OKOndt GROUP

www.oko-ndt.com

EDDYCON CL

Complies with:
ISO 15548–1

EDDYCON C

PORTABLE EDDY CURRENT FLAW DETECTORS EDDYCON product family

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DESCRIPTION

EDDYCON portable eddy-current flaw detectors are flagships of our ECT instruments family. They combine the best features of earlier predecessors, being furnished with larger displays and functional buttons for immediate access to any menu of the instruments, which would meet requirements of the most demanding user.

PURPOSE

EDDYCON eddy-current flaw detectors are intended for:

- Detection of surface cracks in various conductive materials;
- 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**
  eddy current crack detection 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 heaters by internal encircling probes, etc.;
- **HEAVY MACHINERY**
  quality control of bars, wires, steel structures, mill rollers, plates, etc.

BENEFITS OF EDDYCON

- 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 external USB-flash card;
- specialty software for viewing test results and printing out test reports;
- desktop software for 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-hours operation for Eddycon C;
  10-hours operation for Eddycon CL;
- 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

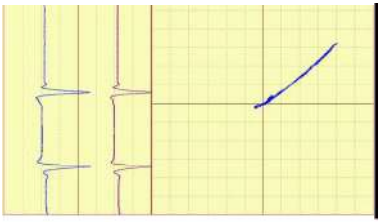
- high-contrast TFT color display;
- ALARM system: 4 three-color LED lights,sound indicator;
- dual-frequency operating mode;
- evaluation of material conductivity and paint coating thickness;
- implified calibration of the instrument on reference standards;
- possibility to connect an encoder and rotary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

SPECIFICATIONS AND FUNCTIONS OF EDDYCON

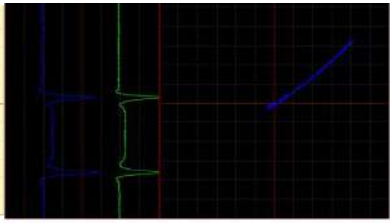
- detection of flaws with the depth from 0.05 mm and width from 0.002 mm;
  frequency 10 Hz to 16 MHz
  pulser output voltage
  (dual amplitude) 0.5 V to 6 V;
- adjustable gain 70 dB;
- additional gain 30 dB;
- independent horizontal and vertical gain - 30 dB to 30 dB;
- signal phase change (signal rotation 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, Band pass, 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) “Night” mode



b) “Day” mode

- 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 

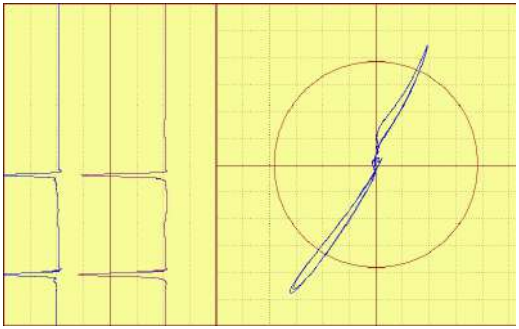
— bottom center 

— bottom right 

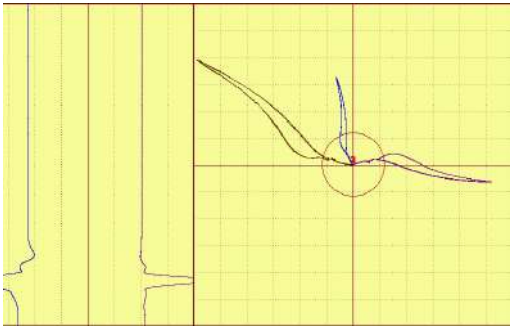
— manual positioning the center of complex of plane into any screen sector 

- two lighting modes: ‘Day’ – for dark rooms with poor lighting; ‘Night’ – for intensely illuminated rooms to im prove the display legibility;

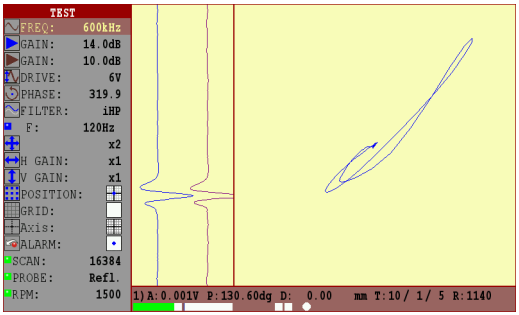
Different modes of full-screen presentation



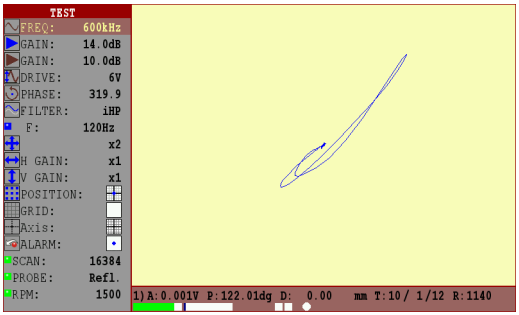
a) complex plane



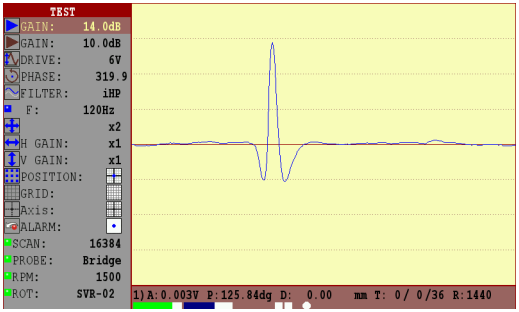
b) mix of two channels



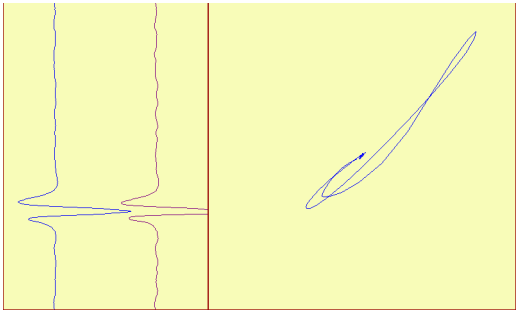
c) Menu+XY+A(t)



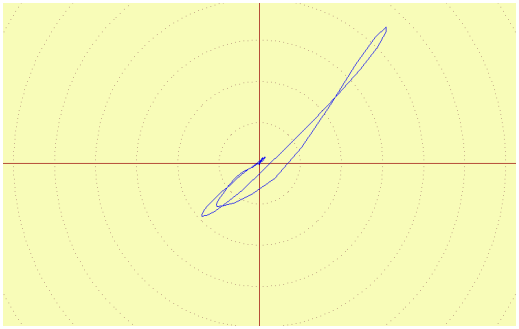
d) Menu+XY



e) Menu+A(t)



f) XY+A(t)



g) XY

h) A(t)

— 4.3” (7.2”) TFT color display with 800×480 pixels resolution ensures a high-definition picture on the screen.
— 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 bringhtness control;
— receiver overload control;
— battery discharge control;
— possibility to connect probes of the following types;
  • reflection type ECP;
  • bridge type ECP;
  • single coil type ECP;
— possibility to connect specialty rotary ET-scanners for inspection of holes;
— user-friendly multilingual interface;
— time of continuous operation of the flaw charged storage battery:
  • Eddycon C - no less then 7 hours;
  • Eddycon CL - no less then 10 hours;
— total average service life of the fully detector: no less then 10 years;
— instrument is powered by a quickrelease Li-Ion battery with rated voltage of 12 V and rated capacity of 4500 mAh (Eddycon C), 10000mAh (Eddycon CL);
— operating temperature: - 20 °C to +50 °C;
— weight of the flaw detector with the battery:
  • Eddycon C - 0.9 kg;
  • Eddycon CL - 1.85 kg
— overall simensions of the flaw detector:
  • Eddycon C: 230x135x98 mm;
  • Eddycon CL: 256x158x80 mm.

Portability and lightweight

Due to small size of the eddy current equipment, an operator can set it up with one hand only. The device is furnished with a side strap, which allows for a firm hold of the flaw detector either in right or left hand, while its narrow width helps easily reach any button on the keypad. Thanks to its lightweight, an operator can perform eddy current testing for a long period of time, not being tired.

Navigation

Elaborated keypad design gives a quick access to any menu of the flaw detectors by pressing a single key only.

- **TESTING menu**
  main operating mode of the flaw detector;
- **MEMORY menu**
  is used to save/download the settings and test results;
- **SETTINGS menu**
  basic settings of the flaw detector;
- **VIEW menu**
  allows viewing test results saved to the flaw detector’s memory;
- **CALIBRATION menu**
  serves to create calibration curves for more precise evaluation of flaw depth.

EDDYCON SPECIFICATIONS

DEVICE MODEL	EDDYCON C	EDDYCON CL
Frequency range	10 Hz to 16 MHz	
Gain	70 dB	
Horizontal Gain	-30...+30 dB	
Vertical Gain	-30...+30 dB	
Additional Gain	30 dB	
Probe supply voltage	0,5 V; 1V; 2V; 4V; 6V	
Phase rotation	0 to 359,9 deg	
Test frequency	1 to 11 kHz	
Signal persistence time	0,1 s, 0,3 s, 0,5 s, 1 s, 2 s, 3 s, 4 s, 5 s, 8 s	
Filter	Low-pass 1 to 5500 Hz Hight-pass: 1 to 5500 Hz Bandpass Averaging	
	CONNECTORS	
Connected probe types	Single coil, Reflection, Bridge	
Probe connector		
	ALARM	
Threshold level types	Circle, Threshold, Sector, Trapezium	
Type	Sound and visual	
	MEMORY	
Capacity	8 Gb (up to 32 Gb optional)	
Removable Micro SD card	+ (built-in)	+ (built-in)
Size	1 largest defectogramm - 15,6 Mb 1 settings takes - 25 kb	
Time of recording	1 kHz — 16 min, 30 sec, (max) 11 kHz — 1 min, 30 sec, (max)	
	DISPLAY	
Signal display modes	Complex plane — X(y); Time base — X(t), Y(t); Dual-frequency mode	
Multi-frequency operation	Independent control of both frequencies; Mix of two frequencies (F1 - F2, F1 + F2)	
Display size	3,68 x 2,21 in (93,6 x 56,16 mm)	6,14 x 3,70 in (156 x 94 mm)
	4,3 in	7,2 in

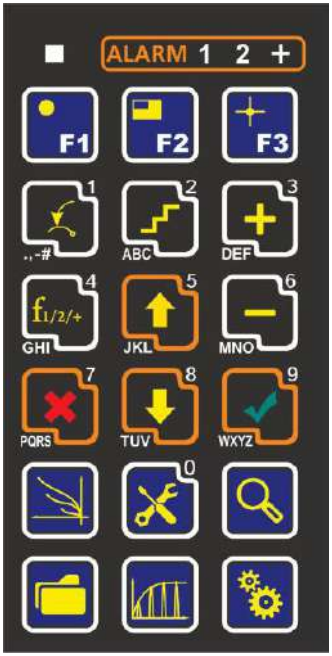
EDDYCON SPECIFICATIONS

DEVICE MODEL	EDDYCON C	EDDYCON CL
Resolution	800 x 480 pixels	
Type	Color TFT	
Display modes	Normal, full-screen; three color schemes	
Grid	Three types: coarse, fine, polar	
	BATTERY	
Type	Li-on 12V/4500 mAh	Li-on 12V/10000 mAh
Operation time	up to 7 hours	up to 10 hours
	OTHER	
Supply mains	100 V to 240 V, 50 Hz/60 Hz	
Applicable standards	CE, ISO 15548-1	
Keypad	English, International (icons)	
	OPERATION CONDITIONS	
Operation temperature	-4 to 122 F (-20 to +50 °C)	
IP rating	IP 64	
	HOUSING	
Overall dimensions	9,06 x 5,31 x 3,86 in (230 x 35 x 98 mm)	10,08 x 6,14 x 3,39 in (256 x 156 x 86 mm)
Weight	1, 98 lb (0.9 kg)	4.07 lb (1.85 kg)

EDDYCON SPECIFICATIONS

Device version	EDDYCON C&CL (International version)	EDDYCON C&CL (English version)
Probe connector	Lemo 12-way (Reflection, Bridge); Lemo 00 (single coil)	Lemo 16-way (Reflection, Bridge); Lemo 00 (single coil)
Encoder connector	Lemo 08-way	
Compatible with the following rotary scanners	SVR-02, SVR-04, MiniDrive (GE)	SVR-03, SVR-05, MiniMite (OLYMPUS)
Evaluation of flaw depth	√	
Operation with linear encoder	√	
Dual-frequency & mix-modes	√	
Measurement of electrical conductivity and coating thickness	√	
Quick-release battery	√	

BASIC DELIVERY SET OF EDDYCON FLAW DETECTORS (INTERNATIONAL VERSION)



- Eddy current flaw detectors Eddycon C or CL (Lemo 12)
- Eddy current probe SS340K09DA0 (or other)
- Connection cable Lemo 12 - Lemo 04
(Lemo 04, connector type 0B, Reflection)
- Charger
- Calibration block RS 2353/1-3N-Fe (Carbon steel)
- Software for operation with PC
- Operating Manual Eddycon C or CL
- Quick start guide
- Operating Manual for charger
- Registration certificate for calibration block RS2353/1-3N-Fe
- Case
- Bag
- Registration certificate for ECP

BASIC DELIVERY SET OF EDDYCON FLAW DETECTORS (ENGLISH VERSION)

- Eddy current flaw detectors Eddycon C or CL (Lemo 16)
- Eddy current probe SS340K09DA0 (or other)
- Connection cable Lemo 16 - Lemo 04
(Lemo 04, connector type 0B, Reflection)
- Charger
- Calibration block RS 2353/1-3N-Fe (Carbon steel)
- Software for operation with PC
- Operating Manual Eddycon C or CL
- Quick start guide
- Operating Manual for charger
- Registration certificate for calibration block RS2353/1-3N-Fe
- Case
- Bag
- Registration certificate for ECP