

## Are you already familiar with our industry-standard services?

- Accredited testing laboratory in accordance with DIN EN ISO/IEC 17025 for various NDT methods
- Certificate of competence of the accredited laboratory to qualify and validate (new) nondestructive testing methods for industrial testing practice in the field of ultrasonic testing
- Rapid transfer to market readiness for qualified, standard-compliant use in industrial applications, both for new developments (in-house developments) or for adaptations
- Our associated quality management system is certified in accordance with DIN EN ISO 9001

## Contact

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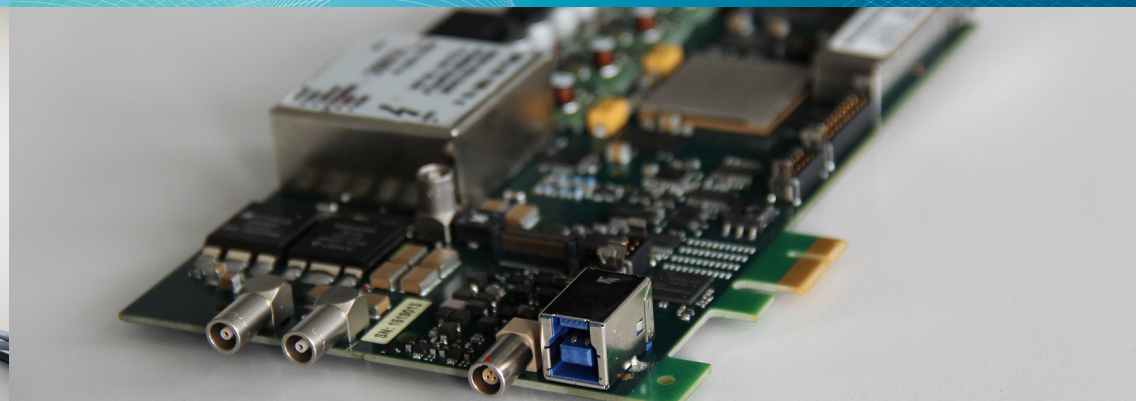
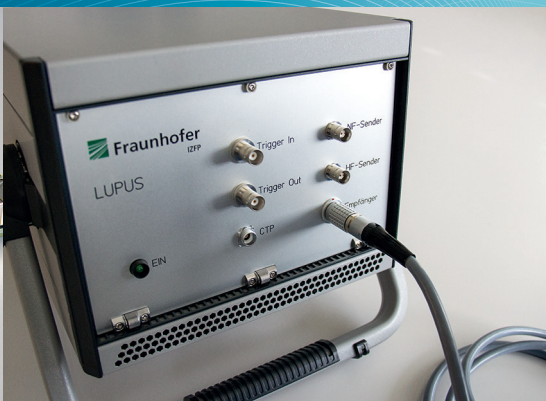


Sensor and Data Systems for Safety,  
Sustainability and Efficiency



## Flexible high-performance, single-channel ultrasound electronics

# UNIUS



UNIUS board and application LUPUS (air-coupled ultrasound pulser)

UNIUS board, detail

## UNIUS – Flexible high-performance, single-channel ultrasound electronics

In the context of the technological evolution known as "Industry 4.0" – which is a slogan for a multitude of technical measures to enable controlled processes instead of inspected processes – the requirements imposed on ultrasonic inspection systems rise to the same extent as the development progresses. Requests include adaptability to highly different application scenarios, steadily increasing sampling and data transfer rates while concurrently enhancing signal quality, and flexible and prompt integration of the inspection systems into existing customer production lines.

UNIUS is Fraunhofer IZFP's solution for technical challenges addressed to current single-channel ultrasound inspection systems.

### Technical data

#### General

- Power supply: 12 V  $\pm$ 10%, 9W - 14W (depending on inspection parameters)

#### Data sampling

- ADC: 14Bit at 240 MSamples/s sampling rate
- 128 kSamples sampling depth
- Up to 511 averages
- Echo-start function

#### Receiver

- 100 dB dynamic range
- 22 MHz analog bandwidth
- 2:1 multiplexed receiver channel, enabling T/R or I/E operation
- Up to 8 analog input filters (5 onboard + 3 pluggable)

- Run-time-dependent gain correction TGC (256 sampling points, 95 dB dynamics)

#### Transmitter

- Onboard transmitter topology: rectangle, negative, burst-capable
- Adjustable onboard transmission voltage up to 300 V (optional external supply up to 500 V)
- Shot repetition rate up to 10 kHz

#### Ports

- Flexibly configurable I/O ports (to control external components, etc.)
- USB 3.0 port for plug-and-play connection with host PC (e.g. as a laboratory system)
- Proprietary optical interface (e.g. for industrial applications in electromagnetically polluted environments)
- 128 MByte internal data cache for rapid measurements

#### Software support

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

#### Applications

UNIUS is a versatile, high-performance, single-channel ultrasound board covering a multitude of customer applications (defect inspection, prove of purity level, etc.) out of the box. The system is available as benchtop model and as a mobile and sturdy variant in form of an industrial notebook compliant to IP65 protection rating. Additionally, when using ITK software interface UNIUS can easily be integrated into customer-specific systems for manual or automated inspections. Moreover, the option for application-specific firmware adaptations referred to customer demands completes the UNIUS service portfolio.