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PCUS® *pro* MULTI – MULTI CHANNEL ULTRASONIC FRONTEND

Industrial compact-shape multi-channel ultrasonic frontend for parallel testing of railroad axles, wheels and rails.

FOR LARGE AUTOMATED INSPECTION SYSTEMS WITH MANY CONVENTIONAL PROBES

The modular concept of the PCUS® *pro* Multi allows flexible and cost efficient configurations from two channels up to 16 parallel channels per device. An integrated scanner interface enables the direct connection of up to four incremental encoders. The high data transfer speed of up to 40 MB/s and the full parallel FPGA design allows testing at high speeds and with fully flexible parameterization.

The device delivers an unreached signal to noise ratio and high dynamic range together with an accurate 14 bit analog to digital converter. The implemented hardware can be used with the PCUS® *pro* Lab software or with .NET SDK (Software Development Kit) for customized solutions and total control over all hardware features.

All devices are calibrated and tested against the ISO 22232-1 ultrasonic standard. New features can be implemented with firmware updates.

1 *PCUS® pro Multi frontend – front side.*

Fraunhofer Institute for Ceramic Technologies and Systems IKTS

Maria-Reiche-Strasse 2
01109 Dresden, Germany

Contact

Christian Richter
Phone +49 351 88815-635
christian.richter@ikts.fraunhofer.de

www.ikts.fraunhofer.de

Category	Characteristics	Value
General	Dimensions (L, W, H)	190 x 150 x 65 mm³
	Weight	1.7 kg
	Operating temperature and humidity range	5…50 °C @ 75% relative humidity (non-condensing)
Transmitter	Number of transmitters	16
	Transmitter pulse voltage into internal 50 Ω	-20 to -300 V, in steps of 1 V
	Pulse	Negative rectangle pulse
	Output impedance	< 25 Ω
	Pulse width	0 to 500 ns, in steps of 3.125 ns
	Pulse fall time	< 9 ns
	Pulse delay	0 to 51 µs, in steps of 6.25 ns
	Pulse repetition frequency	Up to 2 kHz
Receiver	Number of receivers	16
	Input mode	Pulse/Echo or Transmit/Receive mode
	Frequency range	500 kHz to 30 MHz (-3 dB)
	Input impedance	50 Ω
	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/µs
Signal path	Probe delay	0 to 819 µs, in steps of 12.5 ns
	Maximum recording length	65,535 samples per channel
	A/D converter	14 bit, max. 80 MS/sec
	Gates	One start gate and four measurement gates
	Rectification	Positive-, negative-, or full-wave
Interface and connectors	Transducer connector	Lemo 00
	PC interface	USB 2.0 high-speed: Bulgin connector PX0443, max. 40 MB/s
	Trigger in/out	TTL high or low active (Lemo 00)
	Scanner interface inputs	DSUB-25 socket (4 encoders, RS422/485)
	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* Multi system meets all relevant requirements of ISO 22232-1	