PORTABLE
EDDY CURRENT FLAW DETECTOR
EDDYCON C

OKOndt GROUP™

www.okondt.com

DESCRIPTION

EDDYCON C portable eddy-current flaw detector is a flagship of our NDT instruments family. It combines the best features of earlier predecessors, being furnished with 4.3" display and functional buttons for immediate access to any menu of the instrument, which would meet requirements of the most demanding user.

PURPOSE

EDDYCON C eddy-current flaw detector is intended for:

- **detection of surface cracks in various parts;**
- **finding of cracks in holes and multi-layered structures;**
- **recognition of sub-surface flaws in non-magnetic conductive materials;**
- **evaluation of non-magnetic material conductivity, and paint coating thickness.**

INDUSTRIAL APPLICATIONS

- **AEROSPACE**
  testing of aircraft engineering parts (wheel disks, skin, turbine blades, multi-layered structures, various holes, etc.);
- **RAILWAY**
  examination of railway parts and car units (wheelsets and axle boxes; bogies of freight, refrigerator and passenger cars, automatic coupler, etc.);
- **OIL & GAS**
  inspection of pipelines, turbine blades of gas-distributing stations (GDS), pressure vessels, etc.;
- **CHEMICAL**
  examination of pipelines, industrial tanks, etc.;
- **POWER**
  non-destructive testing of steam generator tubes and headers by internal encircling probes, etc.;
- **HEAVY MACHINERY**
  quality control of bars, wire, steel structures, mill rollers, plates, etc.

BENEFITS OF EDDYCON C

- tune-out from the influence of working gap and inhomogeneity of electromagnetic properties of test object;
- saving of huge number of settings and test results to the flaw detector memory;
- two-way data communication with PC via Ethernet port;
- specialty software for viewing test results and printing out test reports;
- application-dependent software for real-time data displaying on a PC;
- software upgrade using USB flash drives;
- evaluation of conditional length and depth of the flaws;
- quick-release Li-Ion battery for continuous 7-hour operation;
- light and sound alarms;
- easy-to-operate due to user-friendly intuitive interface;
- light weight and small size;
- conformity to ISO 15548-1.

DISTINCTIVE FEATURES OF EDDYCON C

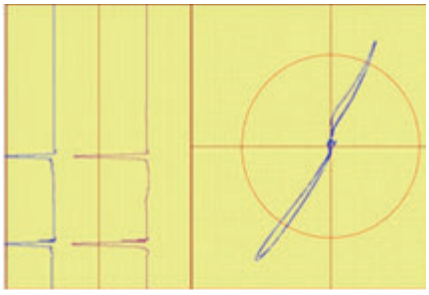
high-contrast TFT color display;
ALARM system: 4 three-color LED lights, sound indicator;
dual-frequency operating mode;
evaluation of material conductivity and paint coating thickness;
simplified calibration of the instrument on reference standards;
possibility to connect an encoder and rotary eddy-current scanner;
quick measurement of signal/noise ratio;
compatibility with probes and rotary scanners of various makes and types;
USB-friendly.

SPECIFICATIONS AND FUNCTIONS OF EDDYCON C

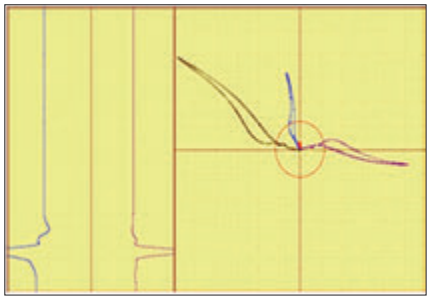
- detection of flaws with the depth from 0.05 mm and width from 0.002 mm;
- frequency _____10 Hz to 16 MHz;
- pulser output voltage (dual amplitude) _____0.5 V to 6 V;
- adjustable gain _____70 dB;
- additional gain _____30 dB;
- independent horizontal and vertical gain ___– 30 dB to 30 dB;
- signal phase change (signal rotation range is from 0° to 360° with a step of 0.1°, 1°, 10°);
- sampling frequency ___up to 11 kHz;
- digital signal filtering (4 types of filters: Low-pass, High-pass, Bandpass, Averaging);
- eddy-current signal representation:

a) complex plane – enables to distinguish defects against noise by analyzing the signal shape;

b) mixing-up of two channels – can help suppress the disturbances and reduce their impact on test results (for combining, an operator can select one of 4 algorithms: summation, subtraction, summation with horizontal inversion, summation with vertical inversion);

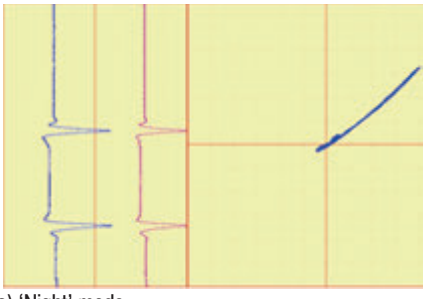


a) complex plane

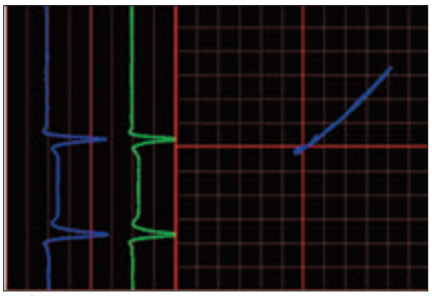


b) mix of two channels

- possibility to move the center of complex plane to any visible part of the screen
  - – top left - ;
  - – top center - ;
  - – top right - ;
  - – center left - ;
  - – center - ;
  - – center right - ;
  - – bottom left - ;
  - – bottom center - ;
  - – bottom right - ;
  - – manual positioning of the center of complex plane into any screen sector - ;
- two lighting modes: ‘Day’ – for dark rooms with poor lighting; ‘Night’ – for intensely illuminated rooms to improve the display legibility;

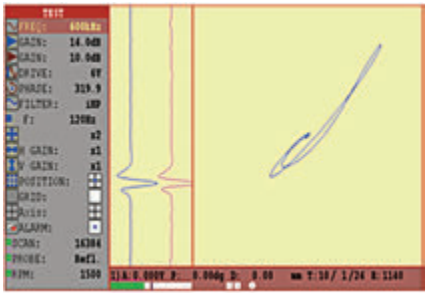


a) ‘Night’ mode

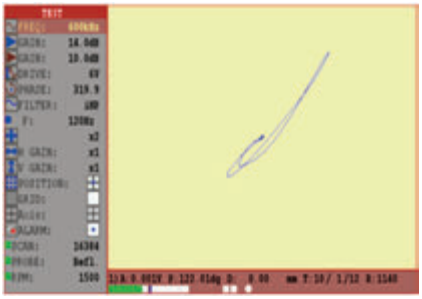


b) ‘Day’ mode

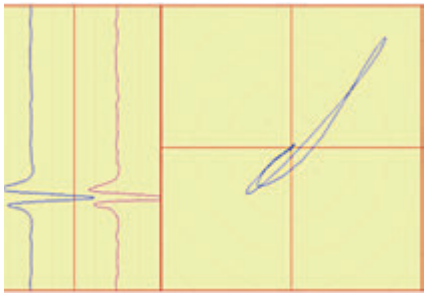
- different modes of information display on the flaw detector's screen:



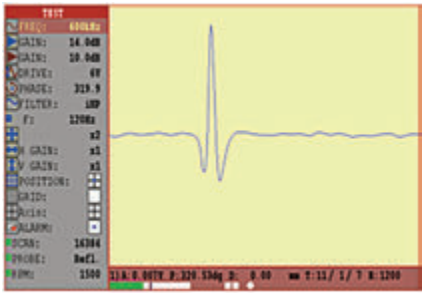
a) Menu+XY+A(t)



b) Menu+XY



c) Menu+A(t)



d) XY+A(t)

e) XY

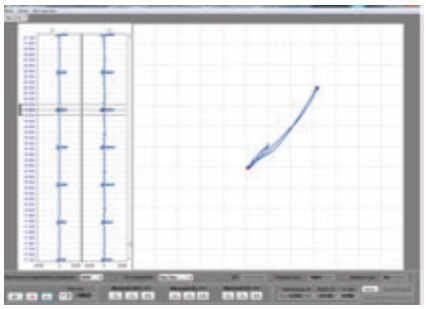
f) A(t)

– time for the flaw detector's operation mode setup: up to 1 minute;
– automatic display clearing (clearing time can be adjusted by 0.1 s; 0.5 s; 1 s; 2 s; 3 s; 4 s; 5 s; 8 s;)
– built-in timer and calendar;
– display backlight and brightness control;
– receiver overload control;
– battery discharge control;
– possibility to connect probes of the following types:

- differential ECP;
- differential bridge-type ECP;
- differential transformer ECP with ground center;
- differential transformer ECP;
- absolute single ECP;
- absolute transformer ECP;

– possibility to connect specialty rotary ET-scanners for inspection of holes;
– user-friendly multilingual interface;
– time of continuous operation of the flaw detector with fully charged storage battery: no less than 7 hours;
– total average service life of the flaw detector: no less than 10 years;
– instrument is powered by a quick-release Li-Ion battery with rated voltage of 12 V and rated capacity of 4500 mA hour;
– operating temperature: –20 ^{0}C to +45 ^{0}C;
– weight of the flaw detector with the battery: 0.9 kg;
– overall dimensions of the flaw detector: 230 x 135 x 98 (mm.)

SOFTWARE



Specialized application-dependent software of Eddycon C multipurpose eddy current flaw detector serves for processing test results, followed by generating and printing out test reports. The software program allows working with the saved data on PC.

Basic advantages:

- Intuitive user-friendly interface;
- Easy viewing of test results for each frequency mode
  (Frequency №1, Frquency №2 & Mix);
- Generation and storage of electronic reports;
- Data output for each detected flaw, such as:
  – flaw location coordinate on a defectogram;
  – signal amplitude and phase;
  – flaw depth.

The resulting electronic report contains all basic data on the test performed, such as:
– name of company, NDT department and inspector who performed the test;
– description of test object;
– all setting parameters of the instrument at the time of inspection;
– parameters of signals coming from defects (amplitude, phase, depth);
– representation of the signals from defects in a complex plane or strip chart;
– date of inspection;
– possibility to create reports of other types, as required by customer.

MAIN TECHNICAL SPECIFICATIONS

- Frequency _____kHz _____0.01 to 16000
- Gain _____dB _____70
- Additional gain _____dB _____30
- Independent gain:
  - horizontal; - vertical __dB _____- 30 to 30
- Probe supply voltage ___V _____0.5, 1, 2, 4, 6
- Measurement frequency Hz _____1 000ч11 000
- Filter _____Hz _LP: 1 to 5 500; HP: 1 to 5 500
  _____Bandpass; Averaging
- Connected probe types _____Single & Transformer
- Digital scaling _____1/16 to 16, with step of 6 dB
- Phase rotation _____^{0} degr. _____0 to 359.9
- Probe connector _____Lemo 00,
  Lemo 12-pin / Lemo 16-pin
- Signal persistence time sec. __0.1; 0.3; 0.5; 1; 2; 3; 4; 5; 8
- Display _____color TFT
- Screen resolution ____dots _____800 x 480
- Diagonal _____mm/inch _____109,22/4,3"
- Screen size _____inch _____3,62 x 2,28
  _____mm _____92 x 58
- Signal representation modes _____Complex plane – X(y);
  _____Time base – X(t), Y(t);
  _____Dual frequency mode.
- Threshold level types _____Circle, Threshold,
  _____Sector, Trapezium
- Memory capacity for storing
  settings and test results _____Total 8 Gb
  _____1 largest defectogram – 15.6 Mb;
  _____time of recording the largest
  _____defectogram at
  _____1kHz – 16 min. 30 sec.;
  _____11kHz – 1 min. 30 sec.
  _____1 setting takes 21 Kb.
- Multi-frequency operation ___Dual-frequency multiplexing;
  _____Independent control
  of both frequencies;
  _____Mixing-up of signals
  to suppress disturbances.
- Battery _____Li-Ion 12V/4500 mA·h
- Continuous work
  from battery _____hours _____at least 7
- Operating temperature _^{0}C _____-20 to +50
- Ambient protection rating – ____IP 64 acc. to GOST 14254
- Overall dimensions ___mm _____230 x 135 x 98
- Weight, incl. battery ___kg _____0.9

BASIC DELIVERY SET OF EDDYCON C FLAW DETECTOR (ENGLISH VERSION)

Description	Quantity
• Eddy current flaw detector Eddycon C (Lemo 16)	1 pc.
• Eddy current probe SS340K09DA0 _ _	1 pc.
• Connection cable Lemo 16 – Lemo 04 (Lemo 04, connector type 0B, Reflection)	1 pc.
• Charger Mascot Type 2542	1 pc.
• Calibration block 2353.08 (Rz 320, steel 45)	1 pc.
• Software for operation with PC	1 copy
• Operating Manual Eddycon C	1 copy
• Quick start guide	1 copy
• Operating Manual Mascot 2542	1 copy
• Registration certificate for calibration block CB2353.08 RC	1 copy
• Case	1 pc.
• Bag	1 pc.
• Registration certificate for ECP	1 copy

BASIC DELIVERY SET OF EDDYCON C FLAW DETECTOR (INTERNATIONAL VERSION)

Description	Quantity
• Eddy current flaw detector Eddycon C (Lemo 16)	1 pc.
• Eddy current probe SS340K09DA0	1 pc.
• Connection cable Lemo 16 – Lemo 04 (Lemo 04, connector type 0B, Reflection)	1 pc.
• Charger Mascot Type 2542	1 pc.
• Calibration block 2353.08 (Rz 320, steel 45)	1 pc.
• Software for operation with PC	1 copy
• Operating Manual Eddycon C	1 copy
• Quick start guide	1 copy
• Operating Manual Mascot 2542	1 copy
• Registration certificate for calibration block CB2353.08 RC	1 copy
• Case	1 pc.
• Bag	1 pc.
• Registration certificate for ECP	1 copy

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