

# ELOTEST \ PL650

Pioneering Eddy Current testing



# ELOTEST \ PL650

**A new dimension of Eddy Current testing**, which leaves nothing to be desired. This device is **the** innovative, all-digital Eddy Current platform for a wide range of applications with an outstanding performance and reliability.



ELOTEST PL650 is available in different casings, depending on the application. Fields of application are amongst others precise material sorting or inspections for cracks and grinding burns.

A flexible software and license system makes it possible to adapt or to extend the capacity according to the individual testing task.

Owing to various casing and operating concepts, such as the remote connection via the client's software and computer, ELOTEST PL650 can be perfectly integrated into automated inspection systems and into existing test lines.

ELOTEST PL650 and ELO\SCAN is a connection to a compact robot unit, designed to tackle the most diverse testing tasks automatically.

ELOTEST PL650 in combination with the universally applicable SCAN\ALYZER inspection, documentation and analysis software for a quick and safe creation of C-Scans.



Robot controlled inspection system with ELOTEST PL650, ELO\SCAN and image processing module ELO\IMAGE.



Automated inspection for cracks and grinding burns on rolling elements with the ELOTEST PL650 and probes (Type KD-129 and KDA-129).

Mechanics:



# ELOTEST \ **PL650 R**

# ELOTEST \ **PL650 RC**

A "remote" version of the ELOTEST PL650, equipped with an identical hardware configuration, but without a user interface, is available for specific needs.

The ELOTEST PL650 R provides all functionalities with no limits and is operated by remote control via a touch screen or a PC-Client.

The minimum version of the ELOTEST PL650 R is equipped with a CHM-650 Eddy Current testing module.

ELOTEST PL650 R – with a maximum of 16 channels

ELOTEST PL650 RC – with a maximum of 4 channels



## **ELOTEST PL650 – flexibly adaptable to the task for every type of Eddy Current testing**

### **19" REMOTE**

ELOTEST PL650 R, 19" casing with 15 free slots for additional modules, ELOTEST PL650 RC, in half of a 19" casing with 6 free slots for additional modules. The Eddy Current devices are used with a computer software under Windows or Linux. Without a computer connected via Displayport + USB to a touch display or a standard display with a mouse.

### **MUX / ARRAY PROBES**

The ELOTEST PL650 is perfectly suited for the parameter multiplex with up to 64 parameter sets as well as the sensor multiplex with up to 64 external individual sensors or array sensors. Multiplex rate up to 125 kHz.

### **10<sub>Hz</sub> - 12<sub>MHz</sub>**

- ▷ Best inspection results with a classic Eddy Current and harmonic wave evaluation
- ▷ Utmost inspection reliability through comprehensive system and sensor monitoring
- ▷ Full integration through extensive I/O functions with a fieldbus connection
- ▷ Flexible expandability thanks to the modular structure
- ▷ Frequency range 10 Hz to 12 MHz

### **PL650 + IPM**

The SCAN\ALYZER documentation and evaluation software combined with the modern Eddy Current testing technology provides precise signal and status analyses. It is also used for maintenance and production monitoring for safety relevant components, because of its serial scan function. The Image Processing Module (IPM) is the enhanced image evaluation functionality for marking, masking out and evaluating of SCAN\ALYZER 7.X C-Scans.

# ELOTEST \ PL650

## Technical Data

### BASIC UNIT

- ▷ 16 slots for functional modules
- ▷ Available module types:
  - ▷ Test channel module CHM-650 (one included in the basic price)
  - ▷ Fieldbus I/O module with fast quadrature inputs (option)
  - ▷ 24 V I/O module with fast quadrature inputs (option)
  - ▷ 8-channel analog I/O module (option)

### DISPLAY

- ▷ Widescreen colour TFT display in IPS technology, 1280 x 800 pixels, 256 mm (10.1") diagonal
- ▷ Displayport output for external Full HD monitors (via USB also with touch screen operation)

### TEST CHANNEL MODULE CHM-650 TEST FREQUENCY RANGE

- ▷ 10 Hz - 12 MHz
- ▷ Driver output +/- 10 Vs; max 1000 mA
- ▷ Measurement and control of the sensor current
- ▷ Voltage/current controlled operation
- ▷ Continuous monitoring of transmitter coils for wire breakage and interturn short circuiting

### SENSOR INPUT STAGES

- ▷ Two input channels per module
- ▷ Differential inputs with 90 dB common mode rejection
- ▷ Continuous monitoring of receiver coils for wire breakage
- ▷ Low-noise, digitally adjustable preamplifier with multiplex capability
- ▷ 2 x 18-bit ADC with 5 MSps conversion rate
- ▷ Fully digital demodulation and FPGA-based signal processing at 250 kSps Sample Rate
- ▷ Sensor multiplexer with up to 125 kHz multiplex rate

### DIGITAL SIGNAL PROCESSING

- ▷ High-performance signal processing chain in FPGA with
  - ▷ Digital sine wave generator 10 Hz - 12 MHz
  - ▷ Two independent levels of digital demodulation
  - ▷ Digital signal processing chain with
    - ▷ Distance compensation without auxiliary channel (option "Advanced")
    - ▷ Signal Filter HP/LP independently adjustable 1 Hz - 100 kHz in 29 logarithmic increments per decade
    - ▷ Phase adjustment 0-359.5° in 0.5° increments
    - ▷ Various real time evaluation thresholds depending on application and licensing

### SENSOR CONNECTION

- ▷ 26-pin HD sub connector for connection of all sensor types, compatible with the ELOTEST PL500 series
- ▷ Connection for active sensor arrays with up to 64 sensors per channel
- ▷ Connection for external sensor multiplexer for up to 64 sensors per channel
- ▷ Intelligent TriggerAll input for processing a wide variety of trigger signals

### INTEGRATED I/O PROCESSOR

- ▷ Central, high-speed I/O processor integrated in the basic unit
- ▷ Shift register, end suppression, FIFO functionality, configurable I/O functions
- ▷ Access to the outside world via I/O boards (fieldbuses, 24V-I/O) or via programmable channel-related I/O ports

### BASIC FUNCTIONS PER CHANNEL THAT REQUIRE A BASIC LICENSE (SELECTABLE)

- ▷ 1-frequency defect detection
- ▷ 1-Frequency FastSort
- ▷ 1-frequency Q-Sort
- ▷ 1-frequency MeanSort

### ADDITIONAL FUNCTIONS PER CHANNEL FOR WHICH AN ADVANCED LICENSE IS REQUIRED (SELECTABLE)

- ▷ Harmonic analysis 3rd, 5th and 7th harmonics
- ▷ Crack testing with distance compensation
- ▷ Multi-frequency defect detection
- ▷ 4-frequency FastSort (with harmonics)
- ▷ Multi-frequency Q-Sort (with harmonics)
- ▷ Multi-frequency MeanSort
- ▷ Internal sensor Multiplex (2 sensors)
- ▷ External Sensor Multiplex (up to 64 sensors)
- ▷ Parameter Multiplex (up to 64 parameter sets)
- ▷ frequency mix function
- ▷ Tolerance band Gate

### AVAILABLE I/O MODULES (OPTION)

- ▷ I/O-650, Profibus-Modul
- ▷ I/O-652, Universal-I/O- Modul
- ▷ I/O-654, EtherCat-Modul
- ▷ I/O-656, Profinet-Modul
- ▷ I/O-658, Analog-I/O-Modul
- ▷ I/O-659, RS422-Modul
- ▷ I/O-6510, Ethernet/IP-Modul

### REMOTE CONTROL CAPABILITY / COMPUTER-SOFTWARE

- ▷ Remote control via Full HD touch panel with virtual front panel (up to 100 m)
- ▷ Remote control and remote maintenance via TCP/IP and supplied PC client (Windows, Linux, MAC)
- ▷ Remote control via customized software with an open TCP/IP protocol

| DIMENSION PL650 MODELLS |      |       |       |
|-------------------------|------|-------|-------|
| Data in mm              | High | Width | Depth |
| PL650                   | 194  | 483   | 418   |
| PL650 R                 | 194  | 483   | 418   |
| PL650 RC                | 184  | 269   | 322   |