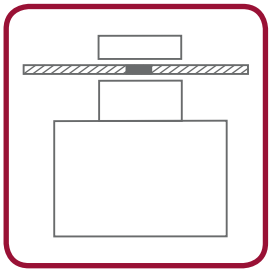
ROLAND ELECTRONIC

Eddy Current Inspection System ECT40

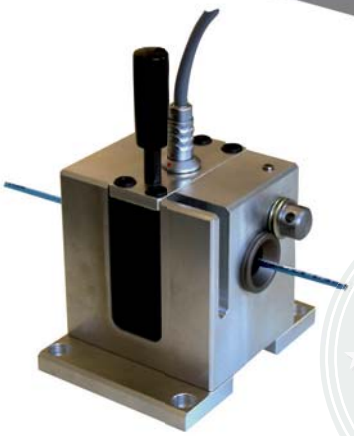
System for fault inspection of metallic semiproducts such as tubes, coils, wires and cables by eddy current measurement.

THE ROLAND PLUS

- ▶ **Compact design**
- ▶ **Full HD graphics resolution**



- Absolute and differential channel
- Frequencies: 1 kHz - 2 MHz
- Real-time communication of measurement module with the evaluation computer via Ethernet
- I/O interface for automation
- Evaluation computer for visualization and operation of the measurement channels



Made in Germany

EDDY CURRENT INSPECTION SYSTEM ECT40

Description:

The ECT40 serves the fault inspection of metallic semiproducts such as tubes, coils, wires, cables and bars.
It has been specifically developed for the use in the quality control area. The standard DIN EN ISO 15548-1 was considered in the conception of the system.

Focussed applications of the system are inspection of surface, volume or subareas like weld seam, using one or more sensor coils.

In the field of eddy current testing, the following inspection standards are usually applied: ASTM, API, BS, JIS, ETTC, ENEL, DIN, EN, ISO. In order to provide the evidence for the detection of imperfections at seamless or welded steel tubes, the standard DIN EN ISO 10893-2 will be applied.

Measurement principle:

The measurement principle is based on the process of eddy current measurement. For measuring, sensor coils of different shapes are used, during the process the material is led by resp. through the coil.

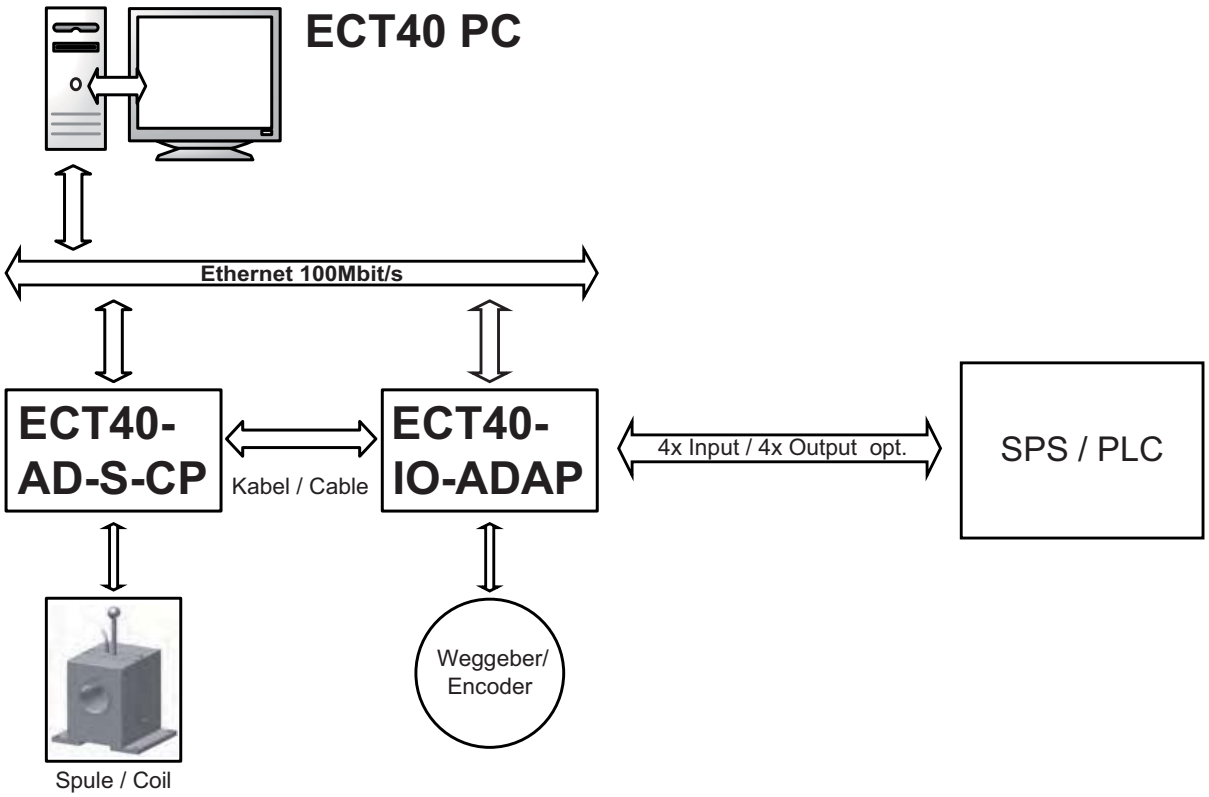
When the material passes / transits the sensor, irregularities (welding faults like cracks, pores or circumferential faults) will be detected by the changing forming of eddy currents within the material. The measuring module will transmit the measurement result to the evaluation computer. The interface module transmits the corresponding switching signals to the PLC of the machine.

Modular Design:

The system has a modular design. Evaluation computer, measurement module and interface modules are separate from each other. The tasks of the components are spread as follows:

Measurement module ECT40-AD-S-CP: Performing the measurement and transmitting the result to the evaluation computer.
Interface module ECT40-IO-ADAP: Communication with the machine PLC.
Evaluation computer: Visualization of operation, operation and administration of the connected measurement modules, protocoling

A Roland Panel PC (ECT40-PC) serves as evaluation computer.

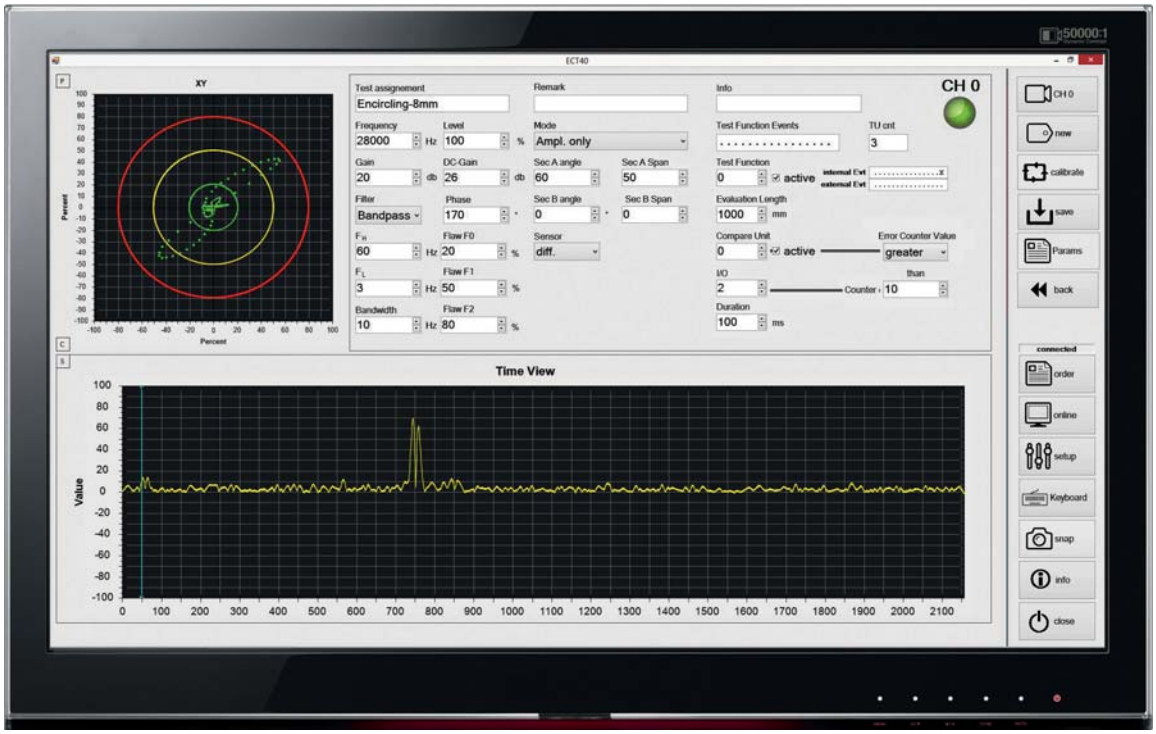


EDDY CURRENT INSPECTION SYSTEM ECT40

The eddy current measurement module is accommodated separately from the evaluation computer ECT40-PC and connected via Ethernet cable. The dual channel module works phase synchronous with a common transmitter. The module ECT40-IO-ADAP serves as interface to the PLC. Fieldbus systems are under preparation.

Visualization and operation:

The visualization of operations is performed with a supplied software for Windows OS, as well as the operation of the measurement channel. The software communicates with the measuring module via Ethernet. The whole administration and the complete log is done by the software. The graphics resolution is designed for Full HD.



Sensorics:

For the ECT40 coil holders with exchangeable encircling coils and probe heads are available. Segment coils are under preparation. Currently encircling coils are available for material diameters from 1 to 90 mm. With these coil systems a sensor can be easily and quickly converted to another material diameter.

Sensor	Size	Exchangeable coils for material diameter
	EC15 EC90	max. 1 mm - 15 mm, in steps of 1 mm max. 16 mm - 90 mm, in steps of 2 mm Additional coil diameters are under preparation
Suitable sensor cable: SPPCECPPS-GG		

Probe heads	Size, Type	
	EC12×30IT10-100-S EC20×25IT10-100-S EC30×25IT10-100-S	for tubes and flat material. See order information for track width and effective width. Additional probe heads are available.
Connection via SCB-ECT-S		

EDDY CURRENT INSPECTION SYSTEM ECT40

Technical Data

Eddy current module, differential channel, absolute channel

Frequencies:	1 kHz - 2 MHz
Low pass filter:	5 - 1000 Hz in steps of 1 Hz
High pass filter:	(0), 1 - 1000 Hz in steps of 1 Hz
AC gain:	0 - 60 dB in steps of 0.1 dB
DC gain:	0 - 60 dB in steps of 0.1 dB
Phase:	adjustable in steps of 1°
Transmitter:	2 - 20 V_{pp} / 0.5 A_{pp}

Evaluation

Signal:	Circle, sector, double sector,
Thresholds:	3
Sample rate:	10 kHz per channel

Other module data

Voltage supply:	24 VDC +/-5%
Power consumption:	approx. 25 W (2 channel)
Ambient temperature:	+5°C to +40°C (operation)
Protection class:	IP65
Control signals: (Extract)	Ready for operation, measurement start, fault / sorting, marking
Data interface:	Ethernet 100 Mbit/s
Sensor interface:	Differential / Absolute coil with separate transmitter and receiver
Connections:	Pluggable at front side
CE conformity:	EN 61000-6-2:2005-08, EN 61000-6-4:2007-01 DIN EN ISO 15548-1:2013

Interface module

ECT40-IO-ADAP:	For installation inside a control panel Opto coupler 24 VDC, 4 inputs / 4 outputs, Rotary encoder 24 VDC
Ambient temperature:	+5°C to +40°C (operation)
Protection class :	IP 00

ECT40-PC

Type:	Panel-PC
Voltage supply:	24 VDC +/- 20%
Power consumption:	approx. 150 W
Graphics resolution:	1920x1080 Full HD, Touch
Network interface 1:	100 MBit/s Ethernet for data exchange with the ECT module
Network interface 2:	100 MBit/s Ethernet not used
Other features:	USB
Operating system:	Windows 7/8
Ambient temperature:	+10°C to +40°C (operation)
Protection class :	IP 65

Evaluation software

Function:	Operation, visualization, administration and storage of the measurement programs for different products, statistics, fault protocol
Modes of operation:	Endless, in preparation: piece, cut, sort

Order information:

Order specification	Description
ECT40-AD-S-CP	Measurement module with 1 differential channel and 1 absolute channel / Switchable to 2 differential channels
ECT40-IO-ADAP	Adapter IO interface 24 V I/O
ECT40-PC	Industrial PC for connection of the ECT40 modules, with a resolution of 1980×1080 Full HD
SCB-ECT-S	Sensor Interface Box, one side for connection of EC probes with M12 plug, the other side for connecting the ECT40 with the cable SPPCECPPS-GG
EC15	Encircling coil with exchangeable coil, for material diameter of max. 1 mm to max. 15 mm, in steps of 1 mm
SH-EC15	Coil bracket system size 15 for encircling coil EC15
EM-SH-EC15	Coil bracket system size 15 with E-Magnetyoke for encircling coil EC15
EC90	Encircling coil with exchangeable coil, for material diameter of max. 16 mm to max. 90 mm, in steps of 2 mm
SH-EC90	Coil bracket system size 90 for encircling coil EC90
EM-SH-EC90	Coil bracket system size 90 with E-Magnetyoke for Encircling coil EC90
EC12x30IT10-100-S	Eddy current probe for tubes and flat material,track width 3 mm, effective width 4 mm, connection to SCB-ECT-S
EC20x25IT10-100-S	Eddy current probe for tubes and flat material, track width 10 mm, effective width 13 mm, connection to SCB-ECT-S
EC30x25IT10-100-S	Eddy current probe for tubes and flat material, track width 16 mm, effective width 20 mm, connection to SCB-ECT-S
SPPCECPPS-GG	Sensor cable for sensors EC15, EC90, Standard length 5 m, push-pull plugs at both sides
Optional:	
2393019	Rotary encoder 24VDC, 5 m cable

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