

OPCARD 2.0

PCI-bus Ultrasonic Card with Integrated Pulsar and Receiver

OPCARD 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 card can work together with following devices:

- 32 channel multiplexer - the card can control it directly;
- Scanner - it has input for incremental encoders;

The card has an implemented one channel pulser & receiver and can be used with one transducer or with two (one is sending, and the second one receiving).



Features

- Low noise preamplifier (0.74 nV/ $\sqrt{\text{Hz}}$)
- 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
- Up to 512k x 16bit samples memory
- Delay settings up to 65535 sample periods
- various triggering mode
- Data transfer speed - up to 132MB/s
- Expansion Connector for extra functions daughter-board
- interfaces (RS232, RS485, SPI, I2C)
- Standard PCI short card (174.63mm x 106.68mm)
- BNC or Lemo analog connectors
- DB15 connector for I/O and power lines
- weight: 172.5g

Technical Data

Analog parameters:

Input Amplifier	-28dB to 68dB
Gain:	(step 1dB, error +/- 0.3dB)
Input Post-Amplifier:	off or +24dB
Input Attenuator:	off or -20dB
Input Range:	+/- 275mV (+/-2.5V with Attenuator active)
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

Technical Data - cont

Pulser:

Pulse Voltage	off(0V) to 360V (positive pulse, Short circuit step pulser)
Charging Time	regulated from 0 to 3.1us in 0.1us steps
Fall Time	<= 20 ns
Pulse Duration	Short circuit, bandwidth up to about 50MHz
Output impedance	< 1 Ohm

A/D data acquisition:

Resolution	10 bit
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	from 1 to 262143 (256k) samples in step of 1
Delay Time	Post trigger from 0 to 65535 sample periods in step of 1

Hardware data processing:

Hardware Positive¹⁾, Negative¹⁾, Absolute
data processing;
3 x measure gate;
peak detector;
Hardware averaging.

DAC (TGC) with arbitrary waveform generator:

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

Trigger:

On-board trigger timer;
Application trigger rate Software
controlled;
External trigger 2x inputs, TTL Signal.

Counters / Input for incremental encoder:

Counters for Incremental Encoders 2
channel, 16-bit

Inputs / Outputs

Analog:

2 x BNC or Lemo connectors

DB15 connector:

Inputs:
2 inputs for
Incremental encoders;
2 general purpose
digital lines;

Outputs:
Trigger output signal
(Sync Out);
3 general purpose
output;
2 fast output buffers
for clock
synchronization.¹⁾

Others:

+12V, -12V fused supply for powering
external devices;
+5V or Vreg (0-9V) output for
control/supply external device.

PCI Connector:

PCI rev2.2, 32bit, 33MHz, 132MB/s max
transfer bandwidth
Universal connector for 3.3V or 5V PCI
sockets.

Expansion connector:

2x10pin 2.54mm connector for special
functions daughter-boards
+12V, -12V, +5V, +3.3V power pins;
I/O pins serial interfaces (3.3V signal
levels): RS232, SPI, I2C and others;
Inputs for general purpose counters;
Interrupt input;
Analog input for A/D converter.

¹⁾ available in selected designs