Fraunhofer
IKTS

PCUS® *pro* SINGLE – ULTRASONICS DEVICE

Ultracompact single-channel ultrasonic frontend for manual and automated testing of weldings, thickness measurements, education and test labs.

UNREACHED SIGNAL TO NOISE RATIO AND HIGH DYNAMIC RANGE

The PCUS® *pro* Single ultrasonic frontend enables manual or automated inspections with a single conventional probe (single or dual element). Main focus of this system is manual inspection in lab and education and simple automated systems.

The cost-efficient solution turns every PC or laptop running Windows operating system into a fully-featured ultrasonic testing system. Powered from the USB port, the device can optionally be equipped with an external scanner interface to operate with mechanical scanning systems in order to create B, C and D scans. The PCUS® *pro* Single hardware can be used with the PCUS® *pro* Lab software or with.NET SDK (Software Development Kit), which enables 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.

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

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Category	Characteristics	Value
General	Dimensions (L, W, H)	120 x 100 x 36 mm³
	Weight	480 g
	Operating temperature and humidity range	5…50 °C @ 75 % relative humidity (non-condensing)
Transmitter	Number of transmitters	1
	Transmitter pulse voltage into 50 Ω	50 to 250 V adjustable
	Pulse	Positive rectangle pulse
	Output impedance	< 14 Ω
	Pulse width	0 to 500 ns, in steps of 2.5 ns
	Pulse rise time	< 12 ns
	Pulse delay	0 to 40 µs, in steps of 2.5 ns
	Pulse repetition frequency	• Externally powered: up to 20 kHz, depending on recording length, pulse width, sampling rate and transmitter voltage • USB bus powered: up to 10 kHz, depending on recording length, pulse width, sampling rate and transmitter voltage
Receiver	Number of receivers	1
	Input mode	Pulse/Echo or Transmit/Receive mode
	Frequency range	500 kHz to 30 MHz (-3 dB)
	Input impedance	50 Ω
	Filters	Up to four analog band filters (user-selectable frequencies)
	Preamplifier gain	0/40 dB
	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 655 µs, in steps of 10 ns
	Maximum recording length	65,535 samples
	A/D converter	14 bit, max.100 MS/s
	Gates	One start gate and four measurement gates
	Rectification	None, positive-, negative-, or full-wave
Interface and connectors	Transducer connector	Lemo 00
	PC interface	USB 2.0 high-speed, USB-B connector, power consumption: max. 5 V/500 mA
	Trigger	• Input: TTL high or low active, pulse width > 100 ns, opto-coupled (MCX) • Output: LVTTL high active (MCX)
	I/O Interface	Trigger IN/OUT, analog in, +5 V/50 mA out: LEMO EPG307-0B
	Scanner interface inputs	Optional with external interface
	Power supply	USB bus powered, optional 12 V DC
Software	Digitally signed drivers for Windows® (Windows® 7 or higher), x86 and x64	
	Managed Windows® SDK based on .NET 4.8	
System conformity	The PCUS® *pro* Single system meets all relevant requirements of ISO 22232-1	

Disclaimer