



## OPTUS / ETHUS MULTI-CHANNEL ELECTRONICS FOR INDUSTRIAL APPLICATIONS

*OPTUS / ETHUS – Industrial Frontend Version*



### Are you familiar with our accredited industrial testing services?

- Test laboratory accredited according to DIN EN ISO / IEC 17025 and competent to issue certificates for qualifying and validating (new) nondestructive testing (NDT) processes for industrial testing
- Accelerated time-to-market and opportunity for qualified, standard-compliant deployment in industrial applications both for new in-house developments and for custom adaptations of innovative NDT technologies in fields where standards have not yet been established
- Certification of the corresponding quality management system in accordance with DIN EN ISO 9001

### Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren IZFP

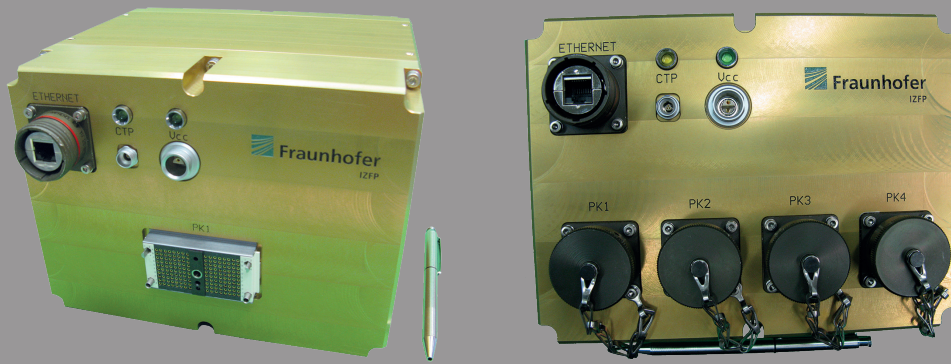
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OPTUS / ETHUS – Electronics



LinScanDuo 2.0, device and sensor

## Situation

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 multi-channel 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, ASCAN) 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

### Data Sampling

- ADC: 14 Bit at a sampling rate of 80 MSamples/s
- 64 kSamples sampling depth per channel
- Up to 16 simultaneously active channels
- Echo-start function for every single channel
- Gate processing, up to 4 gates (overlap is possible)
- 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 (e.g. for control of external components)
- 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 integration toolkit (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).