OPBOX ver 2.1
Mini Ultrasonic Box
with Integrated Pulser and Receiver

www.optel.eu

OPBOX 2.1 is a complete ultrasonic testing device, suitable for all ultrasonic measurements and due to many additional digital inputs/outputs and internal processor it can be used as a controller for more complicated devices.
Opbox 2.1 can work together with devices like multiplexers or scanners.
The box has an implemented one channel pulser & receiver and can be used with one or two transducers (one is sending, and the second one receiving).
The system allows to buffer many acquisitions in internal memory and forward whole packet of data to control application. In this way, the high throughput of data reading from the device is obtained.



Features

-Low noise preamplifier (0.74 nV/√(Hz))
-High gain up to +89 dB
-Switchable analog filters
-Support fast TGC (time gain compensation)
-2 signal inputs PE and TT
-Input attenuator (-20dB)
-Input Impedance 50 Ohm, 10pF
-10 bit A/D Converter
-100MHz sampling frequency, 8bit samples
-Up to 512k x 16bit samples memory
-Delay settings up to 65535 sample periods
-various triggering mode
-BNC or Lemo analog connectors
-dimensions: L 100mm W 82mm H 32mm
-DB15 connector: I/O lines 6 Inputs and 6 Outputs
-USB-2.0 High Speed (480MBps)
-Power supply: USB connector <500mA
-weight: 310g

Technical Data

Analog parameters:

Input Amplifier Gain:	-31dB to 65dB (step 0.5dB)
Switchable preamplifier:	+24dB
Switchable Attenuator:	-20dB
Input Range:	±275mV (±2.0V with Attenuator -20dB)
Full Bandwidth:	0.5 MHz - 25 MHz (-3dB)
Switchable Filters(-3dB):	0.5 - 6MHz, 0.5 - 10MHz, 0.5 - 15MHz, 0.5 - 25MHz, 1 – 6MHz, 1 - 10MHz, 1 - 15MHz, 1 - 25MHz, 2 - 6MHz, 2 – 10MHz, 2 – 15MHz, 2 - 25MHz, 4 - 6MHz, 4 - 10MHz, 4 - 15MHz, 4 – 25MHz

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Technical Data - cont

Pulser:

Pulse Voltage	0V to 360V (positive pulse)
Charging Time	adjustable from 0 to 3.1us in 0.1us steps
Fall Time	<= 20 ns
Bandwidth	up to about 50MHz
Output impedance	< 1 Ohm

A/D data acquisition:

Resolution	10 bit (8bits are stored)
Maximum input voltage:	±0.5V;
Sampling Frequency(MHz)	100; 50; 33.3; 25; 20; 16.7; 14.3; 12.5, 11.1; 10; 9.1, 8.3; 7.7; 7.14 and 6.67
Data Buffer	1 to 256k samples
Measuring frame delay:	0 to 65535 sample periods
PRF	up to 10000[1)].

Hardware data processing:

Data representation:	RF, Absolute;
Measurements in defined frames:	3 peak detectors; 3 level comparators – modes of transition detection: Level, Rising, Falling, Transition.

DAC (TGC) with arbitrary function generator:

Frequency:	100MHz
Resolution:	8 bit
Max. gain changing:	48dB pro step

Trigger:

Software	Software command;
Internal	Programmable timer;
External	2 incremental encoder modules;2 TTL inputs

Counter modules for incremental encoders:

Two 32bit modules with CHA, CHB and IDX inputs;
Programmable input modes: 1X, 2X, 4X;
Programmable triggering on position;

Inputs / Outputs

Transducer connectors:

PE (sending&receiving)	BNC or Lemo;
TT (only receiving)	BNC or Lemo;

DB15 connector:

Inputs:	6 inputs for 2 Incremental encoder channels (A, B, Index signal) or general purpose lines;
Outputs:	6 general purpose outputs; Including Trigger output signal (Sync Out); +5V fused supply for powering external devices. [1)]





Software

We are delivering a standard version of the software (for any Microsoft Windows up to 10 x64 with Microsoft Hardware certification report Approved) and for special needs: SDK with ready to use examples for LabView, MATLAB x64, C++ wrapper for dll, Python and Linux., and also low-level description of how to control our devices directly from any USB tools.



[1)]available in selected designs

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