

EDDY CURRENT TESTING

EDDY SENSE

Portable eddy current flaw detector for surface and stress-corrosion crack detection



A compact, field-ready eddy current flaw detector for detecting and evaluating surface cracks and stress-corrosion cracking on ferromagnetic and non-ferromagnetic materials with electrical conductivity from 1 to 50 MS/m, including detection under non-metallic coatings.

Frequency range 1 – 3.5 MHz

Minimum crack opening 2 μm

Detection under coatings

20 h battery life, 0.25 kg

EDDY SENSE

Rev. 01 / 2026 · 1/8

NOVATEST S.r.l.

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PRODUCT OVERVIEW

EDDY SENSE



Eddy Current Testing

EDDY SENSE is a portable eddy current flaw detector housed in an impact-resistant casing with a protective silicone bumper for harsh operating conditions. It detects and evaluates the depth of surface cracks and identifies stress-corrosion cracks as small as 2 μm opening, even under non-metallic coatings or corrosion products. Working in a 1 MHz to 3.5 MHz frequency range with a 128 $\times$ 64 graphic display and both visual and audible alarms, the instrument is designed for pipelines, gas compressor unit components (blades, shafts), pressure vessels and other parts made from various steel grades, including heat-resistant and high-strength steels. Automatic zero setting, adjustable sensitivity and defect alarm thresholds keep the inspection procedure simple in laboratory, workshop and field conditions.

Designed for

- Pipelines and gas pipeline tube bodies
- Gas compressor unit components: blades, shafts
- Pressure vessels and welded assemblies
- Heat-resistant and high-strength steel parts

01

Auto setup and easy to use

Material settings are adjusted with a single button press; audio and light alarm thresholds are set in seconds, greatly simplifying the inspection process.

02

Visual and audible alarms

Graphical and acoustic indication on a 128 $\times$ 64 display: when the threshold is exceeded, the automatic defect alarm sounds immediately.

03

Web firmware update

Firmware is updated through the web interface, which is also used for transferring inspection data from the device.

KEY BENEFITS

EDDY SENSE

01

Stress-corrosion detection

Identifies and evaluates the depth of stress-corrosion cracks with an opening as small as 2 µm.

02

Works under coatings

Detects flaws in the material even beneath non-metallic coatings or corrosion layers.

03

All conductive metals

Ferromagnetic and non-ferromagnetic materials with conductivity from 1 to 50 MS/m.

04

Curved and complex shapes

Straight and L-shaped probes allow measurements on curved surfaces and complex geometries.

05

True field instrument

IP54 plastic body with shockproof silicone case, 122 × 76 × 37 mm and only 0.25 kg with batteries.

06

Long autonomy

Two AA rechargeable batteries deliver up to 20 hours of operation, with two battery sets supplied.



RECOMMENDED USE / METHOD SELECTION

Eddy Current Testing

The choice of the electromagnetic method depends on the material, the expected defect type and the required inspection speed. The table below summarises the performance envelope of the Novatest eddy current portfolio, including the DEPTH MASTER crack depth meter that complements EDDY SENSE.

METHOD	WORKING PRINCIPLE	PENETRATION	SPEED	TYPICAL USE
Eddy current (EDDY SENSE)	Induced current perturbation, 1 – 3.5 MHz	from 0.3 mm crack depth	up to 50 mm/s	Surface and stress-corrosion cracks
Eddy current under coating	Signal evaluation through non-conductive layer	Surface	up to 50 mm/s	Painted, coated or corroded surfaces
ACPD (DEPTH MASTER)	Alternating current electropotential method	0.5 – 30 mm measured	Medium	Depth sizing of detected cracks
ACPD estimation range	Extended electropotential evaluation	30 – 100 mm estimated	Medium	Deep cracks, indicative assessment



Recommended workflow: detect and locate cracks with EDDY SENSE at up to 50 mm/s scanning speed, then size the depth of the detected indications with the DEPTH MASTER crack depth meter (0.5 – 30 mm, error $\pm (0.1h + 0.2 \text{ mm})$).

APPLICATIONS

EDDY SENSE

EDDY SENSE is used in laboratory, workshop and field conditions wherever surface integrity determines component life. The applications below are the most frequent field configurations supplied by Novatest.



01

Pipelines and gas pipelines

Inspection of the pipe body and welds for surface and stress-corrosion cracking with straight and L-shaped probes.

02

Gas compressor units

Blades, shafts and rotating components with complex geometry, including heat-resistant steels.

03

Pressure vessels

Surface crack detection on shells, nozzles and welded joints, also under paint and coatings.

04

Machined and cast parts

Flanges, hubs, impellers and stainless-steel components verified before assembly or return to service.

TECHNICAL SPECIFICATIONS

EDDY SENSE

DETECTION PERFORMANCE

Frequency range	1 MHz – 3.5 MHz
Minimum crack opening	2 µm
Minimum crack length	4 mm
Minimum crack depth	0.3 mm
Scanning speed	up to 50 mm/s
Material conductivity	1 – 50 MS/m, ferromagnetic and non-ferromagnetic

DISPLAY & INDICATION

Graphic display	128 × 64 pixels
Indication type	Graphical and acoustic
Warm-up time	max 60 s
Languages	English or Ukrainian/Russian (others on request)

POWER & ENVIRONMENT

Power supply	2 × rechargeable AA batteries
Battery life	up to 20 h
Operating temperature	-10 °C to +45 °C
Relative humidity	98% at 35 °C
Body / protection	Plastic with shockproof silicone case, IP54
Dimensions / weight	122 × 76 × 37 mm / 0.25 kg with batteries

RELIABILITY

MTBF	not less than 6 000 h (excluding probes)
Service life	at least 10 years

Specifications are taken from the EDDY SENSE operation manual v1.0 and may be updated without notice as part of continuous product improvement. The manufacturer reserves the right to make minor changes that do not degrade technical characteristics.

STANDARD DELIVERY & OPTIONAL ACCESSORIES

EDDY SENSE

STANDARD DELIVERY

Electronic unit

EDDY SENSE flaw detector, 1 pc.

Probes

Straight probe and L-shaped probe for complex geometries.

Calibration sample

Ferromagnetic reference sample for device calibration.

Connection cable

Device-to-probe connection cable, 1 pc.

Batteries & charger

2 sets of rechargeable AA batteries and charger for all sets.

Case & documentation

Protective silicone bumper, plastic transport case, operating manual.

OPTIONAL ACCESSORIES

Additional probes

Probes of various designs for curved surfaces and restricted access.

Computer interface cable

Cable for data transfer to PC and web interface.

DEPTH MASTER

Crack depth meter, 0.5 – 30 mm measurement, 30 – 100 mm estimation.

Reference samples

Additional standard reference samples for operability verification.

Spare battery sets

Additional AA rechargeable battery sets, 14 h full charge.

Custom configuration

The delivery set can be expanded with equipment on customer request.



MORE THAN AN INSTRUMENT

Novatest services

Novatest supplies more than instruments: every device is delivered with the documentation, warranty programme and engineering support required to make the inspection method work on your components.

01

Technical assistance

Application support for method definition, probe selection and troubleshooting.

02

Warranty programme

Basic and extended warranty, with scheduled maintenance recorded in the device certificate.

03

Training

Operator training on inspection procedure, zero setting, sensitivity and alarm thresholds.

04

Service & calibration

Adjustment and calibration performed at the manufacturer's facility with certified reference samples.



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