

Are you familiar with our industrial-grade accredited inspection services?

- Accredited laboratory in line with DIN EN ISO / IEC 17025, to qualify and validate new non-destructive testing (NDT) processes for industrial applications
- Accelerated time-to-market and opportunity for qualified, norm-compliant deployment in industrial applications as well as for new in-house developments or custom adaptation of innovative NDT technologies, even in fields where norms have not been established
- Certification of the corresponding quality management system in accordance with DIN EN ISO 9001

Contact

Fraunhofer Institute for Nondestructive Testing IZFP

Campus E3 1
66123 Saarbrücken

+49 681 9302 0

info@izfp.fraunhofer.de
www.izfp.fraunhofer.de



Sensor and Data Systems for Safety,
Sustainability and Efficiency



OPTUS / ETHUS – Industrial Frontend Version

Multi-channel electronics for industrial applications

OPTUS / ETHUS



OPTUS / ETHUS-Electronics

OPTUS / ETHUS – Multi-channel electronics for industrial applications

With the steadily rising use of phased array inspection methods in industrial applications a fast growing need for ultrasound inspection devices implementing conventional phased array processing (hardware based focusing) as well as software based techniques (e.g. sampling phased array, total focusing, full matrix capture) arises. At the same time single channel inspection systems are also still demanded. Both types of systems are required to offer high performance, scalability according to the inspection's requirements and ease of integration into the customer's infrastructure.

The OPTUS / ETHUS platform, developed at Fraunhofer IZFP, forms a modular and scalable multichannel inspection system which is able to operate in conventional

phased array mode as well as in multichannel mode with synchronous channels and also in a mixed-mode configuration, thus covering the whole spectrum of requirements. All modes offer numerous possibilities of hardware based data processing (gates, TD) and the ability of positional triggering of the system. Integration into customer-specific hard- and software infrastructures is simplified by support of different data interfaces and the systems versatile software driver layer (ITK).

Technical data

General

- Power supply 19" chassis: 230 VAC
- Frontend variant: 24 VDC



LinScanDuo 2.0, device and sensor

Data sampling

- ADC: 14 Bit at a sampling rate of 80 MSamples/s
- 64 kSamples sampling depth / channel
- Up to 16 simultaneously active channels
- Echo-start function every single channel
- Gate processing, up to 4 gates
- HF data, A-scan or compressed TD data
- Phased Array online summation with up to 16 channels

Receiver

- 100 dB dynamic range
- 18 MHz analog bandwidth
- 8:1 multiplexed receiver channel enables connection of up to 128 probes
- 2 analog input filters
- Time-dependent gain correction TGC (256 sampling points, 95 dB dynamics)

Transmitter

- Onboard transmitter topology: Rectangle, negative
- Transmission voltage 130 V at 50 Ohms
- Shot repetition rate up to 10 kHz

Ports

- Flexibly configurable I/O ports
- Communication interface: Standard Ethernet 1 Gbit/s or 100 Mbit/s, alternatively USB 3.0 or proprietary optical interface

Software support

- Inclusion in different frameworks (C++, C#, LabView, etc.) via ITK

Applications

OPTUS / ETHUS is optimized for industrial use in automated inspection applications that request phased array functionality and/or a large number of single channels at concurrently high repetition rate of the inspection cycle. The sturdy frontend design complements the default 19" chassis variant with a solution for near-sensor assembly. The integration toolkit simplifies the embedding into customer-specific inspection systems by support of established software frameworks (C++, C#, LabView).