

OPCARD 2.2

PCI-bus Ultrasonic Card

with Integrated Pulsar and Receiver

www.optel.eu

OPCARD 2.2 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 devices like multiplexers or scanners.

Opcard can work in sequence mode. It has possibility to store up to 1024 sets of settings. So parameters can be switched very fast for every next data acquisition.

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.

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



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)
- 2 analog signal inputs PE and TT
- Input attenuator (-20dB)
- Input Impedance 50 Ohm, 10pF
- 10bit A/D Converter
- 100MHz sampling frequency, 8bit sample
- 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: 175g

Technical Data

Analog parameters:

Input Amplifier Gain:	-31dB to 65dB (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

Data processing:

Resolution	10 bit (8bit stored)
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 262088 (256k) samples in step of 4
Delay Time	Post trigger from 0 to 65535 sample periods in step of 1
PRF	up to 20 000 with multiplexers up to 100 000 ¹⁾
Hardware data processing:	Absolute, RF
Hardware averaging	
Hardware digital filtering ¹⁾	

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.
Trigger output signal, TTL Signal

Counters / Input for incremental encoder:

Counters for Incremental Encoders 2
channel, 32-bit

Inputs / Outputs

Transducer connectors:

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

DB15 connector:

Inputs:	6 inputs including encoder and external trigger inputs;
Outputs:	6 outputs, including Trigger output signal (Sync Out).

Others:

+12V, -12V fused (polymer fuse) supply
for powering external devices,

+5V or Vreg (0-10V) fused (polymer
fuse) 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⁾ details for request.