 AA batteries
Operating mode setting rime when switched on, sec	up to 30
Continuous work duration, at least hours	60
Dimensions, mm	
of electronic unit	160x98x33
of probes	Ø12x160
connection cable length	500
Weight of device, kg	0.6



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