

#### INTRODUCTION

Today high-speed network applications demand hardware acceleration to be able to process tasks at wire-speed. For this purpose new family of COMBOv2 cards has been designed. Its target deployment is primarily in the area of high-speed computer networks, where the algorithms need to be accelerated with dedicated hardware. Main attention is given to high performance, modular conception and easy implementation of new algorithms. The family of COMBOv2 cards is based on Xilinx programmable integrated circuits (FPGA).

The intention to obtain cutting edge performance and transparent scalability path makes it indispensable to specify several basic types of cards for COMBOv2 family. Such an approach facilitates the assignment of separate processing stages into self-contained blocks, easy implementation of the latest interfaces and gradual performance growth while preserving the advantage of mutual compatibility among various cards within COMBOv2 family. The whole family of cards is laid out in a form of extension cards for PC-like computers.

#### ARCHITECTURE & INTERFACES

The cards are able to process continuous data streams on a link layer where the bandwidth may easily reach the magnitude of tens of Gbps. It can also handle the data transmission rate towards software environment at the magnitude of tens of Gbps.

Important level of flexibility across the family of COMBOv2 cards is based on the „sandwich” principle between mother card and the actual interface card. Mother card is fitted with dedicated connectors for this purpose. Despite of the input and output traffic limits the mother card is designed with 100 Gbps in mind.

The mother card itself has PCI-Express connectivity. On the other hand the interface cards are equipped with network line connectors varying from metallic ones to the optical, from 10 Mbps to Nx10 Gbps.

Data transfers between mother card and the host environment take advantage of PCI Express serial bus. Advanced reconfiguration modes without host PC reboot are adopted. Usage of Virtex FPGA family from Xilinx is used to implement wide range of data processing and communication tasks. Rich variety of configurable elements and embedded blocks establish flexible hardware platform.

#### FEATURES

- ▶ **High industrial quality for commercial appliances**
- ▶ **Health management & firmware protection**
- ▶ **Flexible architecture with various interface cards**
- ▶ **Digital temperature sensors**
- ▶ **Unique on-the-fly FPGA boot system**
- ▶ **On-chip bus with high-speed DMA engines**
- ▶ **Fast static memories, high-capacity dynamic memories**
- ▶ **Support for software based on open standards**
- ▶ **Complete development framework available**



#### APPLICATIONS

COMBOv2 family of cards is destined for networking and telecommunications applications acceleration thus it is suitable for:

- ▶ Monitoring, IDS/IPS
- ▶ VoIP applications, cryptography
- ▶ Data retention, Lawful intercepts
- ▶ Wire-speed packet capture
- ▶ Novel algorithm prototyping
- ▶ Low latency applications

### MOTHER CARD COMBO-LXT

Mother card COMBO-LXT provides an interconnection with the host computer and the main source of processing power in a form of an FPGA chip. COMBO-LXT is a PCI Express x8 mother card equipped with the XILINX Virtex5 XC5VLX155T, QDRII RAM and socket for DDR2 SODIMM memory. The interface cards can be connected either through Low Speed Connectors or Interface Connectors.



### CHARACTERISTICS

The COMBO-LXT card represents the most powerful device with complex data processing and interface features. One of the eminent properties lies in flexible design of the interconnection system which opens up an easy path for the extension and interface cards to be plugged in.

### HOST INTERFACE

Interaction with the host system (most often PC-like computer) is accomplished by means of eight-lane serial PCI Express bus.

### DATA PROCESSING

FPGA contains helpful I/O structures which supplement the configurable elements with all necessary resources to support the data transmission at high-speed.

### MEMORY SUBSYSTEM

Architecture of the memory system has been designed with the aim to accommodate an outstanding throughput, up to 20Gbps for independent read or write operations (up to 10Gbps for each when performed concurrently).

### CONNECTORS

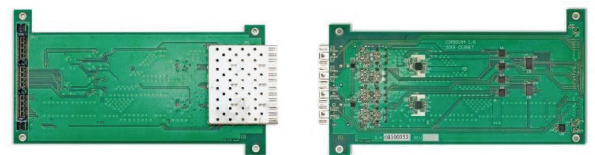
Combination of 16 MGT signal pairs and 72 differential LVDS pairs in two IFC connectors guarantee the overall connectivity at least of 56Gbps in each direction, card also contains four LSC connectors - up to 10Gbps each.

### APPLICATIONS

Group of interface cards offering an add-on solution for the attachment of data links.

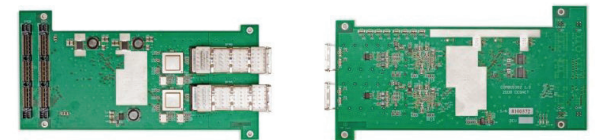
#### COMBOI-IG4

- ▶ Four port 1 Gbps
- ▶ 4x SFP cage multi/singlemode, CWDM or copper
- ▶ 2x Digital Temperature Sensor



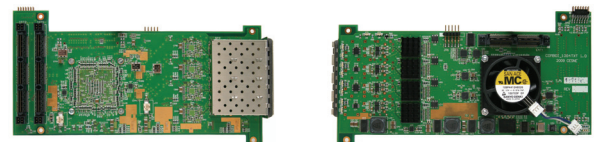
#### COMBOI-10G2

- ▶ Two port 10 Gbps
- ▶ 2x XFP cage multi/singlemode, CWDM or copper
- ▶ Digital Temperature Sensor



#### COMBOI-10G4TXT

- ▶ Four port 10 Gbps
- ▶ Virtex5 TXT FPGA chip
- ▶ 2x SFP+ cages multi/singlemode, CWDM or copper
- ▶ Digital Temperature Sensor



### ORDERING INFORMATION

Please contact INVEA-TECH for pricing and additional information about this product.

[www.invea-tech.com](http://www.invea-tech.com)