

OPBOX ver 2.2

Compact Ultrasonic Box with 2-channel Pulser and Receiver

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OPBOX 2.2 is a 2-channel ultrasonic testing device suitable for various ultrasonic measurements and also as a controller for more complicated system with help of additional digital inputs/outputs.

The device has two high voltage pulsers and switchable receiver which allow for Pulse-echo operation on both outputs and Through-transmission operation in both T-R directions (PE1->PE2 or PE2->PE1).

Opbox 2.2 can also work together with devices like multiplexers or scanners.

The FIFO storage 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/ $\sqrt{\text{Hz}}$)
- High gain up to +89 dB
- Switchable analog filters
- Support fast TGC (time gain compensation)
- Onboard 2-channel HV pulser (up to 460V)
- Input attenuator (-20dB)
- Input Impedance 50 Ohm
- 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
- I/O connector: 6 Inputs and 6 Outputs
- USB-2.0 High Speed (480Mbps)
- Powered from USB connector
- Compact dimensions
- Low weight: 380g

Technical Data

Analog parameters:

Input Amplifier	-31dB to 65dB
Gain:	(step 0.5dB)
Switchable preamplifier:	+24dB
Switchable Attenuator:	-20dB
Input Range:	$\pm 275\text{mV}$ ($\pm 2.0\text{V}$ with Attenuator -20dB)
Full Bandwidth:	0.8 MHz - 25 MHz
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

Technical Data - cont.

Pulser:

Pulse Voltage:	0V to 460V (positive pulse)
Charging Time:	0 to 6.3us with 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)
ADC input range:	±0.5V;
Sampling Frequency(MHz):	100.0; 50.0; 33.3; 25.0; 20.0; 16.7; 14.3; 12.5; 11.1; 10.0; 9.1; 8.33; 7.7; 7.14 and 6.67
Data Buffer:	1 to 256k samples
Sampling Delay:	0 to 65535 sample periods
PRF:	up to 10000 ¹).

Hardware data processing:

Data representation:	RF, Absolute;
Measurements in defined gates:	3 peak detectors; 3 level comparators Signal 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:

PE1(sending&receiving)	BNC or Lemo
PE2(sending&receiving)	BNC or Lemo

CONTROL connector (Dsub-15):

Inputs:	6 inputs for 2 Incremental encoder channels (A, B, Index signal) or general purpose lines;
Outputs:	6 general purpose outputs including Trigger out signal (Sync Out);
Power:	Auxiliary +5V supply input for the unit.

Dimensions

Case:	LxWxH
Overall:	159x82x32mm 186x85x35mm



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