

# PCUS<sup>®</sup> pro Array – Phased-array ultrasonic frontend

Compact industrial phased-array ultrasonic frontend for automated testing of wheelsets, axles and complex-shaped geometries.

## Driving probes with up to 64 elements in 16:64 configuration

The PCUS<sup>®</sup> pro Array is a complete phased-array ultrasonic frontend for use in automated and manual inspection systems. The high data transfer speed of 40 MB/s and the fully parallel FPGA design allow testing at high speeds and with flexible parameterization. Up to four incremental encoders can be connected via the integrated scanner interface. The 64 independent encoders enable large transmit apertures. The PCUS<sup>®</sup> pro Array analog path offers an unmatched signal-to-noise ratio and a high dynamic range together with a precise 14-bit A/D conversion. The device can be used with the PCUS<sup>®</sup> pro Lab software or with our .NET SDK (Software Development Kit), allowing full control over all hardware functions in customized solutions.



PCUS<sup>®</sup> pro Array frontend – front side.

### PCUS<sup>®</sup> pro Array Details

Category	Characteristics	Value
General	Dimensions (L, W, H)	190 x 190 x 65 mm <sup>3</sup>
	Weight	1.9 kg
	Operating temperature and humidity range	5...50 °C @ 75 % relative humidity (non-condensing)
Transmitter	Number of transmitters	64
	Transmitter pulse voltage into internal 50 Ω	-20 to -180 V adjustable
	Pulse	Negative rectangle pulse
	Output impedance	< 15 Ω
	Pulse width	0 to 500 ns, in steps of 3.125 ns
	Pulse fall time	< 9 ns
	Pulse delay	0 s to 40 μs, in steps of 3.125 ns
	Pulse repetition frequency	Up to 2 kHz

## PCUS® pro Array Details

Category	Characteristics	Value
Receiver	Number of receivers	16 (4:1 multiplexed)
	Input mode	Pulse/Echo mode for array transducers
	Frequency range	500 kHz to 30 MHz (-3 dB)
	Input impedance	50 $\Omega$
	Filters	Two analog band filters per channel (user defined)
	Preamplifier gain	0/40 dB switchable
	Main amplifier gain	0...80 dB, maximum input signal 10 Vpp (100 % screen height)
	TGC	0...80 dB, max. 40 dB/ $\mu$ s
Signal path	Probe delay	0 to 819 $\mu$ s in steps of 12.5 ns
	Maximum recording length	65,535 samples per channel
	A/D converter	14 bit, 80 MS/s
	Gates	One start gate and four measurement gates
	Rectification	None, positive-, negative-, or full-wave
Interface and connectors	Array transducer connector	I-Pex or Hypertronics NEBV19/16PFD/THA
	PC interface	USB 2.0 high-speed: Bulgin connector PX0443, max. 40 MB/s
	Trigger in/out	TTL high or low active (Lemo 00)
	General purpose I/O (GPIO)	DSUB-25 socket (4 encoders, RS422/485)
	Scanner interface inputs	4 axis, RS422 level on DSUB 44 I/O connector
	Power supply	12–24 V DC, max. 48 W (30 W typical); Bulgin connector PX0412/2S
Software	Digitally signed drivers for Windows® (Windows® 7 or higher), x86 and x84	
	Managed Windows® SDK based on .NET 4.8	
System conformity	The PCUS® pro Array system meets all relevant requirements of ISO 18563-1	

## Disclaimer

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