Digital eddy current testing
for the metal processing industry
ELOTEST IS500

NEW

- **With high-resolution color display**
- **For crack detection and/or material sorting**
- **Can be integrated directly into the production line**

General

The **ELOTEST IS500** - Eddy current test instrument - is a major step forward for inline industrial eddy current testing. Its FPGA based digital signal processing chain sets it apart from the competition and yields superior speed, accuracy and stability. It enables fast parameter and probe multiplexing, permitting substantial reduction in total system costs. The digital processing chains full dynamics of 96 dB across the entire frequency range makes it suitable for the most demanding applications. The user interface on its bright 16:9 color display sets standards in usability and its FPGA based signal display combines the advantages of traditional analog displays and those of digital storage displays.

Technical Data

Device Configurations
• One Test Channel Module
• Two Test Channel Modules
• One Sort Channel Module
• One Test Channel Module and one Sort Channel Module

Screen Display
• Color TFT display, 800 x 480 pixel (WVGA), 229 mm (9") diagonally, 16:9 format
• Simultaneous display of up to 8 signals with a display rate of 250,000 signal dots per second for each channel (in real time)

Test Channel Module
Frequency Range
• 10 Hz - 12 MHz
• Driver output: +/-10Vs; max. 300mA

Demodulated Signal Bandwidth
• 10 kHz
• Fully digital signal processing; featuring a digitizing rate of 250 kHz with a resolution of 2 x 16 bit

Pre-Amplification
• -16.5 – 60 dB adjustable in 0.5 dB-increments

Gain
• 0 – 80 dB adjustable in 0.5 db-increments
• Additional 0 – 20 dB axis spread for the X- and/or the Y-axis

Signal Filter
• HP/LP independently adjustable from 1 Hz to 10 kHz in 20 logarithmic steps per decade giving a total of 80 filter steps

Phasing
• 0 - 359° in 0.5°-increments

Real Time Gates for Evaluation
• 2 gates per channel; selectable modes: X, Y, Box, circle, flattened circle

Connection Standard Probes to the Test Channel Module
• 26-pin HD-Sub-connector to connect all probe types (Note: no rotor power supply for hand-held rotors)

Input/Output Terminal Strip (24 V opto decoupled)
• 16 Inputs
• 24 Outputs
• 2 counter inputs

Analog Output
• Max. ±10V amplitude for x- and y-component

Distance Compensation Option
• A test channel module can optionally be equipped with a multiplexed distance compensation. This enables automatic amplification compensation during tests that do not have a consistent distance between the test pieces. The control range is ± 30 dB.

Option: Multiplex Operation
Two (2) types of multiplex operation are possible:
1. Parameter Multiplex ("Frequency Multiplex")
The channel module can time-multiplex up to eight individual parameter sets, including the test frequency, driver amplitude, gain, phase angle and filter settings on one probe. Switching time is depending on the test frequency involved and can be as low as 32 microseconds.

2. Probe Multiplex
Using an optional external probe multiplexer box, up to eight probes or coils can be connected to one channel. Each probe has its own eddy current setting, including individual filters. The probe to probe switching frequency can be as high as 32kHz, depending on the test frequencies involved.

Probe-Multiplex Module:
Available as external multiplexer box:
• External module rated to IP65 with 8 separate 26-pin HD-SUB IP65 connectors, max. distance to test channel = 30 m (customer-specific external multiplexer module available upon request)
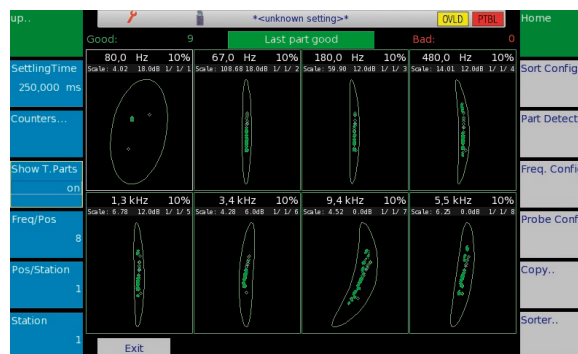
Q500 Sorting Channel Module
Channel module for the automatic self-learning structural and sorting inspection using up to 8 frequencies.
• 8 time-multiplexed test frequencies from 10 Hz to 150 kHz
• Fully digitized full-wave demodulator for the highest precision and stability
• Determination of the inspection point in 1.5 waves trains per frequency
• Self-learning "**BubbleGate**" evaluation gates
• Using the optional external multiplexer Module, up to eight coils can be addressed in quick succession, providing for tests on different test positions on a single part.
• Guided learning from good parts
• Sorting of up to 8 good batches ("**MultiLot**")
• Retroactive teaching of good batches ("**RetroTeach**")
• Integrated interface and programmable driver logic for sorting switches and systems

XY display during crack detection

Sorting mode "BubbleGate" in the new Q500-module

General Information on the Instrument:

Housing data:	Dimensions	Weight
Housing IP54 protective system	Width: 470 mm (185") Depth: 273 mm (107") Height: 296 mm (116,5")	16 kg (35,3 lb)