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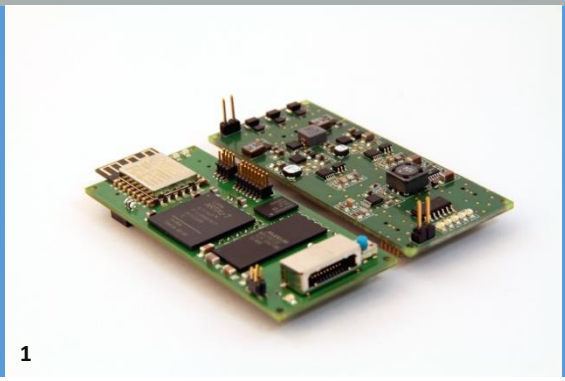

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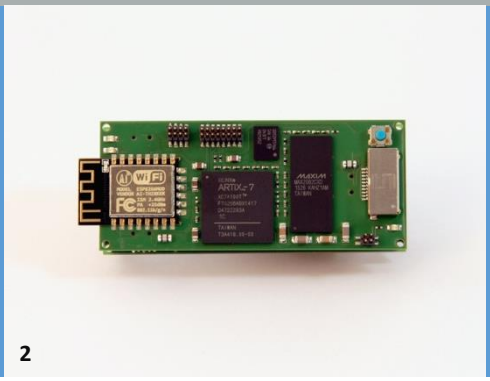

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1 *Full ultrasound system with power supply.*

2 *Mainboard of the ultrasound system.*

Highly Miniaturized 8-Ch System

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System description

The highly miniaturized, multi-channel ultrasound system developed for mobile use integrates a total of eight parallel transmit/receive channels and is configured for a frequency range between 800 kHz and 5 MHz. Based on a pluggable design concept consisting of two printed circuit boards, the system with dimensions of only 80 x 31 x 20 mm (without battery) can be easily integrated into almost any housing. A commercially available lithium-ion battery provides sufficient power to supply the system. Among other things, a cost-optimized and energy-saving Artix-7 FPGA is responsible for the entire sequence control, signal processing, communication interface management and synchronization tasks. A WIFI interface enables the transfer of the received ultrasound data to a mobile device, such as a smartphone/tablet, where the signal analysis will be performed.

The system properties listed in the table are for orientation only. On request, the device can be adapted to individual requirements.

Standard specifications

Transmitter TX	
Channels:	8
Transmit voltage:	+/- 50 V (not adjustable)
Transmit current:	2 A max.
Signals:	Tri-state burst signals (programmable)
Resolution:	6.25 ns (160 MHz)
Signal length:	Max. 6 µs / 10 cycles
Receiver RX	
Channels:	8
Noise:	6.5 dB (@ 50 Ω)
Amplification:	Max. 44.3 dB 39 dB adjustable
A/D converter:	40 MSPS / 12 bit
Local memory:	BRAM 24 kByte
System	
Frequency range:	800 kHz – 5 MHz
Input voltage:	2.5 V – 4.3 V (DC) ($NiCoO_2$ battery)
Power consumption:	Approx. 3 W
FPGA / SoC:	Artix-7 XC7A100T
Signal processing:	External (on mobile device)
Data interface:	WIFI 802.11 b/g/n
Transducer interface:	Samtec FCS8
Dimensions:	80 x 31 x 20 mm (without casing)