

## Rugged Embedded Modules and Industrial PCs

Accessories for System Development

[www.fastwel.com](http://www.fastwel.com)

## Our membership



PC/104 Consortium is an international organization of PC/104 products manufacturers that maintains the PC/104 specifications, disseminates PC/104 technology, and promotes the welfare of its members.

**Executive Member**



PICMG (PCI Industrial Computer Manufacturers Group) is a consortium of companies who collaboratively develop open specifications for high performance telecommunications and industrial computing applications.

**Associate Member**



Intel® Embedded and Communications Alliance (Intel® ECA) is a community of developers and solution providers committed to the design and implementation of modular systems based on Intel technologies in the area of communication and embedded applications.



CAN in Automation (CiA) is the international users' and manufacturers' organization that develops and supports CAN based higher layer protocols.



The OPC Foundation is dedicated to ensuring interoperability in automation by creating and maintaining open specifications that standardize the communication of acquired process data, alarm and event records, historical data, and batch data to multi vendor enterprise systems and between production.



The EtherCAT Technology Group (ETG) is the forum in which key user companies from various industries and leading automation suppliers join forces to support, promote and advance the EtherCAT technology. EtherCAT Technology Group aims to ensure the compatibility of EtherCAT implementations by defining functional requirements, conformance tests as well as certification procedures.

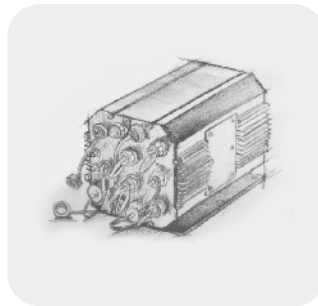
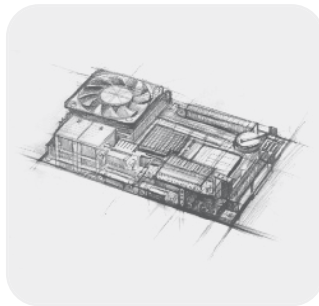


StackPC – New Standard of Embedded Stackable Systems Design. The StackPC Specification defines new approach to stackable systems design and development. The specification includes all valuable heritage of PC/104 standards along with the new features of StackPC connector. The main competitive distinction of the StackPC connector is the combination of most popular low speed interfaces such as USB, COM, CAN, SPI, LPC and high speed SATA, Gigabit Ethernet and PCI-Express x1, x4 within one stack expansion connector.



VPX is a broadly defined technology utilizing the latest in a variety of switch fabric technologies in 3U and 6U format blades. OpenVPX is the architecture framework that defines system level VPX interoperability for multi-vendor, multi-module, integrated system environments.

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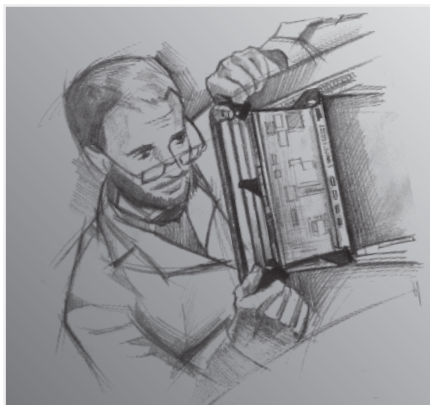
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## Who we are



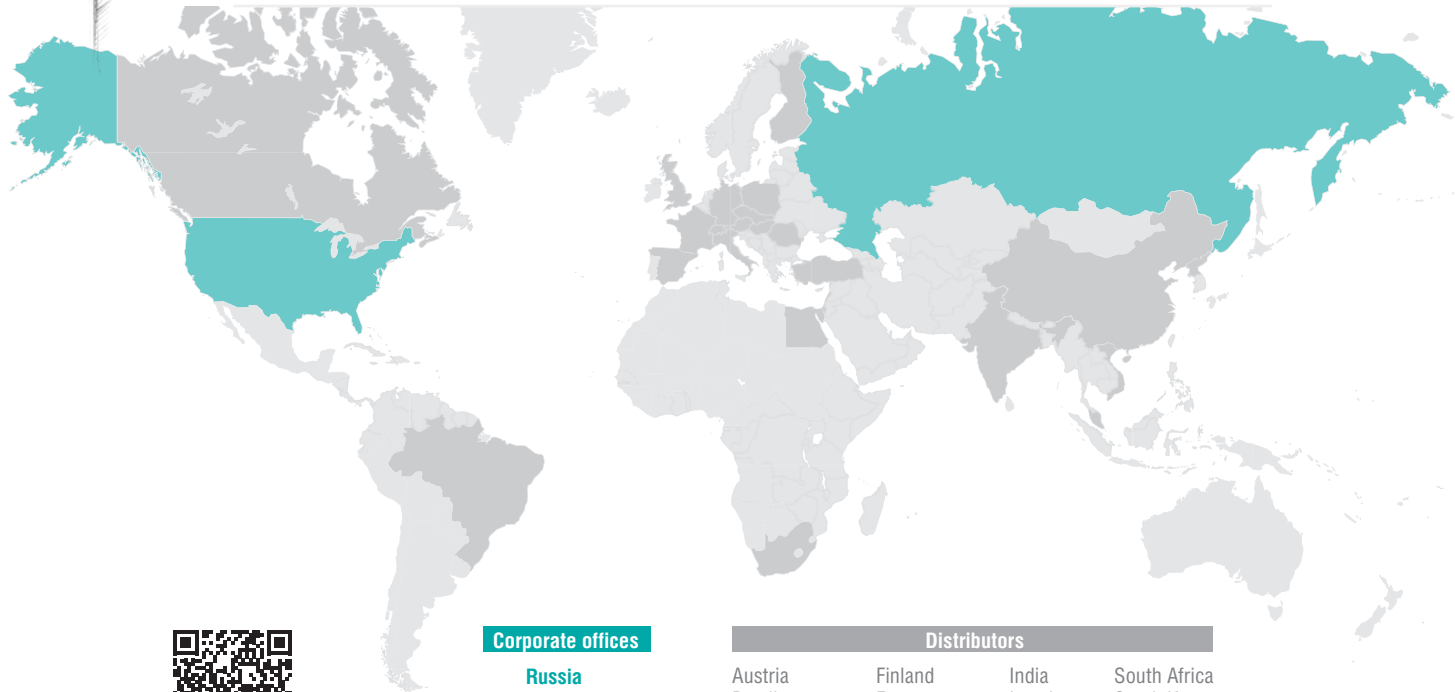
For more than 15 years Fastwel has been one of the leading companies developing and manufacturing rugged Single Board Computers for mission-critical applications in transport, security and telecom. We deliver a wide range of CPU modules designed in PC/104, StackPC, EPIC, CompactPCI, 3.5", MicroPC form-factors and Computer-on-Modules. Besides standard products manufacturing, Fastwel offers a full range of OEM and ODM services.

## Customer approach

- Customer support within the whole project life-cycle
- 10+ years products availability
- 3 years warranty
- Standard products customization
- Strict compliance with the International Industry Standards (EN50155, IEC)



## World wide

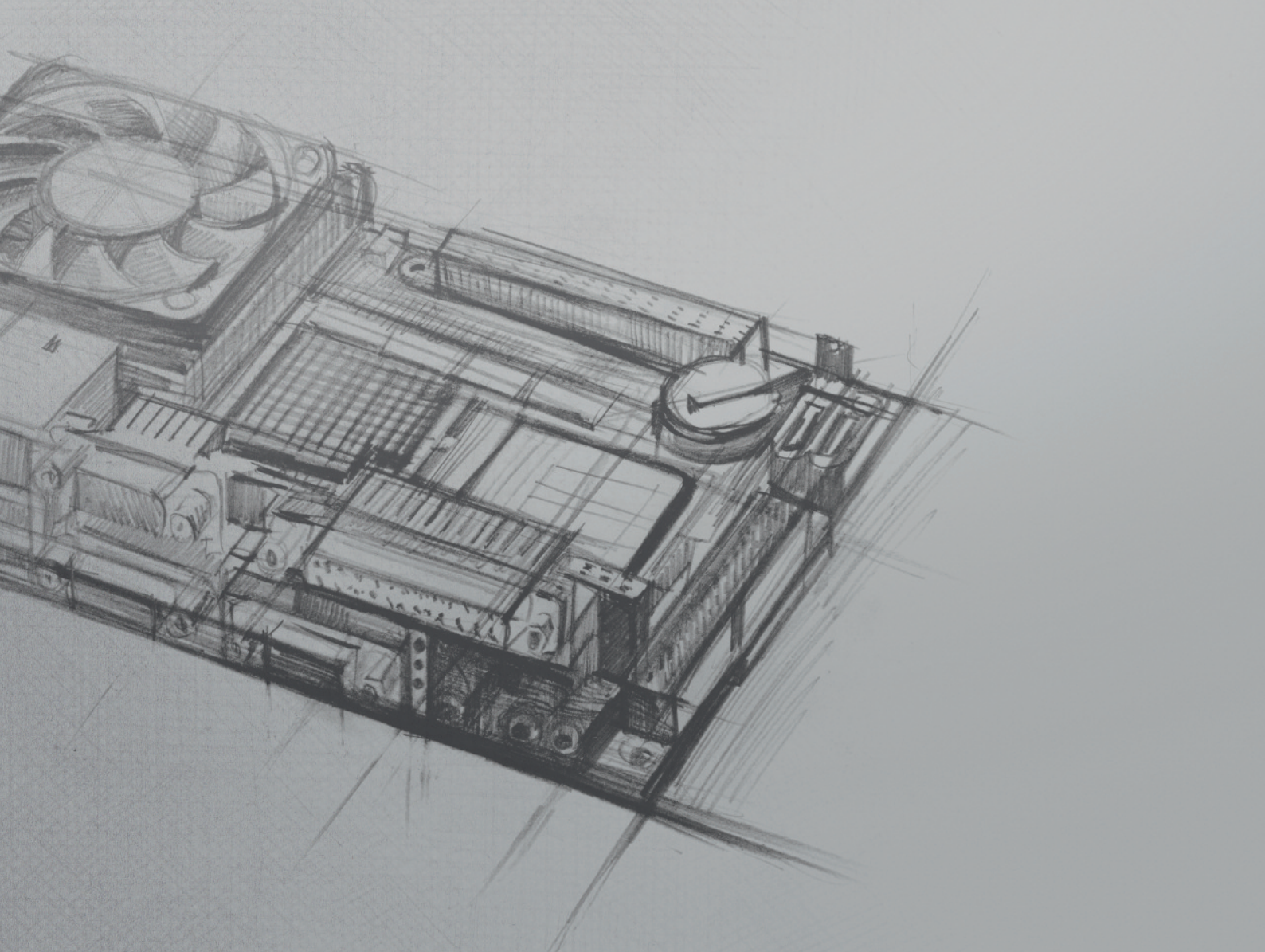


### Corporate offices

Russia  
USA

### Distributors

Austria	Finland	India	South Africa
Brasil	France	Israel	South Korea
Canada	Germany	Italy	Spain
China	Great Britain	Poland	Switzerland
Czech Republic	Hong Kong	Romania	Turkey
Egypt	Hungary	Singapore	Vietnam





# Embedded modules

PC/104 and StackPC

EPIC, 3.5"

3U CompactPCI

6U CompactPCI

COMs

Legacy Products

Embedded modules

# PC/104 and StackPC

Avionics



Automatic pilot and landing system



Video surveillance system



Ticketing System

## PC/104 and StackPC

## CPU modules



### Basic comparison chart

	Field	USB 2.0	Ethernet	Video	ISA 16-bit (PC/104)	PCI 32-bit (PC/104+)	Storage
CPC307	4×RS-232 2×RS-485/422 isolated CAN	4	1 FE	—	+	+	2 SD, IDE
CPC309	2×RS-232	8 (6 channels routed to StackPC* connector)	2GE (routed to StackPC* connector)	VGA and LVDS	—	+	1×Compact Flash, SATA NAND 4 GB, 2×SATA (routed to StackPC* connector)
CPC310	2×RS-232 2×RS-485/422 galvanically isolated	4	2GE	VGA and LVDS	+	+	CF, SATA
CPC313	2×RS-232	6 (4 channels routed to StackPC* connector)	10GE, 2×1GE (routed to StackPC* connector)	VGA and LVDS	—	+	SATA (routed to StackPC* connector), SSD 16 GB (soldered)

\*StackPC: 4×1 PCI\_Express, 6×USB 2.0, 2×SATA II, 2×USB 2.0, 2×SATA II, 2×RS-232, LPC, SMBus.



-40...+85°C  
-50...+90°C

**CPC313****Embedded Single-Board Computer in StackPC-PCI form-factor**

- CPU: Baikal-T1, MIPS32 P5600 core with 900 MHz, 2 physical cores
- DDR3-1600 SDRAM 4 GB, soldered, with ECC support (8 bit)
- Flash drive: up to 16 GB
- StackPC extension connector
- PCI/104 extension connector
- Real-time clock with integrated lithium battery 3V
- Watchdog timer
- Weight: no more than 200 g
- Software compatibility: Linux (Debian 7.x)



-40...+85°C

**CPC309****Intel Atom D510 Based SBC with StackPC\* Extension Connector**

- Intel PineviewD Dual Core (D510) 1.66 GHz
- VGA output (resolution up to 2048×1536 60 Hz)
- LVDS interface (resolution up to 1366×768 60 Hz, single channel 18-bit mode)
- DDR2-667 64-bit up to 2 GB (Onboard)
- 4 GB SATA SLC Flash drive (Onboard)
- 2×SATA II on StackPC
- Compact Flash Card slot
- 2×USB 2.0, 6×USB 2.0 on StackPC 2×SIMcards
- Watchdog 1×Fixed; 1×Programmable
- MS DOS 6.22, FreeDOS, Windows XP (Embedded), Linux 2.6, QNX 6.4

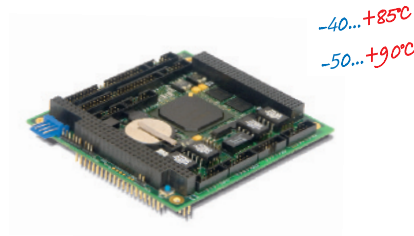
## PC/104 CPU modules



### CPC310

#### PC/104-Plus Intel Atom E38xx Based SBC

- Intel Atom E38xx (1.33–1.46 GHz)
- DDR3L-1066/1333 SDRAM up to 4 GB with ECC support
- Integrated video controller: 2D/3D-accelerator; VGA output (resolution up to 2560×1600 60 GHz); 2×LVDS ports (resolution up to 1600×1200 60 GHz 18/24-bit)
- USB ports: support of USB 1.1 (12 Mb/sec), USB 2.0 (480 Mb/sec); connection up to 4x devices
- PS/2 keyboard and mouse port
- Power supply: +5 V
- Linux, QNX, Microsoft Windows Embedded Standard 8, Microsoft Windows Embedded Standard 7



### CPC307

#### PC/104-Plus DM&P Vortex86DX

- DM&P Vortex86DX, 600 MHz CPU
- 16-bit ISA and 32-bit PCI buses
- 256 MB DDR2 SDRAM soldered
- Up to 2 MicroSD
- Fast Ethernet 10/100 Mb/s
- 4×USB ports 2.0
- 2×Isolated CAN 2.0 ports
- 2×RS-232, 2×RS-232/485/422, 2×RS-485/422
- Shock/vibration resistance: 100g/10g
- Fastwel DOS, MS DOS, Linux, QNX

## PC/104 Extension modules



-50...+85°C

### PS351

#### PC/104 Power Supply and System Control

- Input voltage range: 11...36 VDC
- Overall power output: 50 W max
- Surge overvoltage protection, Input/output isolation – 1500 V
- Capability to supply power from main and reserve sources
- System control and monitoring via isolated RS-232/422
- Automatic power control modes
- Watchdog, Real time clock, Temperature sensor
- System events log (switch to reserve power, input voltage reduction, etc.)
- Heater and fan control covering at  $T > -50^{\circ}\text{C}$
- Shock/vibration 50g/5g



-40...+85°C

### NIM351

#### PC/104 Field Bus module

- Compliance to PC/104 Plus v2.2
- 2×CAN 2.0a and 2.0b, isolated
- 2×RS-422/RS-485, isolated
- ISA based controller, PCI path through
- Protective coating (optional)
- Support for FreeDOS, QNX, Windows XPe, Linux



-40...+85°C

### CNM350

#### PC/104-Plus Communication and Navigation Module

- PC/104 Plus compliance
- 4-band GSM 850/900/1800/1900 modem, GPRS/EDGE Class 10
- Two SIM cards support
- GPS/GLONASS receiver, 24 channels
- PCI/104 (PCI) interface to Host processor
- Shock/vibration resistance: 50g/10g
- QNX, Windows XPE, Linux

## PC/104 Extension modules



0...+70°C  
-40...+85°C

### AIC324

#### PC/104 Analog and Digital Input/Output Module

- System controller interface – PC/104 (ISA 16-bit)
- Pass-through PCI bus
- 32 analog inputs; ADC 16-bit; 250 kHz;  $\pm 10\text{ V} \dots \pm 0.625\text{ V}$
- 4 analog outputs; DAC 16-bit; 6 s;  $\pm 10\text{ V} \dots \pm 2.5\text{ V}$  programmable calibration of analog circuits
- 24 discrete input/output channels; 3.3 V or 5 V CMOS; support for 16-bit and 32-bit counters; electrostatic protection of outputs
- Analog/discrete isolation: 500 V
- Supported operating systems: Fastwel DOS, Linux, QNX



0...+70°C  
-40...+85°C

### DIC324

#### PC/104 Digital I/O Card with Galvanic Isolation

- System Bus – 8-bit ISA bus
- 16×Digital/Frequency Input Channels
- 8×Digital Output Channels
- Delay of input signals: 25  $\mu\text{s}$
- Generation of the event hardware interrupts at inputs
- Programmed time interval for de-bouncing for inputs
- Maximum switch on/switch off time: 3 ms
- Software compatibility with OS: FDOS, FreeDOS, Windows XP (Embedded), Linux 2.6



-40...+85°C

### DIC334

#### PC/104 Digital I/O Module with galvanic isolation

- System Bus: LPC
- 16×Digital/Frequency Input Channels
- 8×Digital Output Channels
- Single or two-wire connection of signals
- Switching output voltages/currents: 60 V/500 ma
- Measuring frequencies over any channel
- Six separable lines of hardware interrupts
- Control of input states
- Programmable de-bouncing time span for inputs
- Software compatibility: FDOS, FreeDOS, Windows XPe, Linux 2.6

## PC/104 Extension modules



-50...+85°C

### KIC301

#### Interface Module in StackPC-PCI Form-factor

- RS-232/485/482 interface
- PCI-104 interface
- SATA, up to 300 Mb/s
- Mini PCIe card slot
- Shock/vibration resistance: 50g/25g



-40...+85°C

### NIM354

#### Network Module in StackPC-PCI Form-factor

- Integrated switch for 7 Ethernet channels
- QoS IEEE 802.1p, IPv4, IPv6, 4096 VLAN IDs with three safety levels of the 802.1Q standard
- PoE PSE 4 ports with galvanic isolation from other circuits, corresponding to IEEE 802.3af/at standards and compatible with the devices up to 25 W
- PoE PSE program control via SMBus (libraries for Windows, Linux and QNX)



-40...+85°C

### NIM355

#### Interface Module in StackPC-PCI Form-factor

- PCI System Bus: 32-bit/33 MHz
- 4xCAN channels, 4xDigital Input Channels, 4xDigital Output Channels
- Dimensions: no more than 90,2x95,9x23,5 mm
- Weight: no more than 120 g
- Power supply: power supply voltage of +5 V  $\pm$  5%, and current consumption: no more than 300 mA
- MTBF: no less than 170 000 hours
- Windows XPe, Linux 2.6.x, QNX 6.5

## StackPC Extension modules



-40...+85°C

### PS353

#### StackPC/PCI-104 Power Supply Module

- StackPC-FPE form-factor
- Input voltage range 9–36 V
- Output voltage +3.3; +5; +12; +5 STDBY
- Maximum output power 100 W
- Galvanic isolation input/output 1500 V
- Protecting inputs against surge voltage, short circuits and overheating



-40...+85°C

### PS352

#### StackPC-PCI Power Supply Module

- StackPC-PCI form-factor
- Input voltage: 9–36 V; Output voltage: 48 V  $\pm$  5%
- Module's power supply without load: 2.4 W
- Maximum output power: 75 W
- Galvanic isolation input/output: 1500 V
- Overload and overheating protection
- Vibration resistance: 5g
- Single shock resistance: 100g
- Multiple shock resistance: 50g



-40...+85°C

### VIM302

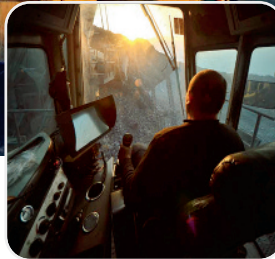
#### Video Graphics Controller Card with StackPC expansion connector

- System-on-a-chip TMS320DM8186 (VLIW-processor C674X)
- DSP; RISC-processor ARM cortex-A8;
- 3D-graphics accelerator SGX530
- RAM: DDR3 SDRAM 1 GB
- NAND Flash 256 MB for storing OS
- PCI-E BUS: Compatibility with the PCI-E 2.0 specification
- SATA interface: transfer rate up to 300 MB/sec
- USB interface: support of USB 1.1 (12 MB/sec), USB 2.0 (480 MB/sec)
- Software compatibility: Open Source Linux

Embedded modules

# EPIC, 3.5"

Transportation



Command desk control

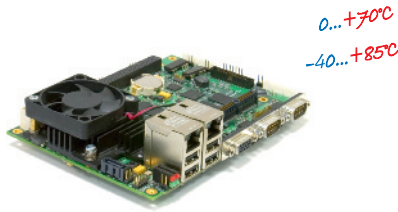


Vehicle Management System



Video surveillance

## EPIC, 3.5"



**CPC805**



### EPIC Single Board Computer with PCI-104 and StackPC Extensions

- Intel® Atom N450 CPU 1.66 GHz soldered
- 1 or 2 GB DDR2 SDRAM soldered
- VGA and LVDS up to 1400×1050 pixels
- Extensions: PCI-104 32/33 and StackPC (4×1 PCI-Express, 6×USB 2.0, 2×SATA II, LPC, 2×RS-232, SM bus)
- 1×SATA II, CF, Soldered 2 GB IDE Flash
- 4×RS-232, 2×RS-485, isolated
- 7–30 V DC or ATX power supply
- Shock/vibration resistance: 50g/5g
- DOS, Windows XP Embedded, Windows Embedded Compact 7, QNX, Linux



**CPB909**



### Intel Atom E38xx-based SBC with StackPC Expansion Connector in 3.5" Form-Factor

- CPU Intel Atom E38xx ( 1.33–1.91 GHz)
- DDR3L-1066/1333 SDRAM up to 4 GB with ECC support
- Integrated graphics controller, 2D/3D-accelerator
- FLASH BIOS: 64 Mb SPI-Flash
- PS/2 keyboard and mouse port
- Power supply: +5 V
- Linux, QNX, Microsoft Windows Embedded Standard 7, Microsoft Windows Embedded Standard 8

Embedded modules

# 6U CompactPCI (PICMG 2.30, 2.16, 2.0)

Marine applications



Navigation system



Command desk control



Control monitoring

## 6U CompactPCI



### CPC503

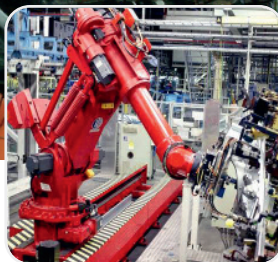
#### 6U CompactPCI Host Blade Intel Core i7 CPU Module

- PICMG 2.0, PICMG 2.16, PICMG 2.1 compliant
- Intel Core i7 CPU, Dual (2.2 and 1.5 GHz) and Quad (2.1 GHz) core
- 4 or 8 GB DDR3 SDRAM ECC 1333 MHz, soldered
- 4 Gbit Ethernet: 2 on front, 2 on rear (PICMG 2.16)
- 4×SATA II, site for onboard 1.8 HDD, 4×USB 2.0 (front)
- PCI 64-bit/ 66 MHz, hot swap support
- **XMC mezzanines:** x8 PCI-Express Gen II, 64/133 PCI-X, 2×USB2.0, 1×SATA II
- **MIC1901:** 2×10/100/1000 Mbit Ethernet, LineIn, LineOut, Mic, SATA interface
- Linux 2.6, QNX 6.5.0, Windows 7 (Windows Embedded Standart 7)

Embedded modules

# 3U CompactPCI (PICMG S.0, 2.30, 2.16, 2.0)

Unmanned Vehicles



On-board computer



Navigation system



System Control

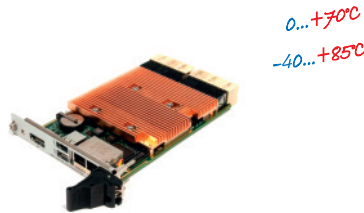
## 3U CompactPCI



### CPC512

#### 3U CompactPCI S.0 Intel® Core i7 Based CPU Module

- Intel IvyBridge (2/4 Cores)
- RAM: DDR3 SDRAM 1333, 1600 MHz or DDR3L SDRAM 1066, 1333 MHz with ECC up to 8 GB soldered, 2-channel
- Interfaces: LPC Bus/ PCI-E Bus/ SMBUS/ Micros SD/ SATAIII/ SATAII/ 2x ports LAN 10/100/1000 Mbit on PCI-E x4 Gen3/1xport LAN 10/100/1000 Mbit with AMT support/ USB ports: 13xUSB 1.1 (12 Mb/sec), USB 2.0 ports (480 Mb/sec) and 4xUSB 3.0 (4.8 Gb/sec) ports
- Power supply:  
Supply voltage: +12V, +5V\_STBY (optional)
- Single/Multiple shock resistance: 100g/50g
- Windows 7 Embedded, Linux 2.6, QNX 6.5.0



### CPC514

#### 3U CompactPCI S.0 Elbrus based CPU Module

- VLIW-based CPU of Elbrus architecture (up to 800 MHz)
- DDR3 SDRAM 1600 MHz with ECC support 8 GB, soldered, 2xchannel
- Flash BIOS: 64 Mb SPI-Flash
- USB 2.0 ports: 2xports are routed to the front panel connectors,
- 7xports are routed to J3 CPCI Serial connector
- Humidity: up to 80%, no condensation; up to 98%, no condensation, for /Coated option
- Software compatibility: Elbrus OS; KPDA. 10964-01 OS
- MTBF: no less than 80 000 h

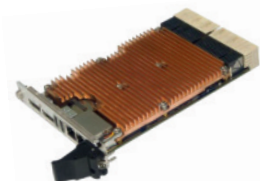


### CPC516

#### 3U CompactPCI S.0 Baikal-T based CPU Module

- Baikal-T CPU: MIPS32 P5600 core with up to 1.2 GHz
- DDR3-1600 SDRAM 4 GB, soldered
- Display Port up to 1920x1080 @ 50 Hz
- SSD: 8 GB
- Real-Time Clock with integrated lithium battery 3 V
- Software compatibility:  
Linux (Debian 8.x)
- MTBF: no less than 100 000 h

## 3U CompactPCI



0...+70°C  
-40...+85°C

### CPC518

#### 3U CompactPCI S.0 Intel Xeon D-1559/Xeon D-1539/ Intel Pentium D-1519 CPU Module

- Intel Xeon D-1559 1.5 GHz 45 W, 12 cores, 12 MB cache
- Intel Xeon D-1539 1.6 GHz 35 W, 8 cores, 12 MB cache
- Intel Pentium D-1519 1.6 GHz 35 W, 4 cores, 6 MB cache
- RAM:DDR4-2133 16 GB or 32 GB with ECC support
- Software compatibility: Linux 3.19; QNX 6.x; Microsoft Windows Embedded Standard 7; Microsoft Windows Embedded Standard 10



0...+70°C  
-40...+85°C

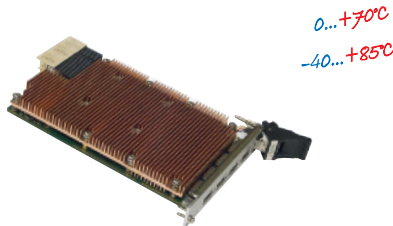
### CPC520

NEW

#### CPCI PICMG 2.30 AMD Ryzen Based CPU Module CPC520

- Processor: AMD Ryzen Embedded (series V1000 or R1000) SOC APU
- RAM: DDR4 SDRAM 1600 MHz, 8 GB, x64, ECC
- FLASH BIOS: 8 MB SPI-Flash
- SSD SATA Flash disk: 16 GB (SLC NAND Flash)
- Dimensions:  
No more than: 130.5×213.0×20.32 mm
- Power supply voltage: + 5 V ± 5%
- Software compatibility: Linux, QNX, Microsoft Windows Embedded Standard 7, Microsoft Windows 10
- MTBF: 100 000 h

## Peripheral 3U CompactPCI modules



### VIM556

#### 3U CompactPCI S.0 Graphics Controller Module

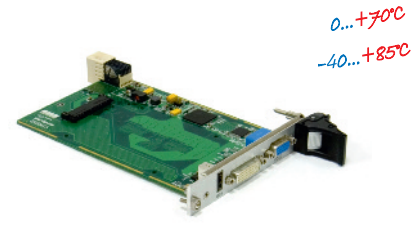
- NVIDIA Quadro K2100M: Graphics Controller Module: 665 MHz, 576 CUDA cores
- RAM: 2 GB GDDR5, 128-bit, 48 GB/s
- Graphics: 2×3840×2160 @ 60 Hz
- DisplayPort: 4×DisplayPort interfaces on the front panel
- Power supply: Supply voltage: +12 V ± 10%
- MTBF: no less than 250 000 hours
- Windows 7 Professional 32/64-bit, Windows Embedded Standard 7 32/64-bit, Linux Debian 7.0 32-bit



### VIM554

#### CompactPCI S.0 Audio/Video Capture Module

- Form-factor: PICMG CPCI-S.0 R1.0 CompactPCI® Serial Specification 3U
- System bus: PCI Express x4
- LED-indication of module's operation modes
- Power supply: Supplying voltage: +12.0 V, consumed current: no more than 0.8 A
- Vibration resistance: 5g
- Single/multiple shock resistance: 100g/50g
- Windows 7 (Embedded) 32/64-bit, Linux 3.2.0



### VIM552

#### CompactPCI S.0 Graphics Processing Module

- Compliance with PICMG 2.30 and PICMG S.0 standards
- LynxExp SM750 graphics processor
- 64 MB DDR SDRAM
- VGA (up to 1920×1440) and DVI-I (up to 1920×1200) front panel interfaces
- 1×USB 2.0 on front panel
- 1×SATA channel with possibility
- Passive cooling
- Windows XP (Embedded), Linux 2.6

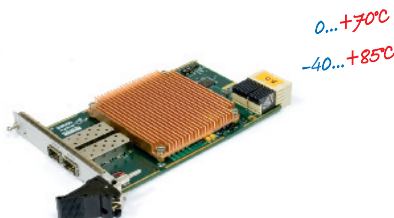
## Peripheral 3U CompactPCI modules



### KIC550

#### 3U CompactPCI S.0 Storage Module for Connection of 2.5" HDD

- Compliance with PICMG 2.30 and PICMG S.0 standards
- Place for mounting a 2.5" disk with SATA interface
- USB 2.0 at the front panel or USB 3.0 via on-board connector



### NIM550

#### 3U CompactPCI S.0 10GB Ethernet Module

- 2×Channels 10 GBASE-SR/SW
- Windows 7 Embedded, Linux 2.6, QNX 6.5.0



### DIC551

#### 3U CompactPCI S.0 Mezzanine Carrier Module

- System Bus PCIe x1
- Support of up to 2 single size mezzanine boards and 1 double size mezzanine board
- "Hot swap" of modules
- Availability of rear output of signals from the module
- Developer kit on the basis of M551T for the development of proprietary mezzanine boards

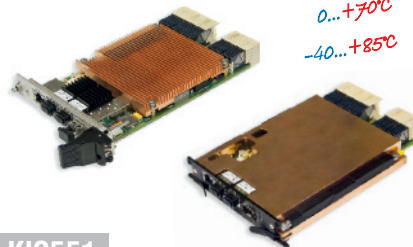
## Peripheral 3U CompactPCI modules



### CNM550

#### 3U CompactPCI S.0 GSM/UMTS Wireless Communication and GPS/GLONASS Positioning Module

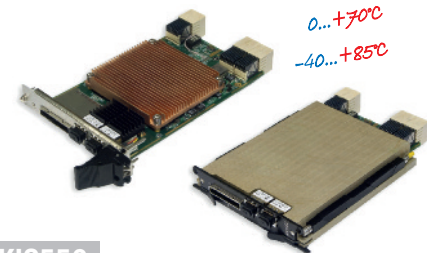
- Compliance with PICMG 2.0 specification (32-bit/ 33 MHz)
- GSM 850/900/1800/1900 MHz, UMTS 850/1900/2100 MHz
- Data transmission: GPRS (up to 48 Kbit/s reception/transmission), EDGE (up to 236.8 Kbit/s reception), HSDPA (up to 7.2 Mbit reception), HSUPA class 5 (up to 2 Mbit transmission)
- 2xSIM/USIM card sockets
- USB 2.0 device interface
- 24 universal GPS/GLONASS channels; maximum positioning error – 5 m (2 m in differential mode)
- External GSM/UMTS and GSM/GLONASS antennas support



### KIC551

#### 3U CompactPCI S.0 PCIe/GB Ethernet Switchboard

- Compliance with PICMG® CPCI-S.0 R1.0, PCI Express® 3.0 specification, PCI Express® External Cabling Specification rev.1
- Dimensions: 3U: 160x100 mm , 4HP
- Power supply: +12 V
- MTBF: no less than 80 000 hours
- Windows 7, Linux 2.6



### KIC552

#### 3U CompactPCI S.0 PCIe (External) Switchboard

- Compatibility with PICMG/VITA standards: PICMG CPCI-S 1.0 D0.70
- CompactPCI Serial
- PCI Express External Cabling
- PCI Express Fiber Optics
- Weight: no more than 600 g
- Power supply: +12 V ± 10%, power consumption: no more than 40 W
- MTBF: no less than 100 000 hours
- Linux Debian 7.0 32-bit, Astra Linux 64-bit

## Peripheral 3U CompactPCI modules



-40...+85°C

**KIC502** **NEW**

### 3U CompactPCI S.0 Interface Module

- PCI Express External cable connection (for KIC502-01), PCI Express External inter-case connection (KIC502-02)
- Power supply: Power supply voltage +12 V  $\pm 10\%$ , current consumption – 1A
- Resistance to mechanical stress: Sinusoidal vibration with acceleration of no more than 5g, single shocks with a peak acceleration of no more than 100g, multiple shocks with a peak acceleration of no more than 50g
- Weight: no more than 0.6 kg
- MTBF: No less than 500 000 h

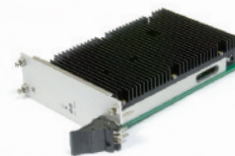


-40...+85°C

**KIC504** **NEW**

### 3U CompactPCI S.0 Interface Module

- CompactPCI: PCI Bus 32 bit 33/66 MHz
- Power supply voltage: +3.3 V  $\pm 5\%$ ; +5 V  $\pm 5\%$
- Dimensions: no more than 131.0×214.0×21 mm
- Moisture: up to 80% at the temperature of 25°C, non-condensing; up to 95% at the temperature of 25 C for the /COATED option
- Weight: no more than 0.6 kg
- MTBF: no less than 500 000 h



-40...+85°C

**PS510**

### 3U CompactPCI S.0 Power Supply Module

- Input voltages: 24, 48, 72, 110 V
- Power: 200 W
- Insulation voltage: 1000 V
- Hot redundancy
- Control over I<sup>2</sup>C bus
- Connector type: 51939-667

## Peripheral 3U CompactPCI modules

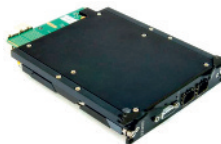


-40...+85°C

### NIM550

#### 3U CompactPCI S.0 Interface Module

- Form-factor: CPCI-S.0 3U/4HP with forced air cooling
- System bus: PCI-E x8/x4 Gen2 (up to 5 GT/s)
- Power supply: 12V  $\pm$ 10%
- Power consumption – no more than 18.4 W
- Software compatibility: Astra Linux Special Edition 1.4 (64 bit), Linux Debian 8 (64 bit)
- MTBF: no less than 300 000 h



-40...+85°C

### NIM550RC

#### 3U CompactPCI S.0 Interface Module

- CPCI-S.0 3U/5HP, with heat spreader
- System bus: PCI-E x8/x4 Gen2 (up to 5 GT/s)
- SATA interface: Support of SATA-I and SATA-II modes
- Power supply: 12V  $\pm$ 10%
- Power consumption – no more than 18.4 W
- Software compatibility: Astra Linux Special Edition 1.4 (64 bit), Linux Debian 8 (64 bit)
- MTBF: no less than 300 000 h

Embedded modules

# Computer-on-modules

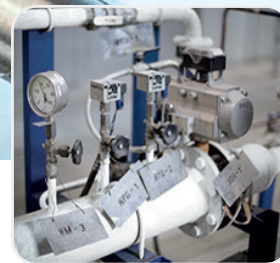
Industrial Automation



Rugged PCs



Internet-of-Things/M2M



Control monitoring

## Computer-on-modules



-40...+85°C

### CPC1302

#### Mezzanine COM Express Basic Intel BroadWell-H 47W CPU Module

- 64-bit CPU Intel BroadWell-H 47W (37W CTD), 13 nm or Intel Core i5-4422E 4th Gen 25W (Haswell Refresh), 22 nm
- DDR3L-1600 SDRAM up to 8 GB with ECC support
- FLASH BIOS: 128 Mb SPI-Flash, modifiable within the system
- FRAM 32 KB (SPI port) for storing user data
- COM-Express Type 6 connector
- SSD 8GB on SATA interface
- RTC with power supply from "RTC battery" port
- Watchdog timer
- Power supply: +12 V from COM-Express connector (+5 V (SBY) as option)
- Linux, QNX, Microsoft Windows Embedded Standard 8, Microsoft Windows Embedded Standard 7



-40...+85°C

### CPC1303

#### Intel Xeon D-1559 based Module in COM Express Basic Format

- CPU Intel Xeon D-1559 1.5 GHz 12C 45 W, D-1539 1.6 GHz 8C 35W, D-1519 1.5 GHz 4C 25 W
- DDR4-2133 SDRAM up to 32 GB, with ECC support
- 1×PCIe port x16 GEN3, 8 GT/s
- PCIe port x8 GEN3, 8 GT/s
- 7 (8) PCIe ports x1 GEN2, 5 GT/s
- 4×USB 3.0 ports
- 2×USB 2.0 ports
- 2×ports SATA III 6 GbpsF
- Port "LAN 0": Gbit Ethernet Intel 210
- SPI port (External Boot)
- 2×10GbE KR ports
- LPC port (Specification Rev. 1.1)
- SMBus port
- I<sup>2</sup>C port
- Speaker Out
- 4×GPIO ports
- 2×RS-232 ports (TTL, 128-byte FIFO, up to 3Mbps)



-40...+85°C

## CPB914

### x86 Vortex86DX3™ Based CPU Module in ETX format

- 800 MHz Vortex86DX3™ CPU, 2 cores
- RAM: soldered DDR3-800 SDRAM, 2 GB
- Bus frequency: 500 MHz
- Built-in non-volatile memory: 8 KB FRAM for storing configuration
- FLASH BIOS: 2 MB, modifiable within the system
- Shock / Vibration resistance: 50g / 5g
- Software compatibility: Microsoft™ MS-DOS®6.22, FreeDOS, Linux Debian 8, QNX 6.x, Microsoft™ Windows 7 Embedded, Windows Embedded Standard 2009
- Weight: no more than 100g
- MTBF: no less than 50 000 h



-40...+85°C

## CPC1001

### SMARC v.1.1 i.MX6 Quad Core 1 ARM Cortex-A9 Based CPU Module

- CPU i.MX6 Quad Core 1 ARM Cortex-A9
- RAM: 4 GB DDR3LP
- Video input 24-bit Parallel RGB LVCMOS, one/two 18/24-bit LVDS, MIPI DSI Lane, HDMI 1.4
- Video capture inputs MIPI CSI 2 Lane, 8-bit Parallel RGB LVCMOS
- PCIe bus Gen II 1 Lan
- Flash-drive 32 GB eMMC, SDIO-interface
- SATA II interface
- Gigabit Ethernet interface
- Ports USB 2.0: 1×port OTG, 1×port Host
- Support of HD-Audio: 2×I²S
- GPIO-interface, 2×CAN 2.0B
- Serial interfaces: 3×COM-ports, 3×I²C, 2×SPI
- Software compatibility: Linux, Android, QNX Neutrino

## Computer-on-modules



-40...+85°C

### CPC1311

#### COM Express Intel Atom E3845/E3825/E3827 Based Module

- Intel Atom: E3845: 1.91 GHz, 4x core, (CPC1311-01 version); E3825: 1.33 GHz, 2x cores, (CPC1311-02 version); E3827: 1.75 GHz, 2x cores, (CPC1311-03 version)
- L1-Cache (32 KB of instructions, 24 KB of data); L2-Cache 1024 KB
- DDR3L-1066/1333 SDRAM up to 4 GB with ECC support
- SSD SATA Flash-drive: 4 GB (SLC NAND Flash)
- Linux 2.6, QNX 6.5, Windows Embedded 8, Windows Embedded 7



-40...+85°C

## AIC124

### MicroPC Analog I/O Module

- 16x single-wire or 8x differential channels;
- 8x channel digital output port: CMOS levels; Group galvanic isolation
- Maximum voltage between module channels and ISA bus: 500 V DC
- MTBF: 180 000 hours
- Dimensions: 125×123×27 mm
- Vibration resistance: 5g
- Single shock resistance: 100g
- Multiple shock resistance: 50g



-40...+85°C

## DIC120

### MicroPC Programmable I/O Module

- System bus: 8-bit ISA bus
- Digital I/O: 96 (DIC120-01) or 48 (DIC120-02) digital I/O channels with logical signal levels (CMOS, TTL)
- Support of timers/pulse counters
- Power consumption: +5 V ± 5%, no more than 340 mA
- Dimensions: no more than 125×115 mm
- FDOS, FreeDOS, Windows XP (Embedded), Linux 2.6



-40...+85°C

## DIC122

### MicroPC Digital Input Card with Galvanic Isolation

- 32x digital/frequency input channels
- Single-wire or two-wire connection of signals
- Frequency measurement via any channel
- Generation of the event hardware interrupts at inputs
- System bus: 8-bit ISA bus
- Delay of input signals: 25 µs
- Frequency measurement via any channel
- Isolated voltage source of: +12V for potential-free contacts (isolation 1000 V)
- Optical isolation of inputs between channels: 500 V
- Optical isolation of inputs between a channel and the "ground": 1000 V
- Programmed time interval for de-bouncing for inputs
- Software compatibility with DIC112
- Programming of interrupts

## Legacy Products



-40...+85°C

### DIC 123

#### MicroPC Digital Output Card with Galvanic Isolation

- System bus: 8-bit ISA bus
- 32x digital output channels
- Single-wire or two-wire connection of signals
- Switching output voltages/ currents 60 V/ 500 mA (by differential load connection)
- LED indication of requests (addressing)
- Maximum switch on/switch off time: 3 ms
- Galvanic isolation of inputs between channels: 500 V
- Galvanic isolation of inputs between a channel and the "ground": 1000 V
- Control of output states (prior to isolation)
- Six separated lines of hardware interrupts
- Software compatibility with: FDOS, FreeDOS



-40...+85°C

### PS151

#### Power Supply Module in MicroPC format

- MicroPC form-factor
- Input voltage: 10,5...36 V
- Protection against surge overvoltages at input of the primary power supply
- Consumption current in switched-on condition: 5 mA
- Galvanic isolation at input/output: 1000 V
- Protection against overloads and overheating
- Vibration/Single shocks/Multiple shocks resistance: 5g/100g/50g



-40...+85°C

### CPC108

#### MicroPC AMD® Geode™ LX800 CPU Module

- AMD® Geode™ LX800 CPU, 500 MHz
- 256 MB DDR SDRAM
- Support for LCD panels (resolution up to 1600x1200) and CRT monitors (resolution up to 1920x1440)
- 2xIsolated CAN ports via KIB985
- Fast Ethernet controller 10/100 Mb/s
- 4xUSB 2.0, 2xRS-232, isolated 2xRS-422/485, PS/2
- DOS, QNX, Windows CE/XP Embedded, RTOS32, Linux



-40...+85°C

## CPC109

### MicroPC Vortex86DX 600 MHz CPU Module

- Vortex86DX 600 MHz
- 256 MB DDR II SDRAM (soldered)
- 1 GB SLC NAND Flash (soldered)
- CompactFlash socket
- Ethernet port: 10/100 Mbit/s
- 4×USB 2.0
- 8×Isolated analog inputs, 12-bit ADC
- 2×Isolated analog outputs: 12-bit DAC
- 72 DIO
- MS DOS 6.22, Fastwel FDOS 6.22, Linux 2.6, QNX, Windows CE 5



-40...+85°C

## CPC150

### MicroPC AMD® Geode™ LX800 CPU Module

- AMD® Geode™ LX 800 (500 MHz)
- System memory: 256 MB DDR SDRAM
- Flash-disk: 1 GB with IDE interface
- CompactFlash (Type I or II) socket
- Graphics controller: CRT, LCD (TFT or DSTN) up to 1920×1440
- 2×Ethernet 10/100 Mbit controllers
- FPGA with open programming interface and 256 KB SRAM
- Serial ports: 2×RS-232, 2×RS-422/485 isolated
- 4×USB 2.0
- Linux 2.6, Fastwel FDOS 6.22, QNX 4.25, 6.3, Windows CE/XP Embedded



-40...+85°C

## CPC152

### MicroPC Vortex86DX™ 600 MHz CPU Module

- Vortex86DX™ 600 MHz CPU
- DDR2 SDRAM 256 MB
- 2 GB NAND Flash (SLC)
- Serial ports: COM1, COM2 with the rate of exchange up to 750 KB/s via RS-422/485; COM3, COM4: RS-232 (9-wire), exchange rate up to 250 KB/s via RS-232
- PS/2 port
- RTC with integrated lithium battery 3 V
- Shock/vibration resistance: 50g/5g
- MS-DOS 6.22, FreeDOS, Linux 2.6, QNX 4.25, QNX 6.5x, Windows CE 5.0, Windows XP Embedded

## Legacy Products



-40...+85°C

### NIM151

#### MicroPC Module of Serial Interfaces

- System bus: 8-bit ISA bus
- 4x (NIM151-01) or 8x (NIM151-02) UART channels with logical levels of signals (CMOS, TTL)
- Rate of data exchange: up to 115200 baud
- Software compatibility: FDOS, FreeDOS, Windows XP Embedded, Linux 2.6



-40...+85°C

### CPC1310

#### COM Express Intel Atom N450/D510 Based Module

- COM Express Basic
- Intel Atom N450 Single Core/D510 Dual Core, 1.66 GHz, 512 KB cache/1 MB cache
- 512 MB/ 1 GB DDR2 SDRAM 667 MHz w/o ECC, 64-bit addressing, soldered
- SATA interface (50 MB/s read, 35 MB/s write)
- 8xUSB 2.0
- Shock/vibration: 50g/5g
- Microsoft Windows® 7/8, Linux 2.6, QNX 6.4



-40...+85°C

### CPB904

#### ETX Module Based on AMD® Geode™ LX800

- AMD® Geode™ LX800 500 MHz
- Soldered 256/512 DDR SDRAM or SODIMM
- VGA and LCD up to 1024x768
- 10/100 Fast Ethernet controller
- 32-bit PCI, 16-bit ISA
- 4xUSB2.0 ports, 3xRS-232
- EIDE: ATA-5/ATAPI UDMA100
- Windows XP Embedded, Linux, QNX

## Legacy Products



0...+70°C  
-40...+85°C

### CPB906

#### "FemtoCore" Module Based on Vortex86DX

- Vortex86DX processor 600 MHz
- 256 MB DDR2 SDRAM
- 10/100 Mbit/s Fast Ethernet
- 32-bit PCI, 8-bit ISA, LPC
- Two USB 2.0
- IDE interface (alternative 2×SDIO)
- Two RS-232, PS/2
- Eight digital I/O ports



-40...+85°C  
-50...+90°C

### CPC304

#### PC/104-Plus AMD® Geode™ LX800

- AMD® Geode™ LX800 CPU, 500 MHz
- 16-bit ISA and 32-bit PCI buses
- 256 MB soldered DDR SDRAM
- VGA, LVDS and TFT interfaces
- 2×Fast Ethernet 10/100 Base T-ports
- Soldered Flash 1 GB, CF Type I/II, IDE interface
- 2×USB 2.0
- 2×RS-232, 2×RS-422/485 isolated
- Shock/Vibration resistance: 50g/3g
- MS DOS, QNX, Windows XPe, Windows CE, Linux



-40...+85°C

### CPC306

#### PC/104-Plus Vortex86DX SBC

- DM&P Vortex86DX (600 MHz) processor
- 256 MB DDR2 SDRAM
- 2×Xilinx FPGAs
- NAND Flash 1GB
- Ethernet controller 10/100 Mb/s
- PC/104 slot (32-bit PCI, 16-bit ISA)
- USB 1.1, USB 2.0 support, up to four devices connection
- Four COM ports
- Isolated analog input – 8 channels
- Isolated analog output – 2 channels
- ADC, DAC
- Shock/vibration 100G/10G (IEC 68-2-27-87; IEC 68-2-6-82)
- Protective coating (option)

## Legacy Products



-40...+85°C

### CPC308

#### PC/104-Plus Intel Atom N450/D510 SBC

- Intel Atom N450/D510, 1.66 GHz CPU
- DDR2 SDRAM 667 MHz, 512 MB / 1 GB, 64-bit addressing, soldered
- 4 GB NAND Flash
- VGA output (up to 1400×1050 60 Hz (N450) and 2048×1536 60 Hz (D510));
- LVDS interface (up to 1280×800 60 Hz (N450) and 1366×768 60 Hz (D510), single-channel 18-bit mode)
- 2×10/100/1000 Mbit/s Gigabit Ethernet controllers
- 4×USB 2.0, 2×RS-232, 2×RS-485/422 galvanically isolated
- OS compatibility: Windows XP (Embedded), Linux 2.6, QNX 6.5



0...+70°C  
-40...+85°C

### CPC501

#### 6U CompactPCI Pentium® M SBC (EOL)

- Intel® Pentium® M processor up to 1.8 GHz
- 2×Gigabit and 1×Fast Ethernet ports
- PICMG 2.16 and PICMG2.1 compliant
- Integrated VGA graphics
- Onboard PMC or 2.5" HDD
- Flash disk soldered onboard
- System and peripheral slot compliance
- Wide range of mezzanine and rear I/O modules



0...+70°C  
-40...+85°C

### CPC502

#### 3U CompactPCI Pentium® M SBC (EOL)

- Intel® Pentium® M processor up to 1.8 GHz
- SDRAM and flash disk soldered onboard
- 2×Gigabit Ethernet ports on internal PCI-X bus
- 2×USB 2.0 ports
- 2×SATA interfaces
- Stand-alone operation without backplane
- Smart temperature control
- Wide range of mezzanine and rear I/O modules

## Legacy Products



### CPC504

#### 3U CompactPCI SBC Intel® Core™ 2 Duo

- Intel Core 2 Duo 533/800 MHz FSB
- Dual Channel DDR II SDRAM up to 4096 MB (soldered)
- Two PCI-E Gigabit Ethernet controllers 10/100/1000 Mbit/s
- CRT support up to 2048×1536
- VGA and LVDS interfaces or two DVI-D interfaces
- Wide range of interfaces via mezzanine modules
- Protective coating (option)



### CPC506

#### 3U CompactPCI 8HP CPU Module

- Intel Core 2 Duo and Core 2 Solo processors (up to 2.2 GHz, 533 or 800 MHz FSB)
- Up to 4 GB soldered DDR2 SDRAM
- VGA graphics, resolution up to 2048×1536
- Dual DVI-D interface, up to 1600×1200 (8HP and 12HP versions)
- Intermodule communication (PICMG 2.30): 32-bit PCI bus, 4×PCI Express x1, 2 SATA II, 4 USB 2.0
- 2×Gigabit Ethernet ports switchable between front panel and backplane
- Soldered 4 GB NAND Flash with IDE interface
- SD card slot with USB 2.0 interface
- Increased heatsink versions for passive cooling
- Protective coating (optional)
- Linux, QNX, and Windows XP Embedded support



### CPC508

#### 3U CompactPCI Intel Atom based CPU board

- Intel Atom N450 or D510 CPU, soldered
- 512 MB or 1 GB DDR2 SDRAM soldered
- VGA up to 2048×1536
- 2×GbEthernet frontrear switchable
- PICMG2.30: PCI 32/33, 4×PCIExpress x1, 2×SATA II, 4×USB
- CF and SD interfaces, 1 or 2 GB Flash SSD soldered
- OS compatibility: MS DOS 6.22, FreeDOS, Windows XP Embedded, Linux 2.6, QNX 6.5
- MTBF: Not less than 100 000 hours

## Legacy Products

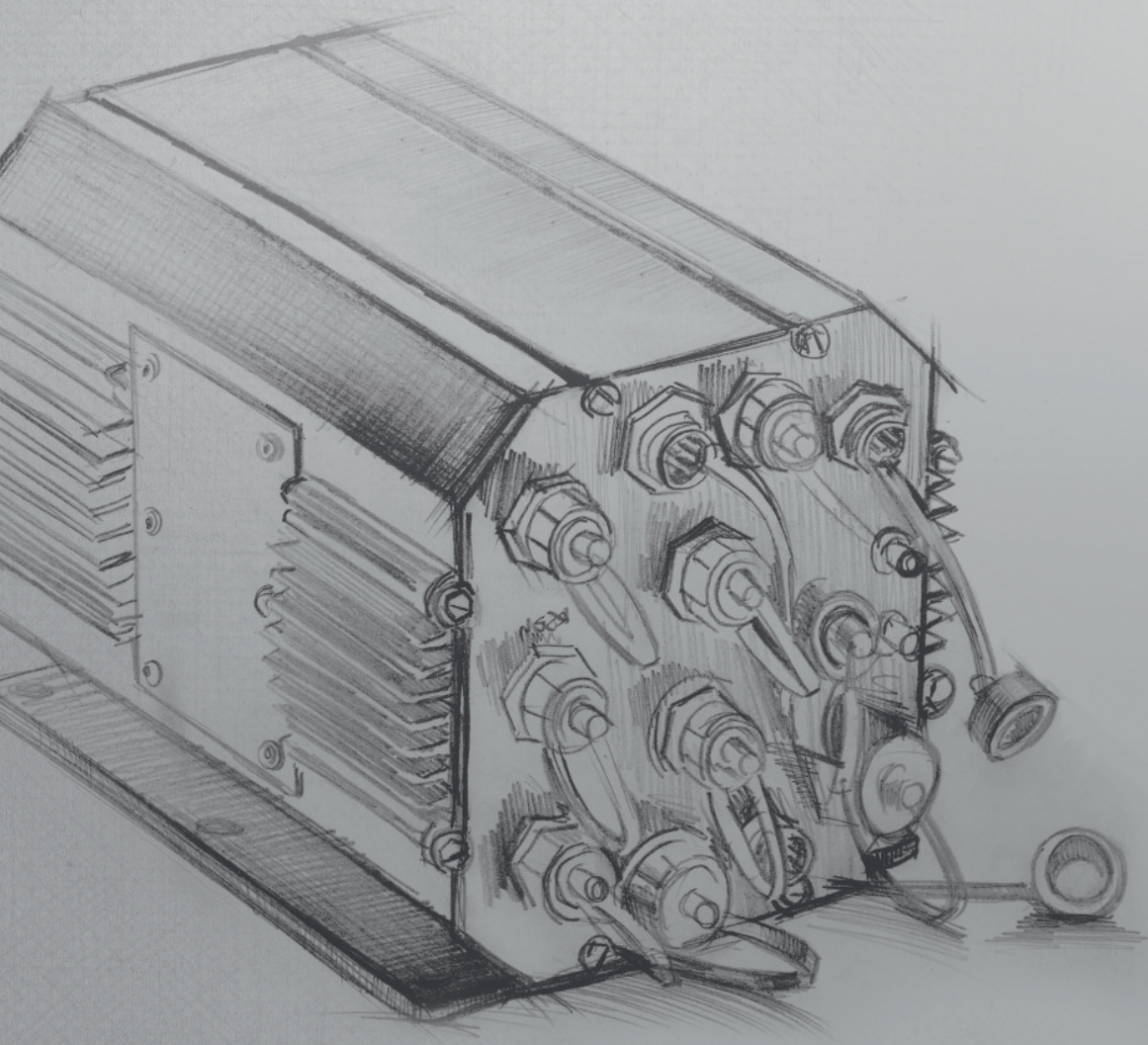


0...+70°C  
-40...+85°C

### VIM301

#### PC/104-Plus Graphics CoProcessor Module

- Lynx3DM8+(SM722G8) GPU
- Graphics memory 8 MB, 64-bit, 100 MHz
- PCI/104 (PCI) interface to Host processor
- VGA up to 1280×1024
- 2×LVDS interfaces
- 2×Flat Panel (FP) interfaces
- 1×SGD 4-bit LCD (EL Planar) interface
- 4×Analog video input channels
- Shock/vibration resistance: 50g/10g
- Fastwel DOS, Windows CE/XPe, Linux, QNX





# Industrial PCs

Industrial Box and Panel PCs

# Industrial PCs    Industrial Box and Panel PCs



System Control



CCTV



Infotainment

## Industrial Box and Panel PCs



The products below are the examples of basic platforms.

They are fully configurable and can be customized according to the specific demands of your application.



-50...+60°C



-30...+50°C



-30...+65°C

### BS04

#### Fanless Panel PC

- Dual core 32-bit/64-bit Intel Pineview-D (D510) x86 CPU
- RAM: DDR2 SDRAM 667 MHz 1 GB, soldered
- NAND Flash Drive 4 GB, soldered and connected to SATA interface
- 10.4" display, resolution 800×600
- 2×CAN, 2×RS4-22/485, 2×Ethernet 10/100/1000 MB/s
- 2×CFAST, 1×SDHS,
- No less than IP65 – enclosure front surface; no less than IP40 – enclosure steel surface
- EN50155 compliant
- FREEDOS 6.22, Windows XPe, CE5.0, Linux 2.6, QNX 6.4

### ONYX08

#### Freescale iMX6 Based Tablet Computer

- Freescale iMX6 applications processor 1 GHz (4 cores)
- RAM DDR3L 1(2) GB or SSD soldered 8 GB (16/32 GB as customized option)
- 1×SDHC slot up to 64 GB
- USB 2.0 OTG
- 2×SIM-cards
- Display 8.4" with 800×600 resolution; screen brightness: 400 CD/MI, shock resistant and antiglare touch-screen
- Docking station availability
- Global positioning systems (integrated active GLONASS/GPS aerial)
- Modifications according to customer's requirements
- Possibility to install video camera

### IMS28/38

#### 28"/38" Network Information Module

- Intel Atom E6xxT
- RAM: up to 1024 MB, soldered
- Flashdrive 4 GB, soldered; slot for CFast
- 28"/38" display
- Resolution: 1366×256/ 1920×502
- Brightness: 1000 cd/m<sup>2</sup>
- EN50155 compliant
- Linux 2,6

## Industrial Box and Panel PCs

The products below are the examples of basic platforms.

They are fully configurable and can be customized according to the specific demands of your application.



-40...+85°C

### MK300

#### Box-PC with StackPC Extension Option

- Intel Pineview D Dual Core (D510) 1.66 GHz
- RAM: DDR2-667 64-bit up to 2 GB (Onboard)
- VGA (from I/O connectors of CPC309)
- 4×USB (from interface module, from Stack PC)
- 4×GbE with PoE, switch (from I/O connectors from NIM354 switch)
- Wi-Fi (from a module in miniPCle connectors on KIC301)
- GPS/GLONASS (from miniPCle USB module on KIC301)
- Single/Multiple shock resistance: 50g/25g (at 1000 shocks)
- MS DOS 6.22, FreeDOS, Windows XP (Embedded), Linux 2.6, QNX 6.4



-40...+70°C

### MK308

#### PC Platform for Modules in PC/104+ Form-factor

- Intel® Atom D510, 1.66 GHz
- Compact Flash: 16 GB
- 2×LAN 10/100/1000 Mb/s, 3×USB 2.0
- 1×RS-232, 4×RS-485/422 serial ports, 2×CAN, PS/2, 4×GPIO
- GLONASS/GPS aerial input, GSM aerial input, WiFi aerial input
- Vibration/single shocks/multiple shocks resistance: 5g/100g/50g
- IP65
- Installation of up to 7 PC/104+ module
- FreeDOS, Windows XP, Linux 2.6, QNX 6.5



0...+70°C  
-40...+85°C

### MK307

#### Box-PC with PC/104 Extension Option

- DM&P Vortex86DX 600 MHz CPU
- 256 MB DDR2 SDRAM
- VGA, LVDS, LCD up to 1280×1024
- Ethernet controller 10/100 Mb/s
- 4×USB 2.0 ports
- Housing up to five PC/104 Extension modules
- 50g/5g – shock/vibration resistance
- 10...36 V DC Power in
- IP65 Sealed

## Industrial Box and Panel PCs



-40...+70°C

### NM350

#### Gigabit Ethernet Network Switch

- Integrated switch for 6×Gigabit Ethernet channels operating at the data link (second) level of OSI model
- 4×ports with PoE PSE technology support according to the IEEE 802.3af standard; compatibility with devices up to 15.4 W per channel
- Industrial M12 connectors
- IP65



-40...+70°C

### BUK02

#### CCTV Video Server for Railway

- Intel Pineview\_M (\_D) 1.66 GHz Dual Core (D510)
- RAM: 1 GB DDR2 SDRAM 667 MHz
- User Interfaces: 2×USB 2.0, 3×Gigabit Ethernet,
- 2×RS-422/485, 2×CAN, LVDS
- Video output: Connection of up to 8x analog cameras of PAL/NTSC standard
- Data storage subsystem: 2x removable SATA drives up to 1 TB
- Supported OS: Linux 2.6
- IP20
- EN50155 compliant

## High performance embedded computers

This computer below is fully configurable and can be customized according to the specific demands of your application.



### 3U CPCI S.0 based High-Performance Heterogeneous Computing Platform

Grifon is a multipurpose compact high-performance computational platform, easily scalable and having proper environmental resistance capabilities.

Grifon is based on the CompactPCI Serial (CPCI-S) standard, has a modular structure and is made of 3U units for 9 and 5 seats.

Grifon enables to create configurations with a simultaneous use of computers of various architectures, including x86, Elbrus, GPU

NVIDIA and FPGA-based modules. The configuration is selected in accordance with customer requirements, depending on the application purpose.

The platform is intended for the creation of signal processing systems, streaming video, telecommunication networks traffic and other applications with high requirements to computation capacity and large volumes of analyzed information.

## High performance embedded computers

Developers of Grifon-based application systems are supplied with a service software package which makes it possible to disregard the features of data exchange channels and computer types, providing standard communication protocols:

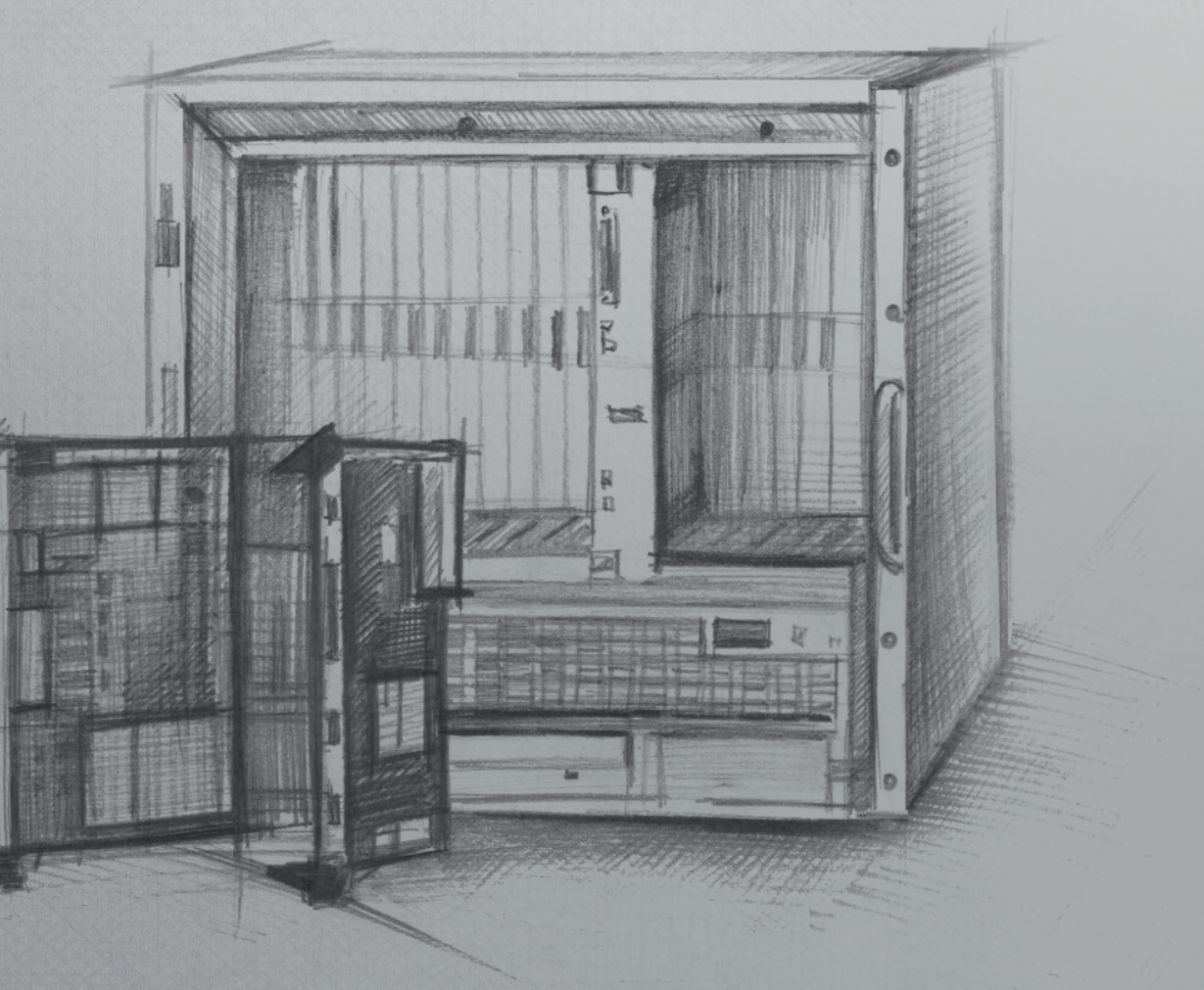
- to provide interaction between the modules based on x86 CPUs, BSD Sockets and MPI mechanisms will be used;
- to provide interaction between x86 CPUs and FPGA –FPGA character driver will be used;

- to provide interaction between x86 CPUs and GPU – CUDA SDK will be used;
- to provide interaction of FPGA with GPU – customization to CUDA SDK will be used.

Grifon is a result of the implementation of the new capabilities of PCIe Bus due to the use of KIC551 Switchboard that enables peer-to-peer (P2P) interaction and makes it possible to build high-performance parallel-pipeline configurations.

### Key features

- Possibility of a joint use of computers with various architectures (x86, Elbrus, GPU NVIDIA, FPGA) within a single unit
- Placement of up to 8 computers within a single unit
- Support of the certified OS (AstraLinux)
- Inter-modular data exchange via PCIe Gen3, “Fully connected network”
- Aggregate bandwidth inside the unit – up to 640 GB/sec
- Grifon modules have either conduction cooling or air cooling





# **Systems & Customization**

**Coating**

**Fastwel EcoSystems**

**Assembling & Customization**

**System Partnership**

## Coating

Protective coating is a thin protective polymeric film (25–75 µm thick) applied on an assembled electronic module or PCB. It is mainly intended for protection of electronics operating in rugged environments, exposed to moisture, aggressive chemicals, salt mist, vibration, and risk of fungous organics buildup.

For high quality protection of its products against various environmental impacts Fastwel employs the HumiSeal® 1A33 urethane protective coating.

### Main Specifications of the Coating

Service Life:	Not less than 20 years
Coating Thickness:	25 µm to 75 µm
Dielectric Breakdown Voltage:	Not less than 7500 V
Insulation Resistance:	Not less than $200 \times 10^{12}$ ohms (200T)
Continuous Use Operating Range:	–65 to +125°C



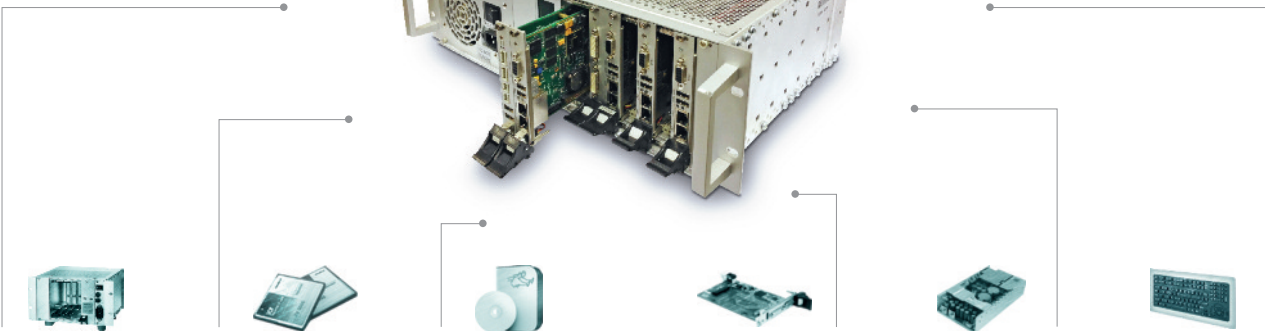
- Polyurethane (PU) coatings provide excellent chemical stability, good moisture protection, dielectric and temperature characteristics.
- This coating is certified to conform UL American standards. In addition, PU coatings comply with the requirements of IEC-1086 and IPC-CC-830B industry standards accepted by most aerospace companies in the United States and European Union.

Protective coating is a proven and efficient way to increase the resistance of electronic modules against all types of surface shortings caused by various environmental impacts, such as dewfall, salt mist, ingress of metallic particles. Fastwel products with protective coating have proved themselves to be a good advantage among the customers from different branches of industry, transport, and defense.

We work in close alliance with more than 90 embedded electronics manufacturers and can be your primary one-stop buy supplier. You may benefit from having fully compatible and tested electronics from a single source at a competitive pricing level.

**Order together  
with our boards!**

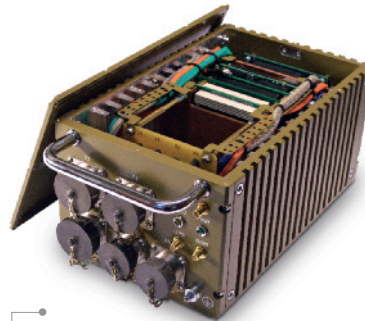
## 3U & 6U Rugged CPCI CPU modules



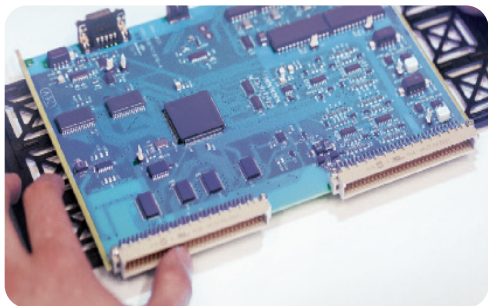
Chassis	Storage	OS	Peripherals	Power Supplies	Accessories
<ul style="list-style-type: none"> <li>• 3U</li> <li>• 6U</li> </ul>	<ul style="list-style-type: none"> <li>• CF</li> <li>• SSD</li> <li>• HDD</li> <li>• mSATA</li> </ul>	<ul style="list-style-type: none"> <li>• Linux</li> <li>• Windows</li> <li>• QNX</li> </ul>	<ul style="list-style-type: none"> <li>• PICMG 2.0, 2.16, 2.30, S.0 Extension modules</li> <li>• CompactPCI power suppliers</li> </ul>	<ul style="list-style-type: none"> <li>• Various types</li> </ul>	<ul style="list-style-type: none"> <li>• Industrial keyboards and pointing devices</li> </ul>

**Order together  
with our boards!**

## PC/104 and StackPC Rugged SBCs



Storage	OS	Peripherals	Accessories	Displays	Cables
<ul style="list-style-type: none"> <li>• CF</li> <li>• SSD</li> <li>• HDD</li> <li>• mSATA</li> </ul>	<ul style="list-style-type: none"> <li>• Linux</li> <li>• Windows</li> <li>• QNX</li> </ul>	<ul style="list-style-type: none"> <li>• Graphical Processor boards</li> <li>• Wireless communication boards</li> <li>• Interface Modules</li> <li>• Power suppliers</li> </ul>	<ul style="list-style-type: none"> <li>• Industrial keyboards and pointing devices</li> </ul>	<ul style="list-style-type: none"> <li>• Rugged HMI Panels</li> <li>• Displays</li> </ul>	<ul style="list-style-type: none"> <li>• Cables</li> <li>• Sockets</li> <li>• Connectors</li> </ul>



## Assembling

To make a better approach to customers' needs, Fastwel offers electronic modules, cases and card cages assembly service. Due to developed network of integration partners we are capable to assemble complicated products, including industrial computers, servers, special purpose monitors, 19-inch stands, cases and blocks.



## Contract manufacturing

Having longterm experience in complex electronics development, Fastwel offers contract manufacturing services which include not only separate electronic modules production, but also complete solutions incorporating hardware and software components.

### System Platforms



Our important system partnership with Elma Electronics allows us to meet the demands of our customers for integrated platforms based on Elma housing solutions and Fastwel CPU boards.

Elma has vast expertise in Eurocard-based system platforms with most relevant PICMG and VITA bus architectures, such as AdvancedTCA, MicroTCA, CompactPSB, CompactPCI, CompactPCI Serial/PlusIO, OpenVPX, VPX, VXS, VME64x, VME etc.

We are able to integrate almost every Fastwel "passive backplane suitable" CPU module with Elma products and provide our customer with a validated platform, which can become the base of his embedded solution and save time for other complicated tasks.

### Software Systems



QNX Board Vendor Enablement Program is designed to support single board computer vendors by enabling them to market QNX-based products, speed up time-to-market and build strong out-of-the-box solutions.

### Embedded Flash Storage



The industrial CPU modules and SBCs from Fastwel can be supplied with the Innodisk rugged 2.5", ATA, SATA, CF Cards on your request. You may benefit from having fully compatible products from a single source at a competitive pricing level.

### Device Software Optimization



Wind River device software optimization technologies, including industry-leading multicore solutions, are available on Fastwel mission-critical hardware, enabling Fastwel customers to benefit from Wind River software and tools like VxWorks RTOS, Wind River embedded virtualization technologies and the award-winning integrated development environment, Wind River Workbench, in their projects.

