OPBOX ver 2.0 - USB 2.0

Mini Ultrasonic Box with Integrated Pulser and Receiver





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General Description

OPBOX 2.0 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.

The box can work together with following devices:
· multi channel multiplexer - the box can control it directly;
· Scanner - it has input for incremental encoders;

The box has an implemented one channel pulser & receiver and can be used with one transducer (Puls- Echo mode) or with two (one is sending, and the second one receiving) - Through Transmission mode.

Features

- Low noise preamplifier (0.74 nV/√(Hz))
- High gain up to +92 dB
- Switchable analog filters
- Support fast TGC (time gain compensation)
- 2 signal inputs PE and TT
- Input attenuator (-20dB)
- Input Impedance 50 Ohm, 10pF
- 100MHz sampling frequency, 10bit resolution
- Delay settings up to 65535 sample periods
- various triggering mode;
- BNC or Lemo analog connectors;
- DB15 connector: I/O lines 6 Inputs and 6 Outputs.
- USB 2.0 HiSpeed;
- weight: 310g
- dimensions: L 100mm W 82mm H 32mm
- Power supply: delivered by the USB connector (5 VDC

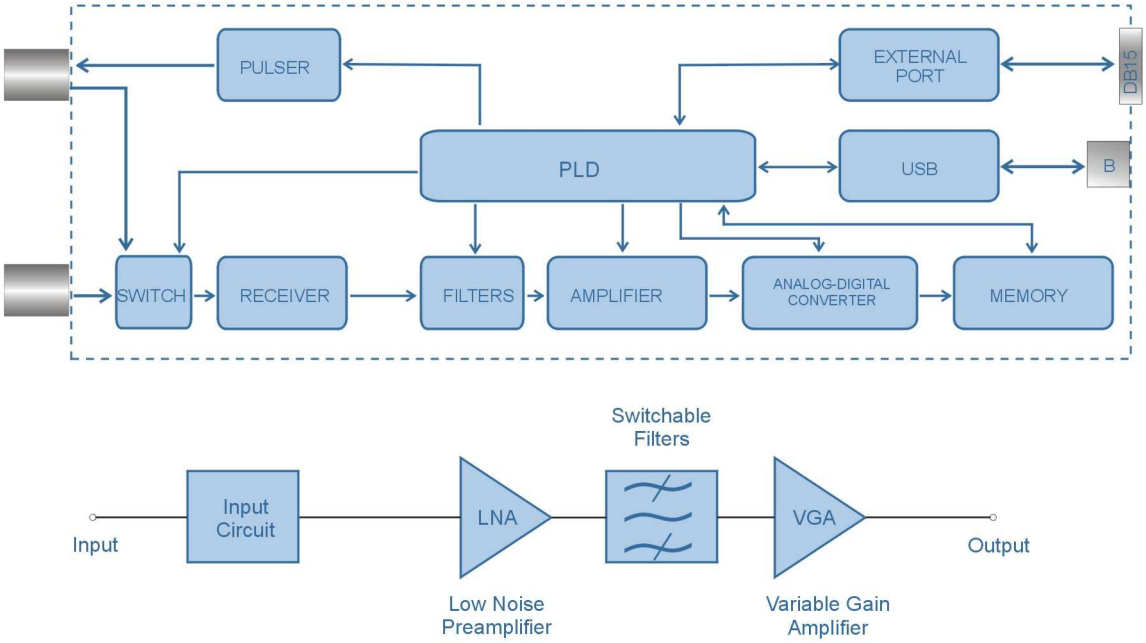
Applications

- Medical ultrasound imaging
- Industrial Non Destructive Testing
- Research & Development



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Block Diagram



Simplified Block Diagram of analogue circuit of the Receiver.

Outline Dimensions



Receiver Features

Full Bandwidth:	0.5 MHz - 25 MHz (-3dB)
Input Impedance:	50 Ohm, 10 pF
Adjustable Amplifier Gain:	-28dB do 68dB (step 0.5dB)
Additional Input Amplifier:	+24dB
Input Attenuator:	-20dB
Input Range:	± 275mV (± 2.0V with active Attenuator)
Switchable Filters:	
Range (-3dB):	0.5 - 6 MHz, 0.5 - 10 MHz, 0.5 - 15 MHz, 0.5 - 25 MHz, 1 - 6 MHz, 1 - 10 MHz, 1 - 15 MHz, 1 - 25 MHz, 2 - 6 MHz, 2 - 10 MHz, 2 - 15 MHz, 2 - 25 MHz, 4 - 6 MHz, 4 - 10 MHz, 4 - 15 MHz, 4 - 25 MHz

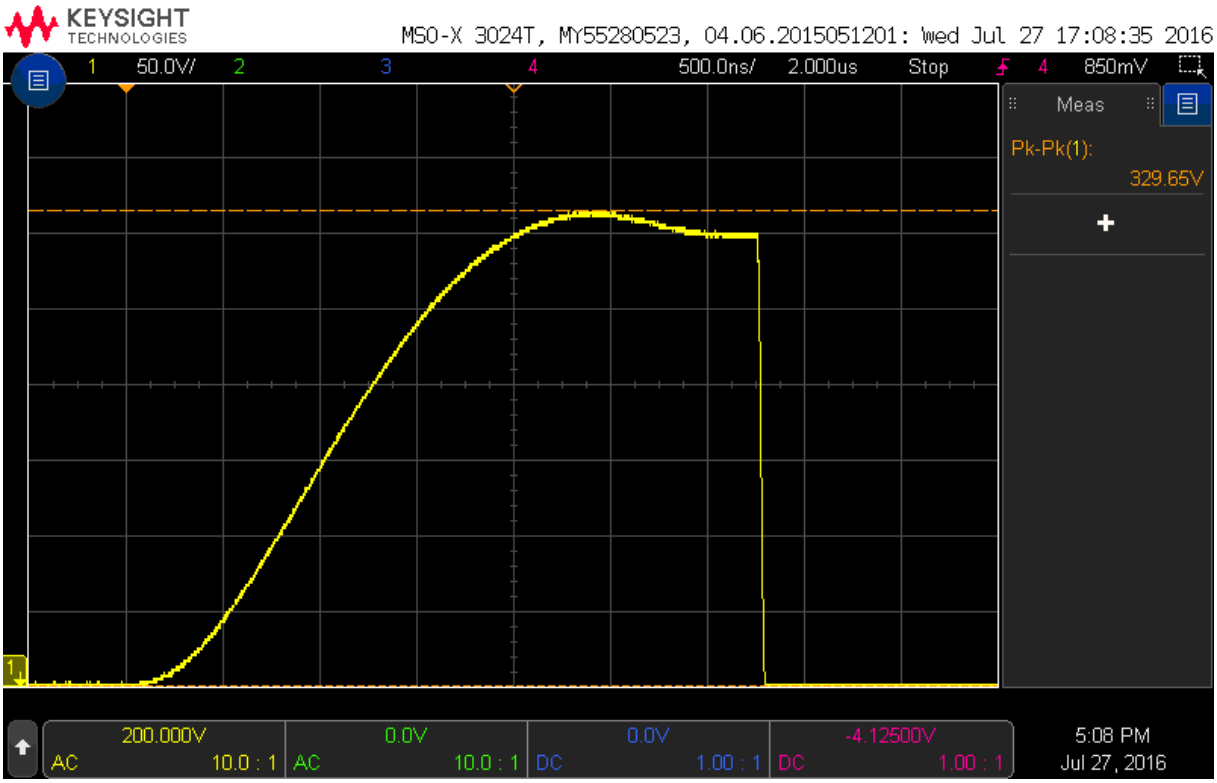
Data processing:

Sampling Frequency (max.):	100 MHz
Sampling Resolution:	10 bits
Measurement Delay:	up to 65535 sample periods
Data Buffer	256k samples
Hardware data processing:	▶ Averaging ▶ Peak detector ▶ 3 measure gates ▶ TGC function with DAC curve
PRF	to 10000

Transmitter

Low Voltage:	0	V
High Voltage:	360	V
Voltage Step:		V
Charging Time:	0-3.1	us
Step of charging time:	0.1	us
Pulse Fall Time:	20	ns
Output Impedance:	<1 Ohm	
Trigger:	▶ Application trigger rate Software controlled; ▶ On-board trigger timer; ▶ External trigger 2x inputs, TTL Signal.	

Typical Pulse Shape



Input/Output Connector DB15

DB15 pin	Signal name	Standard	Description
1	GPO 0	TTL 5V	SYNC_OUT output or general purpose output
2	GPO 2	TTL 5V	General purpose output
3	GND		ground
4	GPI 1	TTL/LVTTL	General purpose input or CHB input for ENC1
5	GPI 3	TTL/LVTTL	General purpose input or CHA input for ENC2
6	GPO 5	TTL 5V	General purpose output
7	Reserved		
8	GPI 5	TTL/LVTTL	General purpose input or IDX input for ENC2
9	GPO 1	TTL 5V	General purpose output
10	GPO 3	TTL 5V	General purpose output
11	GPI 0	TTL/LVTTL	General purpose input or CHA input for ENC1
12	GPI 2	TTL/LVTTL	General purpose input or IDX input for ENC1
13	GPO 4	TTL 5V	General purpose output
14	GND		ground
15	GPI 4	TTL/LVTTL	General purpose input or CHB input for ENC2

Software

- Specialized Software Package for Windows 95/98/ME/2000/XP/VISTA/7.0/8.0/ 10.0;
- Available Libraries* Dll's for LabWindows, Matlab, C, C++

* - speciall order

Accessories

- OPBOX 2.0 can work together with multiplexers OPMUX series and phased array devices OPPA series.
- Available wide range of ultrasonic transducers for different applications and with varied characteristics.