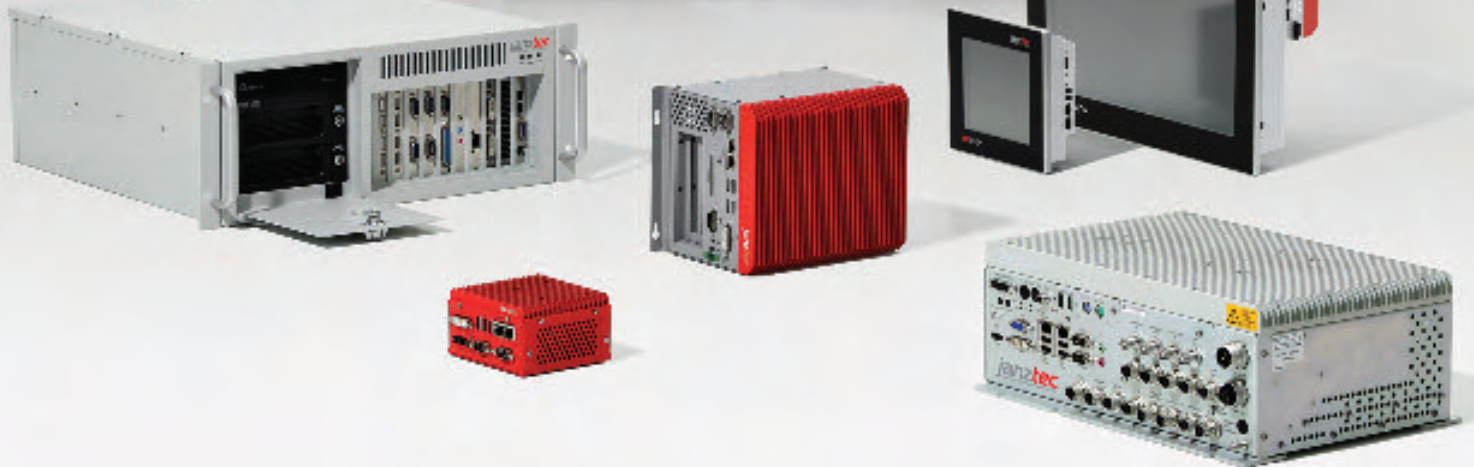


# PRODUCT OVERVIEW

## 2015



### **Industrial Computing Architects**

**Embedded Computing  
Industrial PC  
Industrial Communication  
Custom Design**

**janztec**  
Industrial Computing Architects

AGS-TECH Inc

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Janz Tec AG is a manufacturer of industrial computer systems and accessory electronic assemblies. In addition to providing off-the-shelf embedded computers and industrial PCs, Janz system conceive, develop and produce custom systems and components to meet the requirements of customers to control, operate and visualize machines and plants. Along with general machine and plant operation, Janz sectors include medical devices, transport and logistics, automotive and off-shore maritime applications.

Janz Tec is a partner to the energy sector, offering solutions in the fields of renewable energy sources and smart grid control. The company creates intelligent networks for building automation and optimized energy use. The solutions coming out of company headquarters in Paderborn make devices perform better and communicate more effectively under the most challenging industrial conditions. The key product areas are embedded computing, industrial PCs, industrial communication and custom design.

## We are Industrial Computing Architects

The headquarters facility includes a development center collaborates with the university at Paderborn and the technical university in Bielefeld. In the course of this collaboration, the company has helped develop automation for solar park installations.

The Janz Group includes a leading IT systems company in Paderborn with several locations in Germany and subsidiaries in Jena. It has its own sales organization in the German-speaking countries, as well as a worldwide network of agencies. There are more than 200 employees and earned 2011 revenues of more than 70 million. The majority shareholders of Janz Holding are Wilhelm and Matthias Stute. Janz Tec AG was formed in 1982 as Janz Elektronik GmbH and is the nucleus of the corporate group. Today's majority shareholders have been with the company since 1985.



Matthias Stute and Michael Rennerich,  
Management of Janz Tec AG

### MILESTONES

**1982** Graduates of the university of Paderborn founded Janz Elektronik GmbH.

**1985** Renamed to Janz Computer AG and development of VMEbus E/A assembly groups.

**1992** Presentation of the VNSys series of VMEbus real-time computer systems.

**1998** The PC series JIPSY for industrial users is launched on the market.

**2001** Janz Automationsysteme AG grows out of the industrial technology plant section as a company operating within the group.

**2002** emPC: an embedded computer system family is introduced.

**2004** With the CODESYS software, the emPC becomes a complete SPS control system.

**2011** Renamed to Janz Tec AG.

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# Embedded Computing



**emPC**

**emVIEW**

**emCONTROL**

Embedded computers are always used when particularly robust and reliable systems are necessary due to the requirements made on them. These modularly-constructed and compact industrial computers are low-maintenance, energy-saving and extremely flexible. The computer architecture of the “embedded system” is oriented on a standard PC, whereby the embedded PC only consists of the components which it really needs for the relevant application. This makes completely independent uses possible in environments in which service would otherwise be extremely cost-intensive. Despite this, many embedded computers are so powerful that they can replace a complete computer.

**Benefits of the embedded computer:  
no fan required, low-maintenance**

The embedded computer is used in machine and plant construction, in power and energy, transport and traffic, in medical technology and the automotive industry, in production and manufacturing engineering in addition to other industrial applications. The processors, which are becoming more and more powerful, enable use of an embedded PC even if particularly complex requirements from the above industries need to be dealt with. One advantage of this is the hardware environment familiar to many developers and the availability of appropriate software development environments.

Janz Tec AG has been acquiring the necessary experience in the development of its own embedded computer systems, which can be adapted to customer requirements if required, for many years now. The focus in the embedded computing sector is on the optimum solution appropriate to the application and the individual customer requirements.

# Industrial PC



**JIPSY**  
Janz Tec Industrial PC Systems

An industrial PC has to meet specific requirements in comparison with devices for office use. Such machines are normally exceptionally robustly constructed and have a considerably higher level of failsafe design due to environmental influences or electromagnetic interference. An industrial PC is highly suitable for the operation, programming, visualization, long-term archiving and simulation of processes due to its high flexibility. Furthermore, the industrial PC can be combined with conventional industrial control systems or a PLC controller.

**Individual solutions for your industrial PC**

The manufacture of individual industrial computers, which can be precisely adapted to the various requirements of our customers, is part of our core business:

- conception of industrial PCs
- design of industrial PCs
- series production
- quality assurance

Industrial computers are developed individually in consultation with the customer, and can be adapted to varying requirements with regard to the design, housing shape or use of software (Custom Design). This does not just include consultation during fitting out, but also selection of components and consideration of the work location. One advantage in the selection of industrial PCs is delivery of complete systems including a function test for the entire unit.



# Industrial Communication



EtherCAT<sup>®</sup>

CAN

Good communication is very important nowadays – not just in real life, but also in machines, plant and complex industrial applications from a wide range of industries. This applies especially if error-free transmission of data is required due to more and more compact construction and the necessity for more performance in the case of distributed systems. For this reason, Janz Tec AG also places great value on innovative and sophisticated technology in the Industrial Communication business sector. The InCom products developed in-house enable the control systems for your machines, plant and systems to be kept at the highest level.

## Real time-capable, open standard, future-proof!

CANopen is an exceptionally popular bus system used in automation technology which proves its advantages in many sectors day after day. The CANopen interfaces used by Janz Tec AG are available for many differing system architectures such as ISA/PCI, CompactPCI, VMEbus, PCCard (PCMCIA), PMC, PC/104 and others. You will receive software support and libraries with standardised APIs for Windows, Linux, QNX, VxWorks and other operating systems. In addition to the highest quality, you can also profit from extensive product support for your special application area.

Janz Tec embedded PC systems offer control systems with CODESYS and the connection to real-time Ethernet, a single, powerful communication basis for the entire automation industry. CODESYS supports the following real-time Ethernet: EtherCAT, PROFINET, EtherNet/IP.

By using Janz Tec emCONTROL machine controllers based on CODESYS and “Industrial Ethernet” standards, high-performance control systems that allow fast accesses and short cycle times, can be realized.

# Custom Design



CUSTOM DESIGN

VMEbus  
Technology

MODULbus  
The Modular Standard

Janz Tec AG is specialized in optimally setting up industrial computer systems in accordance with customer requirements. Seeing themselves clearly as *Industrial Computing Architects*, the company from Paderborn has been developing tailor-made solutions based on standard systems for almost 30 years, both in series production and in smaller piece numbers. Each product can be set up specifically to the customers' requirements. This means that the custom design department is not an additional service but a central component of each project.

## Customer-specific products – tailor-made to your requirements!

Janz Tec AG can provide you with assistance using exceptionally competent technical support from the development department in addition to fixed contact persons and rapid information if you have questions about hardware and software development. You will receive optimal solutions which are just as individual as your demands and requirements. This starts as early as planning of the project, continues through development and production of the system and reaches as far as delivery and attachment of customer-specific emblems. If required, you can also purchase our Embedded Computer and Industrial PCs in accordance with your CI requirements with a logo or in a special housing.

## Custom design for industrial computer systems

Janz Tec AG is exceptionally well fitted-out for the future, and has several products in preparation today which will be required by customers tomorrow. For all other requirements, the sales and development team is available with advice and support – contact us for an individual consultation!

# Fanless Embedded PC

Embedded PC System with Freescale i.MX515 / i.MX6



**emPC**

## emPC-A500

### Technical Details

#### Processor

- ▶ Freescale i.MX515 application processor with 600 MHz
- ▶ Fanless cooling concept
- ▶ 32 kB instruction and data caches
- ▶ Unified 256 kB L2 Cache
- ▶ Vector floating point co-processor

#### Memory

- ▶ System memory 256 MB SD-RAM
- ▶ Boot Flash 36 kB, with boot loader
- ▶ Battery-free NVRAM 32 kB, auto-backup to EEPROM
- ▶ CompactFlash Socket, Type I/II

#### Interfaces

- ▶ 2 x 10/100 MBit/s Ethernet (RJ45 connectors)
- ▶ 2 x USB (v2.0), with 500 mA power supply capability
- ▶ Up to 2 x RS232 serial interfaces
- ▶ Up to 2 x CAN/CANopen interfaces

#### Power Supply

- ▶ Input 9...32 V DC
- ▶ Power consumption ca. 6 W

#### Physical

- ▶ Ambient operating temperature 0°C ... 60°C
- ▶ Extended temperature range -30°C ... +70°C
- ▶ Non-operating temperature range from -20°C ... 75°C
- ▶ Humidity 0 % ~ 80 %, non-condensing
- ▶ Dimensions (w x h x d): 111 x 62 x 104 mm
- ▶ Weight approx. 0.8 kg

#### Supported Operating Systems

- ▶ Windows CE 6.0
- ▶ Linux
- ▶ Other operating systems on request

#### Option

- ▶ CODESYS IEC61131-3 runtime environment
- ▶ integrated I/O modules



**emPC**

## emPC-A/iMX6

### Technical Details

#### Processor

- ▶ Freescale i.MX6 application processor
- ▶ Single-, Dual- or Quad-Core CPU based on ARM Cortex-A9 800 MHz, with ARMv7™, Neon, VFPv3 and Trustzone support
- ▶ Fanless cooling concept, quad-core CPU requires heat sink

#### Memory

- ▶ System memory up to 2 GB DDR3
- ▶ Battery-free NVRAM 128 kB
- ▶ Internal CFast Socket for SATA SSD (not available for Single-Core CPU type)

#### Interfaces

- ▶ 2 x 10/100/1000 MBit/s Ethernet
- ▶ 2 x USB (v2.0), with 500 mA power supply capability
- ▶ Up to 2 x RS232 serial interfaces
- ▶ Up to 2 x CAN/CANopen interfaces
- ▶ Serial port with RTS/CTS only
- ▶ Reset push button

#### Power Supply

- ▶ Input 9...32 V DC
- ▶ Power consumption ca. 6 W

#### Physical

- ▶ Ambient operating temperature 0 °C ... 60 °C
- ▶ Non-operating temperature range from -20 °C ... 75 °C
- ▶ Humidity 0 % ~ 80 %, non-condensing
- ▶ Dimensions (w x h x d): 111 x 62 x 104 mm
- ▶ Weight approx. 0.8 kg

#### Supported Operating Systems

- ▶ Linux
- ▶ Other operating systems on request

#### Option

- ▶ CODESYS IEC61131-3 runtime environment
- ▶ Integrated I/O modules

# Fanless Embedded PC

Embedded PC System with Intel Atom E3815/25



**emPC**

**emPC-X/A-E3815**  
**emPC-X/A-E3825**

## Technical Details

### Processor

- ▶ Intel Atom E3825 (2 x 1.33 GHz, 1 MB L2 Cache)
- ▶ Intel Atom E3815 (1 x 1.46 GHz, 512 kB L2 Cache)

### Memory

- ▶ 2 GB DDR3L system memory with 1.067 GT/s
- ▶ 128 kB battery-free NVRAM
- ▶ Internal CFast Socket for SATA SSD

### Interfaces

- ▶ 2 x 10/100/1000 MBit/s Ethernet
- ▶ 3 x USB (v2.0)
- ▶ Up to 2 x RS232 serial interfaces
- ▶ Up to 2 x CAN/CANopen interfaces
- ▶ Serial ports with RTS/CTS only
- ▶ Reset push button

### Power Supply

- ▶ Input 9...32 V DC
- ▶ Power consumption < 10 W

### Physical

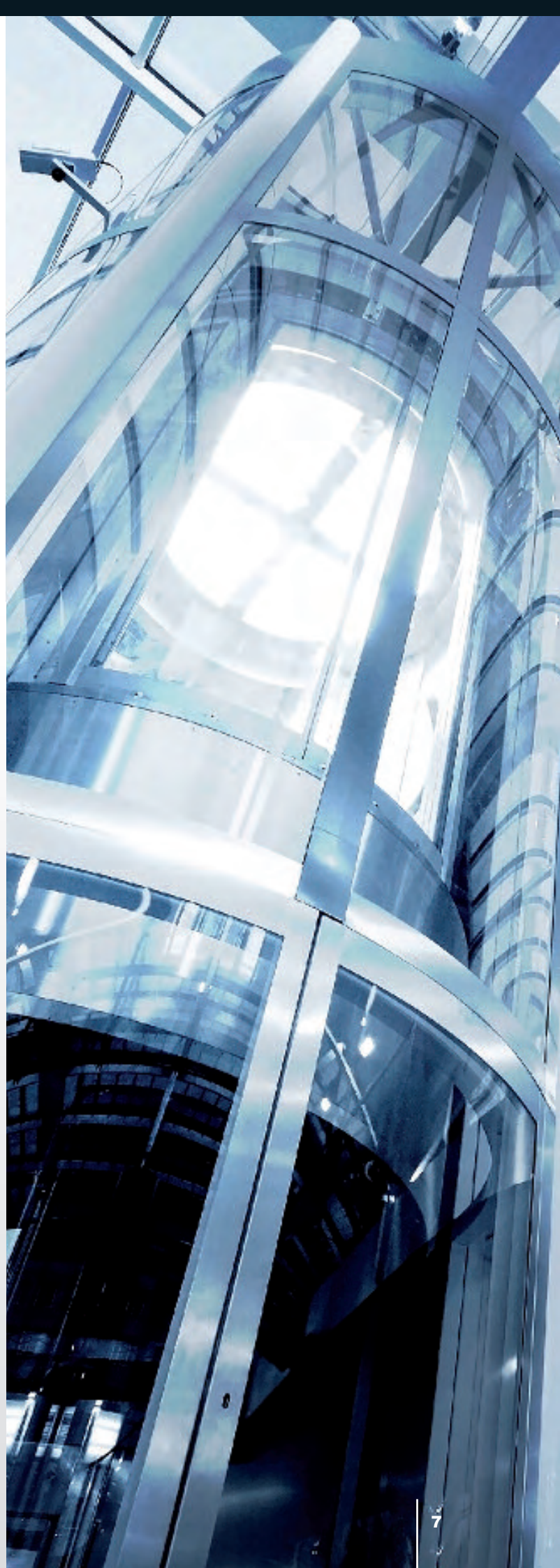
- ▶ Ambient operating temperature 0 °C ... 50 °C
- ▶ Non-operating temperature range from -20 °C ... 75 °C
- ▶ Humidity 0 % ~ 80 %, non-condensing
- ▶ Dimensions (w x h x d): 111 x 62 x 104 mm
- ▶ Weight approx. 0.8 kg

### Supported Operating Systems

- ▶ Windows Embedded Compact (WEC) 7
- ▶ Windows Embedded Standard (WES) 7
- ▶ Windows 7, Windows 8
- ▶ Linux
- ▶ Other operating systems on request

### Option

- ▶ CODESYS IEC61131-3 runtime environment
- ▶ Integrated I/O modules





# Flexible Embedded PC Systems



## emPC-CX+

### Technical Details

#### Physical Environment

- ▶ Ambient operating temperature range: 0°C...50°C
- ▶ Non-operating temperature range: -20°C...75°C
- ▶ Humidity: 0 ~ 80 %, non-condensing
- ▶ Dimensions excl. wall mounting pads (w x h x d):
  - 0 slot version: 96 x 171 x 230 mm
  - 2 slot version: 147 x 171 x 230 mm
  - 4 slot version: 179 x 171 x 230 mm

#### Options

- ▶ CODESYS IEC61131-3 runtime environment
- ▶ Customized IO expansion with personality board
- ▶ Up to 4 either PCI or PCIe slots

#### Supported Operating Systems

- ▶ Windows Embedded Compact (WEC) 7
- ▶ Windows Embedded Standard (WES) 7
- ▶ Windows XP
- ▶ Windows 7, Windows 8
- ▶ Linux
- ▶ Other operating systems on request

#### Connectors / Ports

- ▶ 2 x 10/100/1000 MBit/s Ethernet, RJ45 connectors
- ▶ 4 x USB host connection, USB 2.0 or USB 3.0
- ▶ Up to 2 x isolated CAN/CANopen ports
- ▶ Up to 4 x RS232 ports
- ▶ DVI-I connector

## Specifications Overview

Processor
Frequency
max. RAM
L2 Cache
Chipset
PCI slots
PCIe (x1)slots
Hard Disk (internal, 2.5") / SSD
CFast socket (external)
CAN/CANopen
Ethernet (MBit/s)
USB (v2.0/v3.0)
RS232
RS485
Power Supply



Intel® Celeron™

Intel® Core™ i3 / i7

## view emPC-CX+ Series

emPC-CX+/A-E3827	emPC-CX+/C-1047UE	emPC-CX+/i3-3127UE	emPC-CX+/i3-3120ME	emPC-CX+/i7-3517UE
Intel Atom E3827	Intel Celeron 1047UE	Intel i3-3217UE	Intel i3-3120ME	Intel i7-3517UE
2 x 1.75 GHz	2 x 1.4 GHz	2 x 1.6 GHz	2 x 2.4 GHz	2 x 1.7/2.8 GHz
8 GB DDR3L	16 GB DDR3			
1 MB	2 MB	3 MB		4 MB
integrated in SoC	(HM76)			
0/2	0/2/4			
0/2	0/2/4			
S-ATA				
yes				
2/1*				
2 x 10/100/1000				
4/0	4/4			
1/2*				
on request				
9 ... 34 V DC	14 ... 34 V DC			

\* These options are available on request.  
Please contact our regional sales office for further information.

# Rugged Embedded PC System

## emPC-CXR

### emPC-CXR - Rugged Embedded PC Systems

Rugged and high-quality computer platform  
Made in Germany

- ▶ COM Express embedded processor modules
- ▶ New housing design and new cooling concept
- ▶ Extremely requirements in reference to temperature, tightness, shock and vibration.
- ▶ High-capacity computer platform for the fields marine, mining industry, military, aircraft industry, construction machines and navy.
- ▶ Rugged communication computers specifically designed for heavy vehicles working in harsh environments.



**MADE IN  
GERMANY**

# Rugged Embedded PC System



**emPC**

### emPC-CXR

#### Technical Details

##### Physical Environment

- ▶ Ambient operating temperature range from -40°C ... + 70°C
- ▶ Dimensions (w x h x d): 270 x 200 x 90 mm
- ▶ (not including M connector overhang)
- ▶ Shock (operational):  
IEC60068-2-27, 50G, half sine, 11ms duration
- ▶ Vibration (operational):  
IEC60068-2-64, 5Grms, random, 5-500Hz, 1Oct/min, 1hr/axis

##### Options

- ▶ CODESYS IEC61131-3 runtime environment

##### Supported Operating Systems

- ▶ WES 7
- ▶ Linux
- ▶ Other operating systems on request

##### Connectors / Ports

- ▶ 2 x M12 connectors for CAN or serial ports
- ▶ 2 x M12 X-coded connectors for 10/100/1000BaseT Ethernet
- ▶ 2 x M8 connectors for USB v2.0
- ▶ 1 x M12 power supply connector
- ▶ 1 x M12 with 4 digital input/outputs
- ▶ 1 x 15 pin DSUB VGA connector (waterproof)



# Particularly robust systems for use in extreme environment



**emPC**

## emPC-CX+/ET

### Technical Details

#### Physical Environment

- ▶ Ambient operating temperature -40°C...+70°C
- ▶ Non-operating temperature range from -40°C...+85°C
- ▶ Humidity 0 ~ 80 %, non-condensing
- ▶ Dimensions excl. wall mounting pads (w x h x d):  
96 x 171 x 230 mm
- ▶ Shock (operational):  
IEC60068-2-27, 50G, half sine, 11ms duration
- ▶ Vibration (operational):  
IEC60068-2-64, 5Grms, random, 5-500Hz, 1Oct/min,  
1hr/axis

#### Options

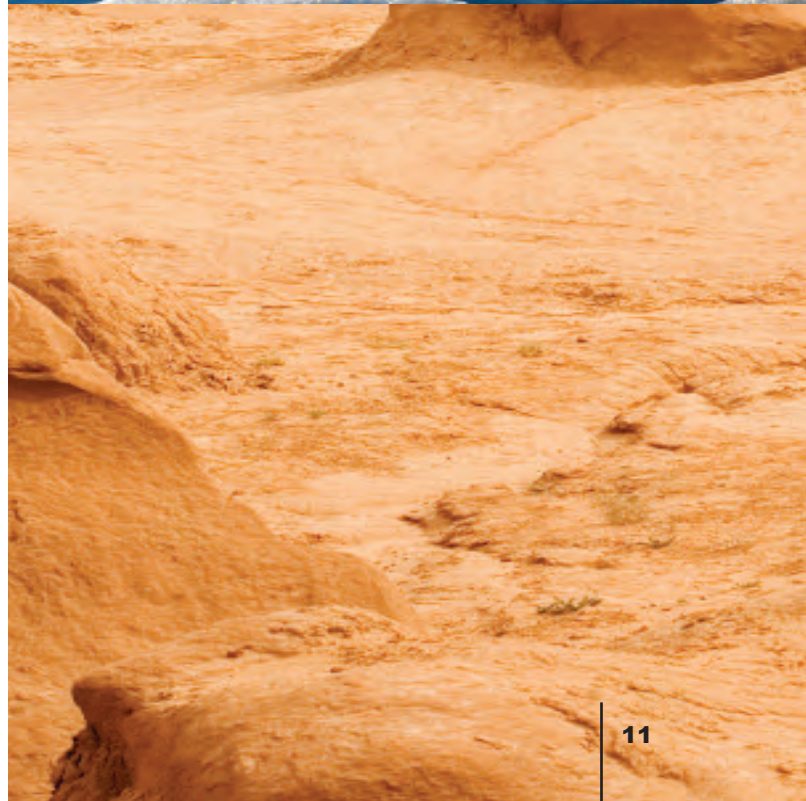
- ▶ CODESYS IEC61131-3 runtime environment
- ▶ Customized IO expansion with personality board

#### Supported Operating Systems

- ▶ Windows Embedded Standard (WES) 7
- ▶ Linux

#### Connectors / Ports

- ▶ 2 x 10/100/1000 MBit/s Ethernet, RJ45 connectors
- ▶ 4 x USB host connection, USB 2.0 or USB 3.0
- ▶ Up to 2 x isolated CAN/CANopen ports
- ▶ Up to 2 x RS232 ports
- ▶ DVI-I connector



# MULTITOUCH

## DISPLAY

- ▶ Capacitive
- ▶ For all Form Factors





# Industrial TFT LCD Displays



## Technical Details

### Housing

- ▶ Aluminum front panel with front foil for corporate design (standard is Janz' design)
- ▶ dimensions and weights see table

### Touchscreen

- ▶ resistive and/or capacitive touchscreen

### Connectors / Ports

- ▶ 5 control buttons for Power (On/Off), OSD (activating), Confirm (for OSD menu), Up and Down (navigation within OSD menu)
- ▶ VGA and DVI-D graphic port
- ▶ RS232 and USB touchscreen port
- ▶ power connector for 14...32 V DC power supply

## Specifications Overview

Display	Size (Format)	Dimension (w x h x d)	Resolution	Luminance (typ.)	Contrast Ratio (typ.)
emVIEW-8T/D	8.4" (4:3)	257 x 190 x 38	800 x 600	400 cd/m <sup>2</sup>	500:1
emVIEW-10WT/D	10.1" (16:10)	on request	on request	on request	on request
emVIEW-12T/D	12.1" (4:3)	320 x 260 x 43	800 x 600 (opt. 1024 x 768)	450 cd/m <sup>2</sup>	700:1
emVIEW-15T/D	15.0" (4:3)	382 x 306 x 46	1024 x 768	450 cd/m <sup>2</sup>	700:1
emVIEW-15WT/D	15.6" (16:10)	on request	on request	on request	on request
emVIEW-19T/D	19.0" (4:3)	460 x 386 x 46	1280 x 1024	270 cd/m <sup>2</sup>	800:1
emVIEW-21WT/D	21.5" (16:10)	on request	on request	on request	on request



The scalable product series of emVIEW systems offers a wide spectrum of processor performance and display sizes from 6.5" up to currently 21.5". Customer-specific solutions for optimal adaptation to your task definition can be implemented by Janz Tec at any time. Here you can select the product which matches your requirements, or you can find out more about this product family in addition to individual variations from our sales staff.

# HMI Systems and Fanless

Display / System	emPC-A500
6.5"	X
7.0"	X
8.4"	X
12.1"	X
15.0"	–
15.6"	–
19.0"	–
21.5"	–
Custom	on request

This table shows the availability of the emVIEW displays with the emPC systems. If there are some missing items, or questions, please contact your regional sales office.

## Specifications Overview emVIEW Displays

	6.5"	7.0"
used in	emVIEW-6T	emVIEW-7W
Backlight		
Resolution	640 x 480	
Format	4:3	16:10
Luminance (typ.)	700 cd/m <sup>2</sup>	
Contrast (typ.)	600:1	
Colors	256k	
Display Mode		
View (hor.)	160°	
View (vert.)	140°	
Operating Temperature	-20...+60°C	
Storage Temperature	-20...+80°C	
Storage Humidity		
Resistive Touchscreen	yes	on request
Capacitive Touchscreen	on request	yes
Front Protection		

# Industrial Display Solutions

emPC-A/iMX6	emPC-X	emPC-CX+	emPC-CX+/ET	Stand-alone Display
X	X	–	–	X
X	X	–	–	on request
X	X	–	–	X
X	X	X	X	X
on request	X	X	X	X
on request	X	X	X	X
–	–	X	X	X
–	–	X	X	X
on request	on request	on request	on request	on request

8.4"	10.1"	12.1"	15.0"	15.6"	19.0"	21.5"
emVIEW-8W	emVIEW-10W	emVIEW-12	emVIEW-15	emVIEW-15W	emVIEW-19	emVIEW-21W
LED						
800 x 600 SVGA		800 x 600 SVGA	1024 x 768 XGA		1280 x 1024 SXGA	
4:3	16:10	4:3	4:3	16:10	4:3	16:10
400 cd/m <sup>2</sup>		450 cd/m <sup>2</sup>	450 cd/m <sup>2</sup>		e270 cd/m <sup>2</sup>	
500:1		700:1	700:1		800:1	
256k		16.7 Mio.	16.7 Mio.		16.7 Mio.	
Normally White						
160°		160°	160°		170°	
140°		140°	140°		160°	
-20...+60°C		-20...+60°C	0...+45°C		0...+45°C	
-20...+80°C		-20...+80°C	-20...+75°C		-20...+75°C	
0...80%, 25°C, non-condensing						
yes	on request	yes	yes	on request	yes	on request
yes	yes	yes	on request	yes	on request	yes
IP65						





## emPC-26/M: Your Maritime Grade Panel PC for Commercial Shipping and Mega Yachts

- ▶ IEC 60945 compliant
- ▶ High-performance CPU i7 quad core
- ▶ 26" wide screen
- ▶ 2 additional displays connectable
- ▶ up to 6 10/100/1000 MBit/s Ethernet
- ▶ Customer specific front panel



## Panel PC Solution for Maritime Application

### emPC-26/M

#### Technical Details

##### Processor:

- ▶ 4th generation Intel Core i7-4700EQ (4 x 2.4 GHz)

##### Memory:

- ▶ up to 16 GB DDR3

##### Connectors/Ports:

- ▶ minimum 2 x 10/100/1000 MBit/s Ethernet
- ▶ 2 x Video outs (DVI-D und DVI-I graphic interface)

##### Expansion:

- ▶ 1 x PCIe X16 slot for short length PCI cards
- ▶ 1 x PCIe mini card
- ▶ 1 x internal expansion board for customizable serial port expansion with up to 4 additional D-SUB connectors

##### Integrated TFT Monitor:

- ▶ 26" panel size, with 1920 x 1200 resolution
- ▶ ECDIS color calibration data stored on internal USB memory stick
- ▶ Build-in beeper
- ▶ easy replaceable and temperature controlled fans
- ▶ glass front
- ▶ dimmable brightness
- ▶ up to 5 definable buttons on front panel

##### Physical:

- ▶ Environmental compliance to EN 60945
- ▶ Dimensions (w x h x d): 684 x 497 x 113 mm

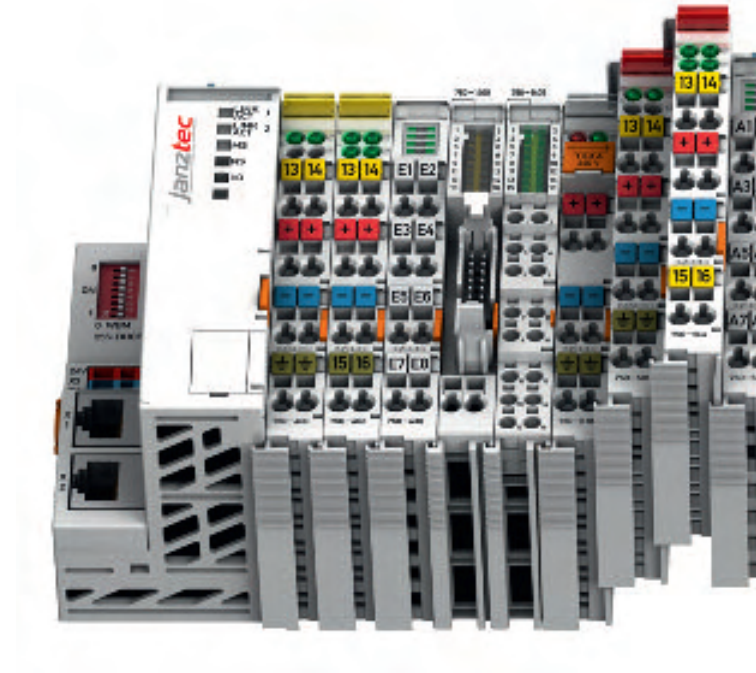
Also available as monitor only



# Universal, Compact and Economical – The Ideal

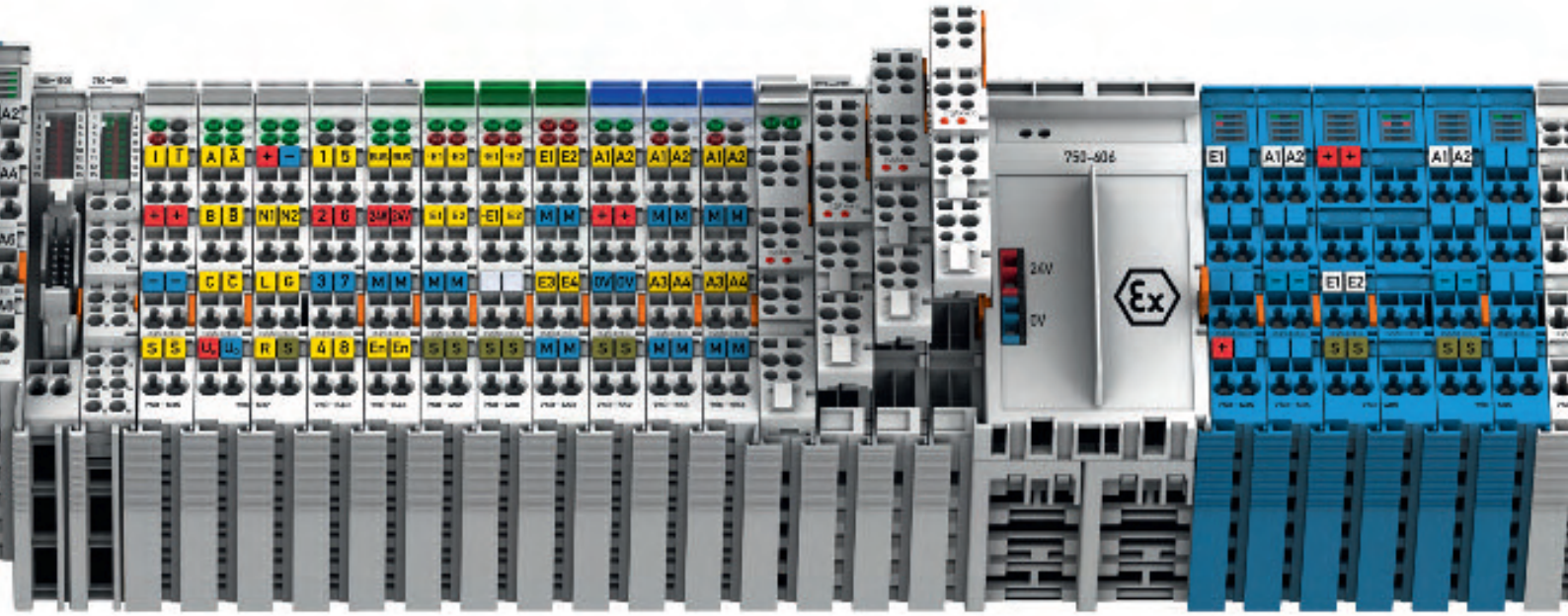
As of now Janz Tec is also able to supply customers with fieldbus modules and couplers containing WAGO I/O technology. The worldwide established product range of WAGO with more than 400 different I/O modules and fieldbus couplers can provide the right solution for you. Together with the world-renowned Soft PLC programming tool CODESYS, Janz Tec is now able to supply a complete customer-oriented solution from one source!

Janz Tec's embedded computing systems emPC and emVIEW are supported, as well as the JIPSY industrial computing family. According to customer's needs, our Industrial Computing Architects develop compact and functional solutions. All computing systems can be combined with interfacing modules for different fieldbuses.





# Fieldbus Node



### Fieldbus Coupler for CANopen

The effective utilization of the bus band width allows CANopen to achieve a short system reaction time at comparatively low data rates. The typical advantages of CANopen, such as high data security and multimaster capability are retained.



### Fieldbus Coupler for EtherCAT

EtherCAT (Ethernet control Automation Technology) is the Ethernet solution for industrial automation, characterized by outstanding performance and particularly simple handling.



### Fieldbus Coupler for Modbus

Modbus is an open, serial communications protocol based on the master/slave architecture. Since it is extremely easy to implement on all kinds of serial interfaces, it has gained wide acceptance.



### Fieldbus Coupler for Profibus

Profibus DP is widely used as a fast bus for decentralized peripheral components.

## Flexible 19" Rack



**JIPSY**  
Janz Tec Industrial PC Systems

**ATLANTIS/4/4020**

MB (ATX); BP (PICMG 1.3 Half-Size SHB)

**General Features**

- ▶ Compact 4U Rack Mount / Tower chassis, with only 348mm depth
- ▶ Supports 14-slot Backplane for half size SHB or ATX/ MicroATX mainboard
- ▶ Shock-resistant disk drive bay holds one internal 2.5", and two front-accessible 3.5" drives, plus one slim optical disk drive (Optionally, the two front-accessible 3.5" slot may be converted to two or even four 2.5" mobile SATA SSD/HDD trays by using optional part IDT-3120E)
- ▶ Supports 80plus single power supply
- ▶ Front-accessible system fan without opening top cover for easy maintenance
- ▶ LED indicators and audible alarm notification for system fault detection
- ▶ Smart fan speed control for system fans
- ▶ Remote management (SUSI Access 2.1)

**Computing Technology\***

- ▶ Industrial CPU/ Mainboard technology
- ▶ Up to Intel Core i7/ XEON technology
- ▶ Interfaces (USB, RS232, LAN, graphic...)

**Disk Drive Bays**

- ▶ 1 x front-accessible slim optical drive bay
- ▶ 2 x front-accessible 3.5" drive bay
- ▶ 1 x internal 2.5" drive bay

**Active Cooling**

- ▶ 2 x cooling fan (Ø 90 mm)

**Front I/O**

- ▶ 2 x USB 3.0

**Environment**

- ▶ Operating temperature 0°C...+40°C
- ▶ Storage temperature -40°C...+70°C
- ▶ Humidity 10...95% @ 40°C, non-condensing
- ▶ Vibration (5...500Hz): 1G
- ▶ Shock: 10G (with 11ms duration, half sine wave)

**Physical**

- ▶ Dimensions (w x h x d): 482 x 177 x 348 mm



**JIPSY**  
Janz Tec Industrial PC Systems

**ATLANTIS/4/4340**

MB (ATX); BP (PICMG 1.3 Half-Size/Full-Size SHB)

**General Features**

- ▶ Supports 15-slot Backplane for full size SHB or ATX/ MicroATX motherboard
- ▶ Shock-resistant disk drive bay holds four hot-swap 3.5" and 2.5" SAS/SATA disk trays, one slim optical disk drive, and one 2.5" internal drive
- ▶ Supports 80plus single or redundant power supply
- ▶ Front-accessible system fan without opening top cover for easy maintenance
- ▶ LED indicators and audible alarm notification for system fault detection
- ▶ Smart fan speed control for system fans
- ▶ Remote management (SUSI Access 2.1)

**Computing Technology\***

- ▶ Industrial Mainboard technology
- ▶ Up to Intel Core i7/ XEON technology
- ▶ Interfaces (USB, RS232, LAN, graphic...)

**Disk Drive Bays**

- ▶ 1 x front-accessible slim optical drive bay
- ▶ 4 x SAS/SATA HDDS front-accessible 2.5" or 3.5" drive bays
- ▶ 1 x internal 2.5" or 3.5" drive bay

**Active Cooling**

- ▶ 1 x cooling fan (Ø 120mm) + 1 x cooling fan (Ø 80mm) for SAS/SATA storage unit

**Front I/O**

- ▶ 2 x USB 3.0

**Environment**

- ▶ Operating temperature 0°C...+40°C
- ▶ Storage temperature -40°C...+70°C
- ▶ Humidity 10...95% @ 40°C, non-condensing
- ▶ Vibration (5...500Hz): 1G
- ▶ Shock: 10G (with 11ms duration, half sine wave)

**Physical**

- ▶ Dimensions (w x h x d): 482 x 177 x 478 mm



\*Features depends on mainboard or SHB technology and may be different to other solutions!

\*Features depends on mainboard or SHB technology and may be different to other solutions!



# Mount Systems



**JIPSY**  
Janz Tec Industrial PC Systems

## ATLANTIS/4/4340

MB (ATX); BP (PICMG 1.3 Half-Size/Full-Size SHB)

### General Features

- ▶ 4U Rack Mount chassis supports PICMG 1.3 SHB
- ▶ Support PICMG 1.3, 7-slot passive backplane
- ▶ Drive bay holds one 5.25" drive and two 3.5" disk drives with front access using special bracket
- ▶ Lockable front door prevents unauthorized access
- ▶ LED indicators for Power and HDD
- ▶ Supports 80plus single or redundant power supply

### Computing Technology\*

- ▶ Industrial CPU-Board technology
- ▶ Up to Intel Core i7/ XEON technology
- ▶ Interfaces (USB, RS232, LAN, graphic...)

### Disk Drive Bays

- ▶ 3 x front-accessible 5.25" drive bays or
- ▶ 1 x 5.25" and 2 x SAS / SATA HDDs front-accessible 3.5" drive bays using special bracket bays
- ▶ 1 x internal 2.5" or 3.5" drive bay

### Active Cooling

- ▶ 3 x cooling fan (Ø 80mm)

### Front I/O

- ▶ Optional with bracket

### Environment

- ▶ Operating temperature 0°C...+40°C
- ▶ Storage temperature -40°C...+70°C
- ▶ Humidity 10...95% @ 40°C, non-condensing
- ▶ Vibration (5...500Hz): 1G
- ▶ Shock: 10G (with 11ms duration, half sine wave)

### Physical

- ▶ Dimensions (w x h x d): 482 x 177 x 455 mm



\*Features depends on mainboard or SHB technology and may be different to other solutions!



**JIPSY**  
Janz Tec Industrial PC Systems

## ATLANTIS/2/7242

MB (ATX/RC/LP)

### General Features

- ▶ Supports ATX motherboard with dual processors
- ▶ Four shock-resistant hot-swap disk trays supporting 3.5" or 2.5" SAS/SATA drives for RAID 5/10 application, one slim ODD, and two 2.5" internal drives
- ▶ Dual front USB 3.0 ports
- ▶ Supports 80plus single or redundant power supply up to 700W
- ▶ Front-accessible system fan without opening top cover for easy maintenance
- ▶ LED indicators and audible alarm notification for system fault detection
- ▶ Built-in Intelligent System Module enabling whole system fan control and remote manageability
- ▶ Remote management (SUSI Access 2.1)

### Computing Technology\*

- ▶ Industrial Mainboard technology
- ▶ Up to Intel Core i7/ XEON technology
- ▶ Interfaces (USB, RS232, LAN, graphic...)

### Disk Drive Bays

- ▶ 1 x front-accessible slim optical drive bay
- ▶ 1 x internal 2.5" drive bay
- ▶ 4 x SAS/SATA external hot swap drive bay

### Active Cooling

- ▶ 1 x cooling fan (Ø 80 mm) + 2 x cooling fan (Ø 60 mm) for SAS/SATA storage unit

### Front I/O

- ▶ 2 x USB 3.0

### Environment

- ▶ Operating temperature 0°C...+50°C
- ▶ Storage temperature -40°C...+70°C
- ▶ Humidity 10...95% @ 40°C, non-condensing
- ▶ Vibration (5...500Hz): 1G
- ▶ Shock: 10G (with 11ms duration, half sine wave)

### Physical

- ▶ Dimensions (w x h x d): 482 x 88 x 525 mm



\*Features depends on mainboard or SHB technology and may be different to other solutions!

## Space Saving Wall



**JIPSY**  
Janz Tec Industrial PC Systems



**JIPSY**  
Janz Tec Industrial PC Systems

**ENDEAVOUR/3026/7130**

BP (PICMG 1.3 Half-Size SHB); MB (ATX/Micro-ATX)

**General Features**

- ▶ Stylish and compact design for embedded applications
- ▶ LED indicators and alarm notification for system fault detection, including Power, HDD, Temp, Fan
- ▶ Shock-resistant disk drive bay to hold one 3.5" disk drives (or two 2.5" disk drive with front access using special bracket)
- ▶ Support PICMG 1.3, 6-slot half size passive backplane or ATX/MicroATX Mainboard
- ▶ Accepts 150 W power supply or PS/2 300 W/ 400 W power supply

**Computing Technology\***

- ▶ Industrial CPU/Mainboard technology
- ▶ up to Intel i7/XEON CPU
- ▶ interfaces (USB, RS232, LAN, graphic...)

**Disk Drive Bays**

- ▶ 1 x internal 3.5" drive bay or 2 x SAS / SATA HDDS front-accessible 3.5" drive bays + 1 x internal 3.5" drive bay + 1 x front-accessible 5.25" drive bay

**Active Cooling**

- ▶ 1 x cooling fan (Ø 90mm) or 1 x cooling fan (Ø 120mm) + 1 x cooling fan (Ø 60 mm)

**Front I/O**

- ▶ 2 x USB 2.0

**Environment**

- ▶ Operating temperature 0°C...+40°C
- ▶ Storage temperature -20°C...+60°C
- ▶ Humidity 10...85% @ 40°C, non-condensing
- ▶ Vibration (5...500Hz): 1G
- ▶ Shock: 10G (with 11ms duration, half sine wave)

**Physical**

- ▶ Dimensions (w x h x d): 150 x 222 x 270 mm / 200 x 320 x 480 mm

**ENDEAVOUR/FSI1**

BP (PICMG 1.3 Full-Size SHB)

**General Features**

- ▶ Wallmount chassis supports PICMG 1.3 SHB
- ▶ Support PICMG 1.3, 7-slot passive backplane
- ▶ Front drive bay holds two 5.25" drive and two internal 3.5" drive bay
- ▶ Lockable front door prevents unauthorized access
- ▶ LED indicators for Power and HDD
- ▶ Supports 80plus single or redundant power supply

**Computing Technology\***

- ▶ Industrial CPU-Board technology
- ▶ Up to Intel Core i7/ XEON technology
- ▶ Interfaces (USB, RS232, LAN, graphic...)

**Disk Drive Bays**

- ▶ 2 x front-accessible 5.25" drive bays and 2 x 3.5" internal drive bay

**Active Cooling**

- ▶ 2 x cooling fan (Ø 90mm)

**Front I/O**

- ▶ Optional with bracket

**Environment**

- ▶ Operating temperature 0°C...+40°C
- ▶ Storage temperature -40°C...+70°C
- ▶ Humidity 10...95% @ 40°C, non-condensing
- ▶ Vibration (5...500Hz): 1G
- ▶ Shock: 10G (with 11ms duration, half sine wave)

**Physical**

- ▶ Dimensions (w x h x d): 240 x 260 x 460 mm

\*Features depends on mainboard or SHB technology and may be different to other solutions!

\*Features depends on mainboard or SHB technology and may be different to other solutions!

# Mounting Systems



**JIPSY**  
Janz Tec Industrial PC Systems



**JIPSY**  
Janz Tec Industrial PC Systems

## ENDEAVOUR/3012

BP (PICMG 1.3 Half-Size SHB)

### General Features

- ▶ Compact chassis with two expansion slots (depends on PICMG 1.3 SHB)
- ▶ Supports high computing PICMG 1.3 half size SHB
- ▶ supports two 2.5" disc drives for Raid 0,1 configuration
- ▶ Bi-directional mounting on wall or workbench (optionally)
- ▶ Top cover with thumb screw for easy maintenance

### Computing Technology\*

- ▶ Industrial CPU-Board technology
- ▶ Up to Intel Core i7 technology
- ▶ Interfaces (USB, RS232, LAN, graphic...)

### Disk Drive Bays

- ▶ 2 x internal 2.5" drive bays

### Active Cooling

- ▶ 2 x cooling fans (Ø 60mm)

### Front I/O

- ▶ 2 x USB
- ▶ further depending on SHB

### Environment

- ▶ Operating temperature 0°C...+40°C
- ▶ Storage temperature -20°C...+60°C
- ▶ Humidity 10...85% @ 40°C, non-condensing
- ▶ Vibration (5...500Hz): 1G
- ▶ Shock: 10G (with 11ms duration, half sine wave)

### Physical

- ▶ Dimensions (w x h x d): 232 x 90 x 232 mm



\*Features depends on mainboard or SHB technology and may be different to other solutions!

## ENDEAVOUR/B2000

MB (Mini-ITX)

### General Features

- ▶ Economical Embedded chassis for Mini-ITX motherboard
- ▶ Front LED indicators for system fault detection and with one expansion slot
- ▶ Reserved USB, COM and WLAN antenna openings on front side
- ▶ Shock-resistant two 2.5" drive bay
- ▶ Two SKUs to support ATX Power Supply (AIMB-B2000-15ZE) and AC-DC Power Adapter (AIMB-B2000-00YE)

### Computing Technology\*

- ▶ Industrial Mainboard technology
- ▶ Up to Intel Core i7 technology
- ▶ Interfaces (USB, RS232, LAN, graphic...)

### Disk Drive Bays

- ▶ 1 x slim optical drive bay
- ▶ 2 x 2.5" HDD/SSD or 1 x 2.5" HDD/SSD + 1 x slim ODD

### Active Cooling

- ▶ 2 x cooling fans (Ø 70mm)

### Front I/O

- ▶ 4 x USB
- ▶ 4 x Serial
- ▶ 2 x WLAN Antenna
- ▶ 1 x Expansion slot (low profile)

### Environment

- ▶ Operating temperature 0°C...+40°C
- ▶ Storage temperature -20°C...+60°C
- ▶ Humidity 10...85% @ 40°C, non-condensing
- ▶ Vibration (5...500Hz): 1G (1 x HDD + 1 x ODD); 0.5G (2 x HDD)
- ▶ Shock: 10G (with 11ms duration, half sine wave)

### Physical

AIMB-B2000-15ZE:

- ▶ Dimensions (w x h x d): 250 x 98 x 255 mm
- ▶ Weight: 3.8 kg

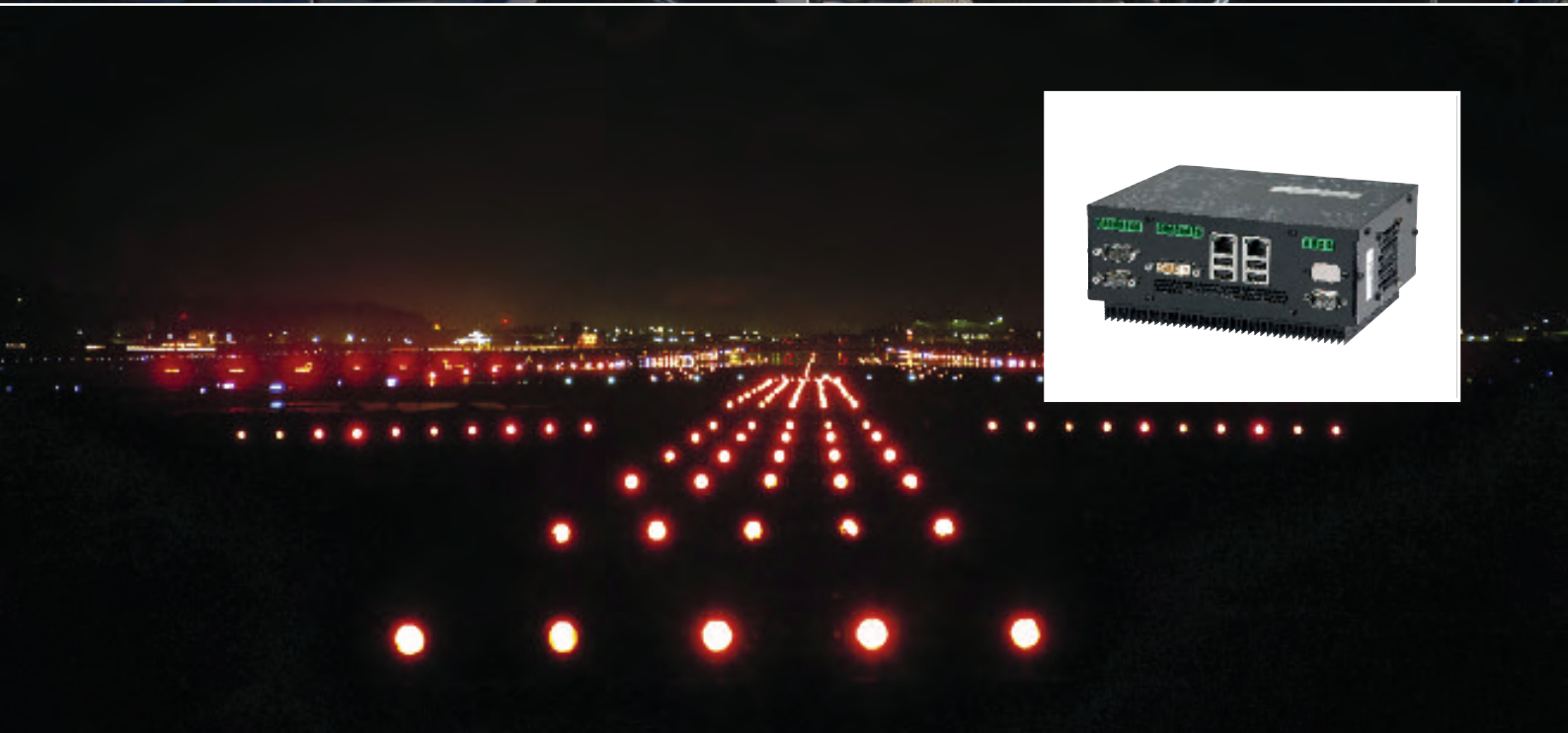
AIMB-B2000-00YE:

- ▶ Dimensions (w x h x d): 250 x 98 x 255 mm



\*Features depends on mainboard or SHB technology and may be different to other solutions!





# Top quality mobile equipment for concentrated feed mixing uses Janz Tec controllers



**Challenge:** Janz Tec was required to provide a reliable controller to be used in feed-mix machinery, where exact dispensing of feed formulations is essential for the safe feeding of domestic animals. Progressive customer requirements and the latest technology in food processing also require advanced control technology in these stationary and mobile mixing plants.

**Solution:** A Janz-sourced computing system communicates with two displays installed in the vehicle. One 12.1" display with touch screen is installed in the cab close to the driver to allow easy parameter setting at customer sites. From here, all control, service, and maintenance work can be performed for the entire mixer. This information is also registered at the rear of the truck by an additional display, which makes the

equipment extremely user-friendly. Great care was taken in selecting and mounting the correct display for readability even in bright sunlight. This required the surface of the display to be specially treated with an anti-reflective coating. CODESYS – a Soft PLC programming tool (IEC 61131-3) – was selected as the most convenient user interface, since this has proven ideal in similar applications.

**Pro Janz Tec:** This customer was looking for a competent manufacturer of control systems with a good track record, longevity, and expertise. Janz Tec was able to meet all of the customer's special requirements, such as presenting different display contents on the two monitors.

# Advanced airport navigation lighting controllers for safe landings



**Challenge:** The challenge for Janz Tec was to find a controller for navigation lights at airports like runways and gate signals, indicators for taxiways etc. These navigation lights need the utmost reliability and they feature redundant systems in most cases.

**Solution:** To allow simple integration in new as well as existing installations, the dimensions of this controller had to be compact.

With dimensions of 134 x 185 x 90mm, this PC offers the highest performance available in this configuration. Easy unit serviceability was also very important, so connections were provided above and below the system. The new system upgrades the front display

and a more powerful processor as well as rapid Ethernet interfaces. Featuring the usual industrial controller interfaces (3 x Gigabyte Ethernet ports, 4 x USB2.0 ports, 2 x serial interfaces and 1 x DVI-I-Interface), additionally CANopen and several analogue and digital I/Os have been added to provide a perfect custom solution.

**Pro Janz Tec:** Requiring a lengthy warranty (as far as 10 years) this company searched for a reliable partner with a high level of controller expertise.

Janz Tec AG's development competence, together with requirements resulted in a decision to make a custom, jointly developed controller system.

# SoftMotion – system-integrated control software



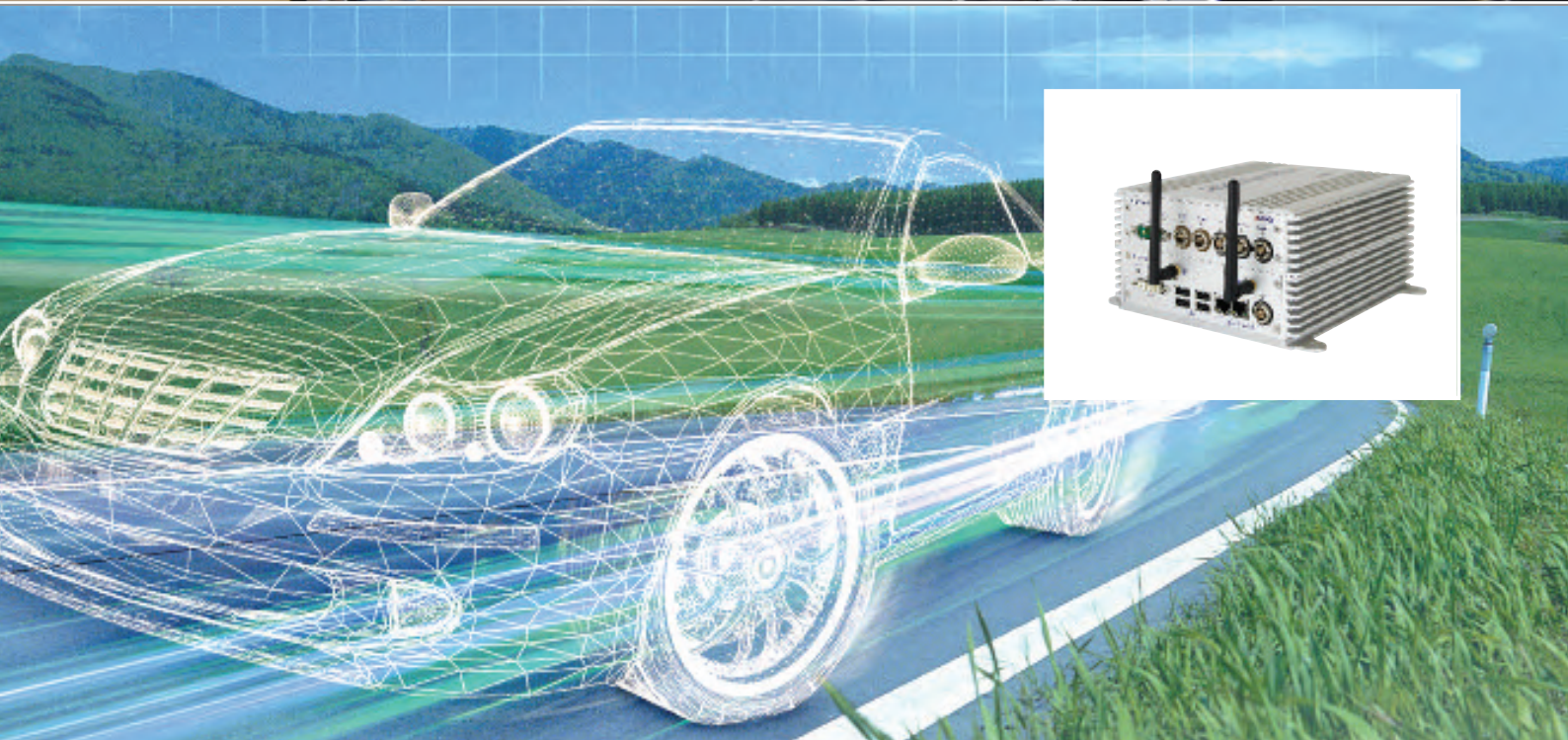
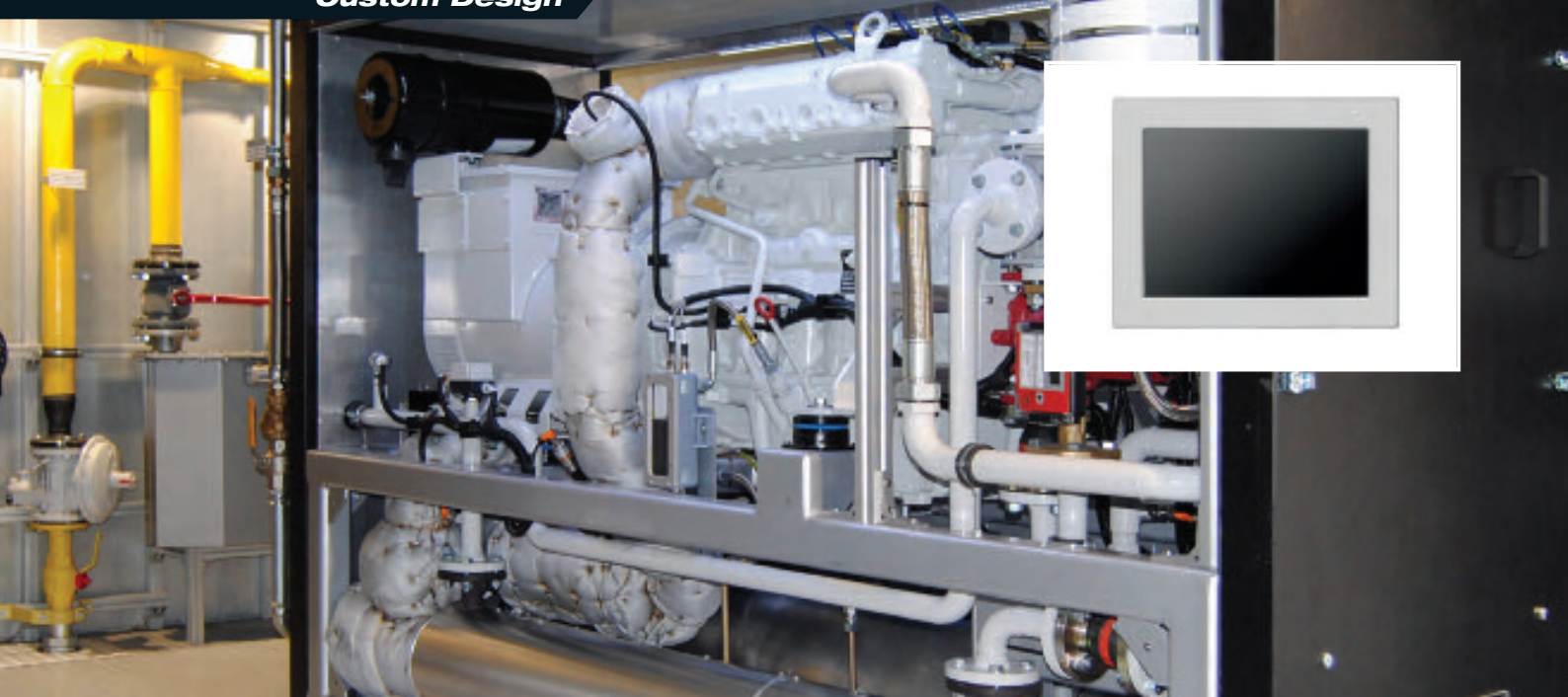
**Challenge:** To stay ahead as a system supplier and maintain the position of a global leader in the technology sector, top performance is required in the drive technology industry in many ways. Besides developing new products, a company must also demonstrate the ability to tailor previously developed solutions to a customer's specific requirements. STÖBER has always been aware of this challenge and took up the gauntlet in three specific core target industries.

**Solution:** Thus, they chose to base their system on the high-performance EtherCAT at an early stage, which is why the MC6 motion controller also relies on EtherCAT – an Ethernet-based synchronous bus system. Today,

the machine tool industry cannot survive without drive technology. Reliability, precision and a high load capacity must be guaranteed at all times. STÖBER drives ensure that plant and machinery operate smoothly – even in the most difficult operating conditions.

**Pro Janz:** They not only found a control system manufacturer in the Paderborn-based company, Janz Tec, but also a qualified partner for EtherCAT issues. Janz is known for its reliability and expertise – qualities that have been shaping STÖBER for years. Thanks to Janz Tec, the compact size of the MC6 means it can be used in a wide range of applications.







# Using Janz Tec emVIEW Systems in Heating Plants



**Challenge:** The challenge for Janz Tec was to find a customized control system for heat and power coupler plants.

**Solution:** The customer uses the latest available technologies, not only in terms of power generation, but also in terms of high quality, reliable user interface and control equipment. That is why the customer selected the Janz emVIEW-12T/A400. Heating plant control is very similar to vehicle engine control, both using CANbus as an internal bus. So an emVIEW Fanless Embedded Panel PC, with its built-in CANBus (CAN open), is installed to perform the power plant control. Another vital interface included is Ethernet – allowing remote system maintenance and also a regular exchange of statistical data via FTP. Of course, software

plays a critical role too – the user interface was created using CODESYS, a versatile development environment for programming controller applications. This IEC 61131-3 programming suite already provides many ready-made function blocks, enabling the complete system to be set up quickly and efficiently.

**Pro Janz Tec:** This customer was looking for a partner who could offer intelligent, individualized solutions. The function of the system was an important issue, but even more essential was the final design of the solution fitting to the customers requirements and needs. The display has a special stainless steel front to match the overall design of the power plant system.

# Unique Embedded Development System



**Challenge:** The challenge for Janz Tec was to build a customer specific embedded computer system for the dSPACE MicroAutoBox (MABX), which is an example of a world-implemented Real-time development platform in Rapid-Control-Prototyping.

**Solution:** As an extension for MicroAutoBox II the individual embedded computer system was designed. The integrated Gigabit-Ethernet-Switch realizes the communication between the PowerPC MABX II and the Janz Tec Embedded-PC, which is powered by a passively-cooled Intel® CPU – though more powerful COM Express module can be used. To incorporate WLAN, mobile communications or FireWire®, the computer unit offers an internal PCIe-Mini-Cardslot and an Express-Card-socket on at the rear, and three Gigabit Ethernet connections on the front. One internal

2.5" form factor SATA connector allows using ruggedized SSDs as well as high capacity hard disks.

**Pro Janz Tec:** This customer was looking for a partner who could offer intelligent, individualized solutions. With the MicroAutoBox II and its embedded computing expansion, users now have a unique development system offering great versatility, compact configuration and almost unlimited possibilities.

André Rolfmeier, Senior Product Manager at dSPACE GmbH says: "Because of Janz Tec AG's Embedded know-how, we were able to offer an extension option for the MicroAutoBox II within just a few months. The cooperation was straightforward and issues arising could be dealt with promptly. In Janz Tec AG we found a regional partner with obvious competence in Embedded PC technology."

# Latest Generation Aircraft Tow Tractor uses Janz Tec emVIEW Systems



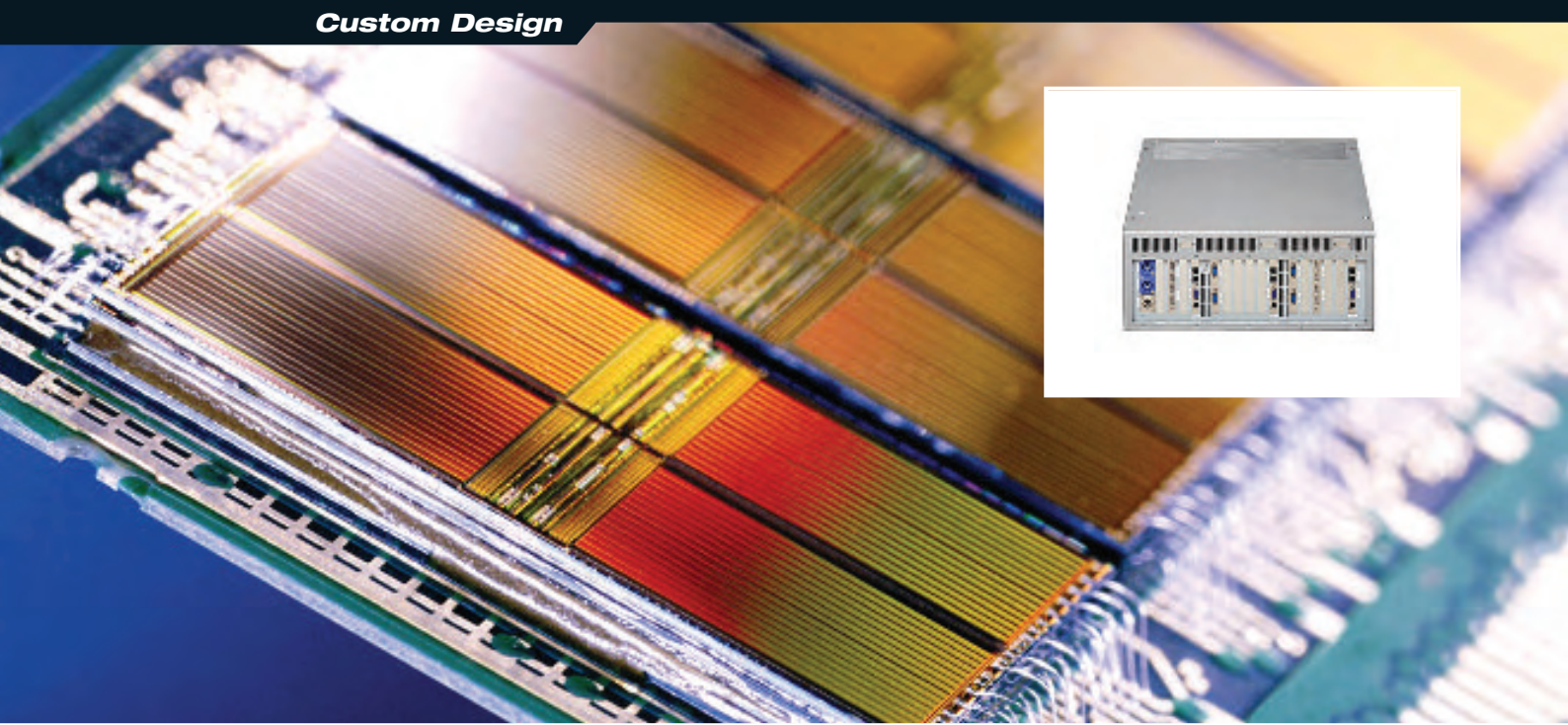
**Challenge:** The challenge for Janz Tec was to build the customer specific HMI system, in collaboration with TREPEL, with a display which is suitable for daylight operation (sunny conditions) in aircraft tow tractor cabins. Low power operation even in adverse environmental conditions is essential for fanless operation.

**Solution:** At the beginning of the project a standard Janz Tec emVIEW-6T/A400 was selected, a small compact ARM based Panel PC with a 6.5" display. Important factors in selecting these systems were the full CAN/CANopen support and the use of Soft-SPS CODESYS as IEC 61131-3 control software. Based on a standard emVIEW-6T/A400, a customer specific product was

designed, with a display suitable for daylight operation and customer CI front panel design.

**Pro Janz Tec:** Since the tractors are equipped with very large windows, and thus have a lot of ambient light in the cabins, a normal display is often difficult to read and Janz Tec was able to offer a small HMI system with a display technology suitable for this application. The decision to use Janz Tec for the series launch was based on several reasons – significantly the fast, flexible response to additional requests from TREPEL. This decision insured that a system could be delivered that could cope with wide temperature ranges.







# Control systems for fine wire and heavy wire bonders



**Challenge:** The challenge was to replace the previous outdated computer system in a way that re-fitting existing machines with new control units is no problem. This way, warehousing two different controller components can be avoided. In addition, the systems allow for future requirements and challenges. A control unit consists of up to three Core2Quad processor boards contained together in one housing and sized to the requirements of existing machines.

**Solution:** The control unit is configured as an HMI computer to allow easy user-control of the machine. The second unit provides motion control and regulation,

and is a conventional real-time controller. An optional third unit forms an integrated quality control processor (PiQC), performing real-time bond tests. In addition to the quality standard power supply, uncontrolled data loss from the PiQC unit is prevented by a UPS unit.

**Pro Janz:** The development of the housing and the component selection for the three computer cores was a close cooperation between Janz Tec AG and the customer. An advantage for Janz Tec was, that they are situated close by and have their own development department.

## IEC 60945-certified 'ECDIS' PC



**Challenge:** One or more 19"-rackmounted PC systems in multiscreen mode provide the ship's central information display and command control inputs, since this is more suitable for marine applications.

Ergonomics and design requirements for ship bridges (especially yachting) increasingly make it necessary to use smaller and more adaptable computers. Due to the complex software required, Raytheon Anschütz GmbH could not accept any limitations with computer performance, so a Core2Duo processor was selected.

**Solution:** It was necessary to develop a custom computer with Raytheon Anschütz GmbH because a) Raytheon Anschütz GmbH uses special IO boards with

own-designed connectors and b) the housing should be as small as possible. The combined experience of Raytheon Anschütz GmbH and Janz Tec AG was needed!

**Pro Janz:** We succeeded in reducing the volume of the unit by 60 % compared to the previous generation unit. The number of internal connectors, a potential fault source, could be reduced at the same time. For the customer it is also vital that the computer has long-term availability, with even longer term after-sales service for spare parts and repairs. Since many of the components chosen come from Janz Tec directly, this reduces the 'guaranteed availability' issues.

## CANopen and Janz Tec PanelPC controls Italian trams



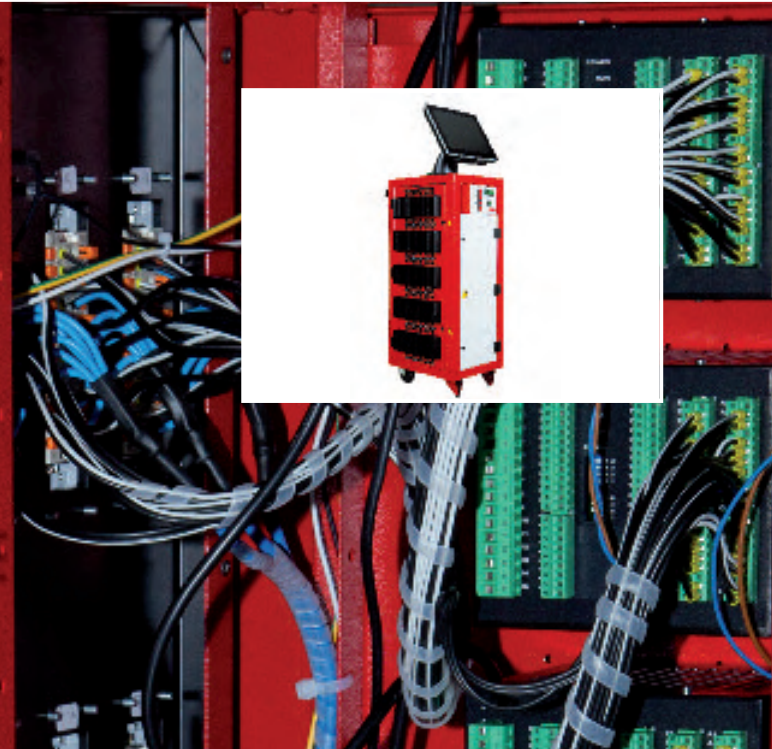
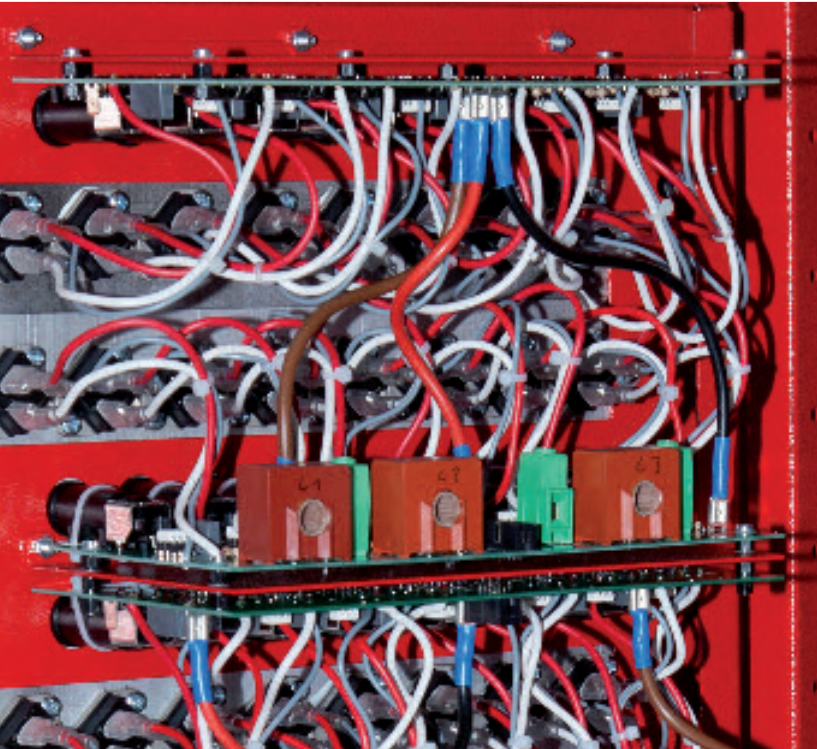
**Challenge:** The 6000 series tram is a modern vehicle operating in the city of Turin and Catania in Italy. It has security systems onboard, including an interactive diagnostic monitor installed in the driver's cabin. This monitor is a vital component of the tram and its malfunction causes the tram to become non-operative and requires the vehicle to be returned to the depot for maintenance. This monitor is not just a display as its name suggests, but an embedded computer with display capability that works as a HMI (human machine interface) for the driver.

**Solution:** LVD Systems, the local representative of Janz Tec in Italy, proposed to the local transportation company (GTT) a monitor solution based on the emVIEW series from Janz Tec (Germany). The chosen 8-inch Panel-PC is based on ARM architecture running embedded Linux. The diagnostic monitor was a one-to-one replacement of the previous device, requiring no modification to others

sub-systems on-board to avoid complex qualification procedures. The former monitor communicated with the main supervisor computer through an RS-485 line with a proprietary protocol, which encapsulates VT100-like graphical commands plus custom extensions and other tram status information. It also used physical push buttons to receive commands from the driver.

**Pro Janz:** In order to make the emVIEW to become a replacement component, Linux with QT Embedded from Nokia was chosen as operating system. Real-time patches were applied to the Linux kernel in order to comply with the strict timing requirements of the protocol. Every incoming packet must be acknowledged after 2  $\mu$ s from reception and not later than 5  $\mu$ s. A missing acknowledge would cause the tram to stop for security.









## Efficient energy management

**Challenge:** The goQ-Controller is a system regulator for modern heating technology and enables integrated energy management and monitoring of HVAC systems in buildings of all types. The controller and the software are based on the needs of equipment manufacturers, facility managers and OEM customers. The hardware basis for the goQ-Controller is the Janz Tec AG emPC-A500. The CODESYS automation platform offers a high standard of flexibility and reliability with regard to hardware and software.

**Solution:** The goQ-Controller, in addition to the regulation processes based on IEC 61131-3, comprises a variety of expanded system functions built upon the CODESYS development environment. These functions enable the equipment to be highly configurable and flexible. The performance can be easily adjusted to

each individual casing size using the flexible interface options.

**Pro Janz:** Hasko Ahrendt, Managing director of me. Ahrendt GmbH: "The emPC-A 500 – or better our goQ-Controller – is an ace for our technical applications. The existing connections are a perfect fit for our applications. Moreover, the system can optionally be expanded to include various special applications. CODESYS could be obtained directly from Janz Tec AG. It was very important to us in the initial phase that hardware and software support come from one source as much as possible. This task was mastered brilliantly by the Janz Tec AG developers. Within two weeks after the decision to purchase this small embedded computer, our own software could be completely integrated and embedded."



## Intelligent Heating Zone Controller

**Challenge:** Heating zone controllers are widely used in the plastics processing industry. In order to be able to produce versatile components, Nolden Regelsysteme GmbH saw the requirement to employ new and more powerful control equipment with more channels.

**Solution:** Instead of using a controller with one or two outputs, a compact controller was developed which can actuate 120 outputs at the same time. These outputs are checked and monitored separately by a custom-developed CODESYS-based software program. Operation is via a 15" multi-touch display which is mounted directly to the central controller PC – a Janz Tec AG emPC System. From the outset of development, Janz Tec AG software developers were involved with the engineers at Nolden in the development and design. In this way the correct processor platform for the tasks envisaged were chosen and put into operation from the very beginning.

**Pro Janz:** Hans Werner Müller, Managing Director of Nolden Regelsysteme GmbH says: "In Janz Tec AG we found a flexible and dependable partner for sourcing processors and displays. From the outset the communication of the engineers involved was close and straightforward, so there were hardly any problems at all, starting from the initial consultation right up to the development of the custom CODESYS control software. If there were any questions with respect to either hardware or software, Janz Tec reacted immediately and in an uncomplicated way, so that everything was clear and with complete satisfaction to all concerned. All of Janz Tec AG's systems are available for a guaranteed period of at least 5 years, so that obsolescence will not be an issue. We will definitely pursue a long term cooperation with this supplier."



## Progressive Signal System

**Challenge:** Fabema is a market leader of mobile traffic systems and traffic safety products. The service spectrum of Fabema's enterprise spans from research and development of new products to ensuring safety at accident or dangerous locations. For the demonstration and simulation of the traffic layout they need a controller for the mobile units.

**Solution:** The heart of this new mobile signal system is a multifunctional controller for the mobile unit and the light-signal system fixtures. The control display in this system is the emVIEW-6T from Janz Tec AG, which is used for the demonstration and simulation of the real traffic layout. All necessary traffic related documents have to be produced fast and without any problems with this system: they are constructed in only one operating procedure with the program software provided. The

large touchscreen display with a resolution of 640x480 pixel and a 24-bit color depth offers the necessary easy of use too. The demonstration and simulation of the real layouts with signals are incorporated in the control system.

**Pro Janz:** Peter Tesch, Managing director of Fabema GmbH: "With launching the emVIEWs from our partner company – Janz Tec AG – we have found a powerful regional partner who can also facilitate modifications of Hardware and Software directly and straightforwardly. The needed interfaces can be allocated without any problems. The Custom Design of the system fits well into our own Corporate Identity, so that our customers and employees can identify seamlessly with this system. The service and support from the Janz employees is phenomenal!"

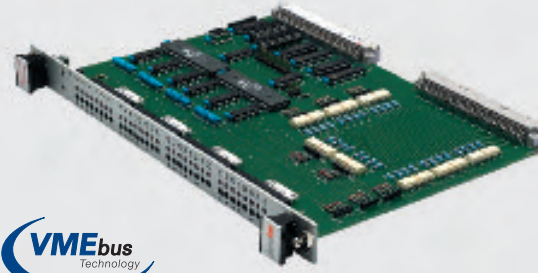
## Simple VME FMC Carrier (SVEC)



### VME64x SVEC

- ▶ two Low-Pin Count FMC slots
- ▶ no dedicated clock signals from Carrier to FMC (as only available on HPC pins and use LPC)
- ▶ FMC connectivity: all 34 differential pairs connected, 1 GTP transceiver with clock, 2 clock pairs, JTAG Xilinx FPGAs
- ▶ application FPGA: Spartan-6 XC6SLX150T-FGG900
- ▶ direct connection to all resources such as VME64x, memories and FMC connectors
- ▶ system FPGA: Spartan-6 XC6SLX9-2FTG256C Provides VME bootloader, early oscillator/PLL config Configuration Flash memory for both Main FPGA and Application FPGA configuration FPGA configuration from SPI flash or via VME Clocking resources
- ▶ 1x 10-280 MHz I2C Programmable XO Oscillator, starts up at 100 MHz (Silicon Labs Si570, freely usable)
- ▶ 1x 25 MHz TCXO controlled by a DAC with SPI interface (AD5662, used by White Rabbit PTP core)
- ▶ 1x 20 MHz VCXO controlled by a DAC with SPI interface (AD5662, used by White Rabbit PTP core)
- ▶ 2x low-jitter frequency synthesizer/fanout (TI CDCM61004, fixed configuration, Fout=125 MHz, used by White Rabbit PTP core) On-board memories
- ▶ 2x 256 MByte (2 Gbit) DDR3 (16-bit bus, MT41J128M16HA-15E)
- ▶ 1x 128 Mbit SPI flash for FPGA firmware storage
- ▶ 64kbit EEPROM (24AA64T-I/MC) connected for storing application parameters
- ▶ 1x I2C configuration EEPROM (24LC64) Miscellaneous
- ▶ on-board thermometer IC (DS18B20U+)
- ▶ unique 64-bit identifier (DS18B20U+) Front panel
- ▶ 1x SFP port (White Rabbit compatible)
- ▶ 4x LEMO/SMC programmable I/Os capable of driving 3.3V @ 50 ohm
- ▶ 2x mini displayPort connectors for high-speed serial GTP links (not for video)
- ▶ 8x Programmable LED
- ▶ reset push button

## 32-Channel Digital Input



### VDIN-32

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ 32 independent high impedance inputs
- ▶ opto-isolated inputs
- ▶ input voltage ranges (0V..100V)
- ▶ LED status display for each input
- ▶ simulation sockets
- ▶ counter/timer with trigger/gate activation change-of-state
- ▶ and pattern recognition interrupt P2 connection of input lines
- ▶ 30 kHz max. input frequency

## 96-Channel Digital Output

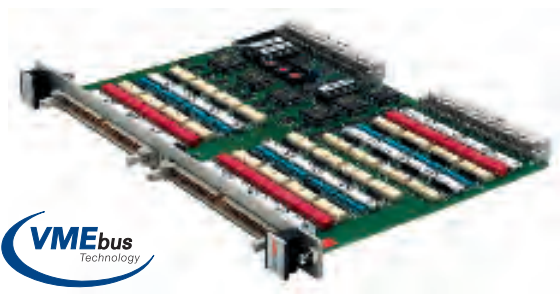


### VDOT-96

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ 32 bit, 64 bit or 96 bit digital outputs
- ▶ output voltages 12V/24V
- ▶ outputs with high-side power switch (BTS721)
- ▶ output current max. 2.5A, short circuit, overvoltage, overload and overheating protected
- ▶ opto-isolated outputs optionally available front-panel and
- ▶ P2-connection for output lines LED and interrupt error
- ▶ indication



# 96-Channel Digital Input



## VDIN-96

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ 32, 64 or 96 independent high impedance inputs (opto-isolated version)
- ▶ opto-isolated inputs optionally available
- ▶ input voltage 5V/24V (up to 100 V optionally available)
- ▶ counter/timer with trigger/gate activation change-of-state
- ▶ and pattern recognition interrupt front-panel and P2
- ▶ connection for input lines
- ▶ 30 kHz max. input frequency

# 32-Channel Digital Output



## VDIO-32

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ 32 opto-isolated in-/outputs
- ▶ voltage ranges 5V/12V/24V
- ▶ read-back outputs usable as inputs
- ▶ LED display simulation sockets for each channel
- ▶ counter/timer with trigger/gate activation
- ▶ change-of-state and pattern recognition interrupt P2
- ▶ connection for I/O lines
- ▶ 30 kHz max. input frequency

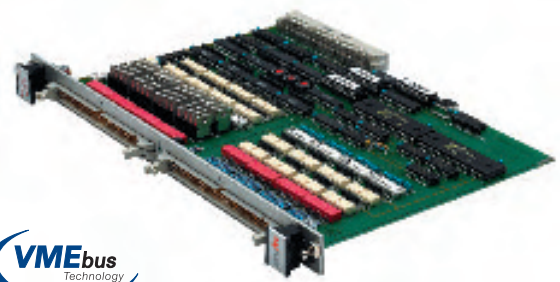
# 32-Channel Digital Power I/O



## VDOT-32

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ 32 opto-isolated inputs/outputs
- ▶ outputs with high-side power switch (BTS721)
- ▶ voltage ranges 12V/24V
- ▶ output current max. 2.5A, short circuit, overvoltage, overload and overheating protected
- ▶ outputs can be read back; each 8 bit group usable as inputs
- ▶ LED display, simulation sockets for each channel each
- ▶ channel current-limited
- ▶ undervoltage and overvoltage shutdown with auto-restart and hysteresis
- ▶ counter/timer with trigger/gate activation
- ▶ change-of-state and pattern recognition interrupt
- ▶ front-panel and P2 connection for input lines

# 64-Channel Digital I/O



## VDIO-64

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ 32 digital inputs and 32 digital outputs
- ▶ input/output voltage ranges 12V/24V, other voltages optionally available
- ▶ opto-isolated outputs optionally available
- ▶ output current max. 2.5A, short circuit, overvoltage, overload and overheating protected
- ▶ LED and interrupt error indication
- ▶ counter/timer with trigger/gate activation
- ▶ change-of-state and pattern recognition interrupt
- ▶ front panel connection of I/O lines

## FMC TDC 1ns



### FMC TDC 1ns 5 cha

- ▶ 5 TTL input channels with software selectable 50 Ohm termination
- ▶ software controlled switch for all channels
- ▶ circular time stamp buffer to keep 128 pulses (256 rising and falling edges)
- ▶ time stamp precision +/- 700 ps
- ▶ time base accuracy <1 ns with White Rabbit and +/- 4 ppm without White Rabbit from a local TCXO
- ▶ maximum input pulse rate 31,25 MHz from all 5 channels, maximum input pulse width 100 ns
- ▶ FMC board with low pin count (LPC) connector
- ▶ open Hardware (Published under CERN OHL)

## 80-Channel Parallel I/O

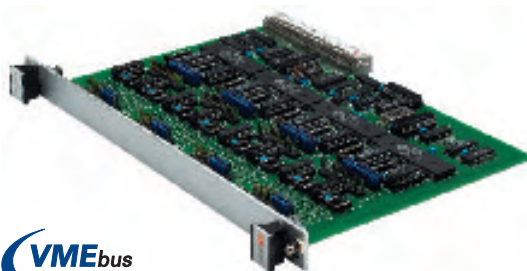


### VPIO-80

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ A24:D16 slave interface
- ▶ 32 opto-isolated in- or outputs (factory configured in 8 bit groups)
- ▶ up to 70V in-/output voltage, 0.6A output current, open collector
- ▶ 48 TTL-compatible in-/outputs, 48mA, open collector
- ▶ counter/timer with trigger/gate activation
- ▶ change-of-state and pattern recognition interrupt
- ▶ opto-isolated lines connected to front panel, TTL lines at P2
- ▶ 30 kHz max. input clock rate



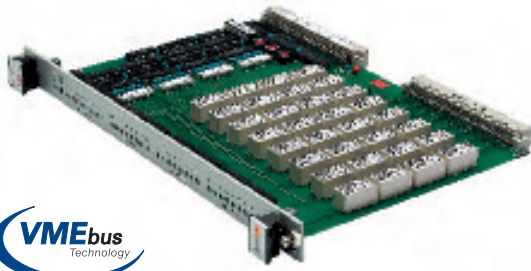
## 8-Channel RS232/RS422



### VSIO-A8

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ 8 independent serial channels
- ▶ configurable as RS232, RS422 or 20mA
- ▶ voltage isolation using opto-isolation
- ▶ independent Baud-rates for each channel
- ▶ signals for modem-control
- ▶ transfer-rate up to 800 kBaud
- ▶ all channel parameters are software programmable and independent of each other
- ▶ full interrupt capability with 4 independent interrupt vectors
- ▶ connector signals at the interfaces are hardware wireable as needed

# 32 Relay Output



## VREL-32

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ 32 relay outputs, active closing or opening contacts
- ▶ outputs max. 250V (AC), 110V (DC), 3A, 60VA, 30W
- ▶ isolation voltage coil/contact : 1500V
- ▶ max. switch frequency 500 Hz
- ▶ relay states re-readable
- ▶ relay outputs at P2 connector
- ▶ LED status display

# 8-Channel Serial I/O



## VSIO-D8

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ 8 independent serial channels
- ▶ configurable V.24 (RS232) or 20mA (current loop)
- ▶ opto-isolation for 20mA current loop
- ▶ signals for modem control
- ▶ transfer rates up to 38.4 kBaud asynchronous
- ▶ channel parameters independently set by software
- ▶ fully interruptable with 8 independent interrupt vectors
- ▶ P2 connection for serial lines, transition adapter optional

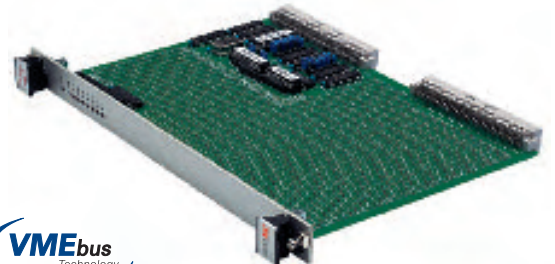
# Static CMOS Memory



## VMEM-C16

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ capacity up to 16MB SRAM or up to 16MB FLASH EPROM
- ▶ 140 ns access time
- ▶ A24/A32 addressing mode
- ▶ D16/D32 data transfer
- ▶ memory write protectable with temporary unprotect from front panel
- ▶ battery back-up for at least 1000h (rechargeable NiCd battery)

# VMEbus Prototyping

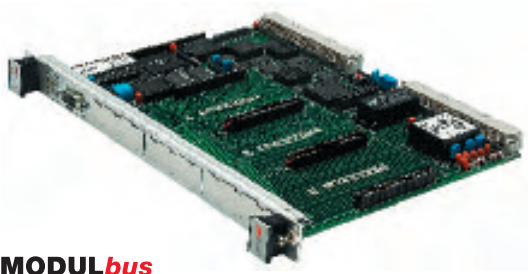


## VDEV-IO

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ A24/16:D16 VMEbus slave interface
- ▶ full interrupt capabilities
- ▶ pre-decoding of 8 address ranges
- ▶ vector register
- ▶ large matrix field with surrounding track for GND/Vcc
- ▶ 8 user definable LEDs available at the front panel



## Active VMEbus I/O Controller

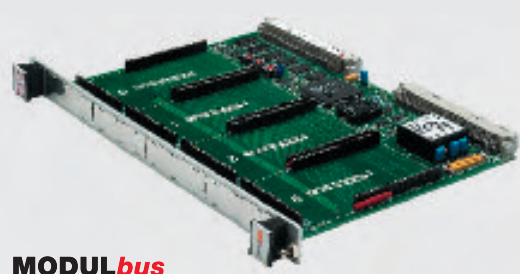


**MODULbus**  
The Mezzanine Standard

### VMOD-32

- ▶ double Eurocard form factor (6U)
- ▶ A32/24/16:D16/08 VMEbus master; A24:D16/08 slave interface
- ▶ switchable bus width for short, standard and extended VMEbus-I/O
- ▶ VMEbus master/slave operation
- ▶ 3 MODULbus I/O sockets, 4 additional sockets with VMOD-IX expansion board (8 TE solution)
- ▶ front panel and P2 connection of MODULbus I/O lines
- ▶ MC68332 MCU with 21 MHz (programmable) on-board system controller with first slot detection
- ▶ interrupt handler IRQ 1-5
- ▶ interrupt generator any 1 of 7
- ▶ up to 4 MB DRAM
- ▶ up to 1 MB EPROM
- ▶ up to 1 MB FLASH EPROM
- ▶ up to 1 MB dual-ported battery buffered SRAM
- ▶ battery buffered realtime clock with 2 kB SRAM
- ▶ RS232 serial ports
- ▶ periodic interrupt timer (internal to MC68332)
- ▶ watchdog timer (internal to MC68332)
- ▶ DC/DC converter to supply analog modules

## 6U VME64 Mezzanine Carrier for MODULbus I/O

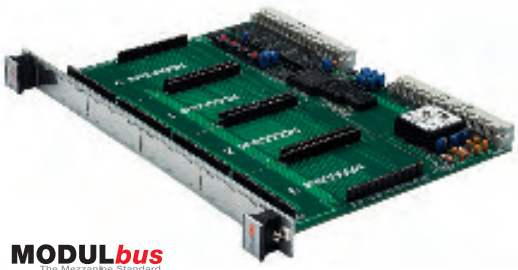


**MODULbus**  
The Mezzanine Standard

### VMOD-IO2

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ passive carrier board for MODULbus I/O
- ▶ A16/D16, A24/D16 and A32/D16 VMEbus slave interface
- ▶ 4 sockets for MODULbus I/O
- ▶ MODULbus+ extension
- ▶ performance improvement through write buffer
- ▶ VME64x compliant CR/CSR for software board detection and address decoder configuration
- ▶ BAR register can be loaded by geographical addressing or auto slot identification
- ▶ software configuration of the boards run-time parameters (without jumpers) programmable IRQ level and IRQ vector
- ▶ for each module
  - ▶ interrupt masking for each module
- ▶ modules can be individual reset by software
- ▶ software configuration of MODULbus clock
- ▶ access time configuration via software
- ▶ needs only one VMEbus slot
- ▶ front panel and P2 connection for I/O lines
- ▶ on-board DC/DC converter to supply analog
- ▶ modules optionally available

# 6U/3U VME Mezzanine Carrier for MODULbus I/O



**MODULbus**  
The Mezzanine Standard

## VMOD-IO

- ▶ double Eurocard form factor (6U) with VMEbus interface
- ▶ passive carrier board for MODULbus I/O A16/A24:D16
- ▶ VMEbus slave interface
- ▶ 4 plug-in sockets for MODULbus I/O
- ▶ different interrupt vector for each MODULbus socket
- ▶ jumper selectable interrupt level
- ▶ 2 kB short I/O or standard-address range
- ▶ needs only one VMEbus slot
- ▶ front panel and P2 connection for I/O lines
- ▶ on-board DC/DC converter to supply analog modules optionally available



**MODULbus**  
The Mezzanine Standard

## VMOD-3U

- ▶ single Eurocard form factor (3U) with VMEbus interface
- ▶ passive carrier board for MODULbus I/O
- ▶ A24/16:D16 VMEbus slave interface
- ▶ 1 plug-in socket for MODULbus I/O
- ▶ jumper selectable interrupt level 1-7 and vector-interrupt
- ▶ 512 byte short I/O or standard addressing
- ▶ needs only one VMEbus slot
- ▶ front panel connection for I/O lines
- ▶ on-board DC/DC converter to supply analog modules optionally available

# PCI Carrier Boards



**MODULbus**  
The Mezzanine Standard

## MOD-PCI

- ▶ passive PCI carrier board with two MODULbus+ sockets
- ▶ extended height short form factor
- ▶ 32 bit PCI 2.2 target interface (PLX 9030)
- ▶ 3.3V / 5V PCI interface
- ▶ only one PCI-bus slot occupied
- ▶ front panel connector of MODULbus socket 0 available at PCI bus bracket



**MODULbus**  
The Mezzanine Standard

## MOD-PCI4

- ▶ passive PCI-bus carrier board with four MODULbus+ sockets
- ▶ extended height long form factor
- ▶ 32 bit PCI 2.1 target interface (PLX 9052)
- ▶ 5V PCI interface
- ▶ only one PCI slot occupied
- ▶ front panel connector of MODULbus socket 0 available at ISA bus bracket
- ▶ I/O connector of MODULbus socket 1 available on 16-pin flat cable connector at ISA bracket



# CompactPCI Carrier Boards



**MODULbus**  
The Mezzanine Standard

## **CMOD-IO**

- ▶ by using the VMOD-ICAN3 host system does not need to handle the high interrupt CMOD-IO 6U
- ▶ CompactPCI passive carrier board for MODULbus
- ▶ 32 bit PCI 2.2 target interface (PLX 9030)
- ▶ 3.3V / 5V PCI interface
- ▶ single slot double euro card form factor
- ▶ 4 sockets for MODULbus I/O
- ▶ needs only one CompactPCI slot
- ▶ interrupt sharing between the four modules (interrupts individually maskable)
- ▶ supports MODULbus+ identification mechanism
- ▶ supports MODULbus+ user interconnect signals
- ▶ front panel connection of I/O signals
- ▶ rear panel connection of I/O signals via CompactPCI J4 connector
- ▶ optional on board DC/DC converter to supply analog modules



**MODULbus**  
The Mezzanine Standard

## **CMOD-3U**

- ▶ 3U CompactPCI passive carrier board for MODULbus
- ▶ 32 bit PCI 2.2 target interface (PLX 9030)
- ▶ 3.3V / 5V PCI interface
- ▶ 1 socket for MODULbus I/O
- ▶ needs only one CompactPCI-slot
- ▶ interrupt sharing between the four modules (interrupts individually maskable)
- ▶ supports MODULbus+ identification mechanism
- ▶ front panel connection of I/O signals
- ▶ optional on board DC/DC converter to supply analog modules

# Digital I/O Modules



**MODULbus**  
The Mezzanine Standard

## VMOD-TTL

- ▶ 20 bit TTL I/O
- ▶ optionally opto-isolated I/O
- ▶ single 4 bit and double 8 bit I/O channels
- ▶ I/O software configurable per channel max.
- ▶ 48 mA open collector outputs
- ▶ 16 bit counter/timer internally or externally controlled
- ▶ interrupt on change of input state or input pattern
- ▶ high side or open collector switching capabilities
- ▶ software drivers for various operating systems available



**MODULbus**  
The Mezzanine Standard

## VMOD-REL

- ▶ 8 relay outputs
- ▶ output characteristics 250V (AC), 110V (DC), 3A max.
- ▶ output power 30W, 60 VA
- ▶ isolation voltage (coil/contact) 1.500V
- ▶ LED state display for each output channel
- ▶ double size module
- ▶ software drivers for various operating systems available

# Digital I/O Modules



**MODULbus**  
The Mezzanine Standard

## VMOD-BE8

- ▶ 8 independent opto-isolated inputs
- ▶ input voltage 24V
- ▶ interrupt by pattern recognition logic
- ▶ status display for each input
- ▶ input filters optionally
- ▶ software drivers for various operating systems available

## VMOD-BE20

- ▶ 20 independent opto-isolated inputs
- ▶ each input line is isolated from each other
- ▶ input voltage 12V / 24V / 48V
- ▶ input low pass filters
- ▶ software drivers for various operating systems available



**MODULbus**  
The Mezzanine Standard

## VMOD-BA5

- ▶ 8 independent outputs
- ▶ 24V / 0.5A opto-isolated
- ▶ short circuit protected
- ▶ load connected to ground
- ▶ status display for each output interrupt-generation on short circuit software
- ▶ drivers for various operating systems available

## VMOD-BA20

- ▶ 20 independent opto-isolated outputs
- ▶ output voltage 12V / 24V / 48V
- ▶ output current max. 1.0A
- ▶ high side or low side switching capabilities
- ▶ software drivers for various operating systems available



# Analog Input Modules



**MODULbus**  
The Mezzanine Standard

## VMOD-8E8 / VMOD-8E16

- ▶ 16 single-ended or 8 differential analog inputs
- ▶ 8 bit ADC with integrated Sample & Hold
- ▶ input ranges 0 – 5V, 0 – 10V,  $\pm 2.5V$ ,  $\pm 5V$ ,  $\pm 10V$
- ▶ sampling rate max. 1 MHz (conversion time 1  $\mu s$ )
- ▶ interrupt by end-of-conversion
- ▶ 8 bit binary code format
- ▶ software drivers for various operating systems available



**MODULbus**  
The Mezzanine Standard

## VMOD-12E16

- ▶ 16 single-ended or 8 differential analog inputs
- ▶ 12 bit resolution
- ▶ linearity error max  $\pm 1/2$  LSB
- ▶ gain error max.  $\pm 1/2$  LSB (for amplification factor 1)
- ▶ selectable input voltage ranges:  $\pm 5V$ ,  $\pm 10V$ , 0 – 10V
- ▶ optional: current input 0 – 20mA
- ▶ programmable amplification 1, 10, 100, 1000 or 1, 2, 4, 8
- ▶ input section opto-isolated optionally programmable
- ▶ interrupt on end-of-conversion sampling rate max. 167 kHz (conversion time 15  $\mu s$ ) software drivers for various operating systems available

# Analog Input Modules



**MODULbus**  
The Mezzanine Standard

## VMOD-12E4

- ▶ 4 analog inputs
- ▶ 12 bit resolution
- ▶ sampling rate max. 333 kHz (conversion time 3  $\mu s$ )
- ▶ simultaneous conversion with 4 ADC (so no time-gap of measured data)
- ▶ input voltage ranges  $\pm 5V$ ,  $\pm 10V$ , 0 – 10V
- ▶ cascadable with common trigger
- ▶ single-stage buffer for each channel
- ▶ low pass filter
- ▶ software drivers for various operating systems available



**MODULbus**  
The Mezzanine Standard

## VMOD-16E4

- ▶ 4 fast and independent analog inputs
- ▶ 16 bit resolution
- ▶ conversion time 3  $\mu s$  with simultaneous conversion (4 ADCs)
- ▶ input ranges: 0-10V,  $\pm 10V$ , 0-5V,  $\pm 5V$
- ▶ external conversion trigger (MODULbus+ or DSUB)
- ▶ trigger out (MODULbus+ or D-SUB) to cascade with other modules
- ▶ timer for self triggered conversion
- ▶ FIFO of 127 words
- ▶ interrupt can be generated when configurable threshold has been reached.
- ▶ software drivers for various operating systems available

# Analog Output Modules



**MODULbus**  
The Mezzanine Standard

## **VMOD-8A4 / VMOD-8A8**

- ▶ 4 or 8 independent analog output channels
- ▶ 8 bit resolution per channel
- ▶ output voltage ranges selectable:  $\pm 10V$ ,  $0 - 10V$ ,  $\pm 5V$ ,  $0 - 5V$ ,  $\pm 2.5V$ ,  $0 - 2.5V$
- ▶ 10mA output current per channel
- ▶ double buffered input interface with one common load DAC command
- ▶ software drivers for various operating systems available

## **VMOD-12A2 / VMOD-12A4**

- ▶ high precision analog output module
- ▶ 2 or 4 independent channels
- ▶ 12 bit resolution and linearity
- ▶ sampling rate max. 100 kHz (conversion time 10  $\mu s$ )
- ▶  $\pm 5V$ ,  $\pm 10V$ ,  $0 - 5V$ ,  $0 - 10V$  output voltages
- ▶ 25mA max. drive capability
- ▶ drives large capacitive loads
- ▶ simultaneous loading of output channels
- ▶ binary code format
- ▶ power-up to zero volts
- ▶ opto-isolated outputs optionally
- ▶ software drivers for various operating systems available

# Analog Output Modules



**MODULbus**  
The Mezzanine Standard

## **VMOD-12A8**

- ▶ high precision analog output module
- ▶ 8 independent channels
- ▶ 12 bit resolution and linearity
- ▶ sampling rate max. 333 kHz (conversion time 3  $\mu s$ )
- ▶ output voltages  $\pm 10V$ ,  $0 - 10V$
- ▶ max. 25mA output current
- ▶ double-buffered digital inputs
- ▶ software drivers for various operating systems available

## **VMOD-16A1 / VMOD-16A2**

- ▶ high precision analog output module
- ▶ 2 independent channels
- ▶ 16 bit resolution and linearity
- ▶ sampling rate max. 111 kHz (conversion time 9  $\mu s$ )
- ▶ output voltages  $\pm 5V$ ,  $\pm 10V$ ,  $0 - 10V$
- ▶ 25mA max. drive capability
- ▶ drives large capacitive loads
- ▶ simultaneous loading of output channels
- ▶ binary code format
- ▶ power-up to zero volts
- ▶ software drivers for various operating systems available



## Serial Modules



**MODULbus**  
The Mezzanine Standard

### VMOD-SIO2

- ▶ 2 independent opto-isolated serial channels RS232/V.24 (VMOD-SIO2/A) or
- ▶ 2 independent opto-isolated serial channels RS485 (VMOD-SIO2/B) or
- ▶ 2 independent opto-isolated serial channels RS422 (VMOD-SIO2/C)
- ▶ baud rate up to 38.4 kBaud
- ▶ supports TxD, RxD, RTS and CTS signals
- ▶ Zilog SCC Z8530
- ▶ software drivers for various operating systems available

### VMOD-SIO4

- ▶ 4 independent serial channels RS232/V.24 (VMOD-SIO4/A) or
- ▶ 4 independent opto-isolated serial channels current loop (VMOD-SIO4/B) or
- ▶ 1 serial channel RS422 (VMOD-SIO4/C)
- ▶ baud rate up to 38.4 kBaud
- ▶ supports TxD, RxD, RTS, CTS, DCD and DTR signals
- ▶ Zilog SCC Z8530
- ▶ software drivers for various operating systems available

## Communication Modules



**MODULbus**  
The Mezzanine Standard

### VMOD-ICAN3

- ▶ intelligent high performance SJA1000 CAN controller
- ▶ local intelligence with MC68332
- ▶ 256 kB SRAM, 16 bit wide
- ▶ 64 kB DPRAM, 16 bit wide
- ▶ 512 kB Flash
- ▶ optionally opto-isolated CAN interface
- ▶ ISO/DIS 11898
- ▶ 9-pin D-SUB connector
- ▶ ICANOS firmware on-board CANopen
- ▶ optionally available software drivers for
- ▶ various operating systems available



**MODULbus**  
The Mezzanine Standard

### VMOD-FCAN

- ▶ Bosch CC770E Standalone CAN Controller
- ▶ supports CAN protocol V2.0A and V2.0B
- ▶ optionally opto-isolated CAN interface ISO/DIS 11898
- ▶ 9-pin D-SUB connector
- ▶ software drivers for various operating systems available

# Communication Modules



**MODULbus**  
The Mezzanine Standard

## VMOD-COM

- ▶ communication procedure 3964(R)
- ▶ messaging interface between host and firmware through software driver
- ▶ enables applications on the host to communicate with another station on the serial line connections
- ▶ serial data communication according to 3964(R) protocol
- ▶ software drivers for various operating systems available



**MODULbus**  
The Mezzanine Standard

## VMOD-PROF

- ▶ usable as slave to Profibus-DP
- ▶ SPC3 interface
- ▶ possible broadcast messages of 256 I/Os within one cycle
- ▶ baud rate up to 12 MBaud
- ▶ baud rate selected automatically by the module software
- ▶ drivers for various operating systems available

# Interfacing Modules



**MODULbus**  
The Mezzanine Standard

## VMOD-CEN

- ▶ 20 bit TTL-I/O
- ▶ optionally opto-isolated I/O
- ▶ single 4 bit and double 8 bit I/O channels
- ▶ I/O software configurable per channel
- ▶ max. 48 mA open collector outputs
- ▶ 16 bit counter/timer internally or externally controlled
- ▶ interrupt on change of input state or input pattern
- ▶ software drivers for various operating systems available

# Counter/Special Modules



**MODULbus**  
The Mezzanine Standard

## VMOD-INC2

- ▶ 3-axis evaluation on one module
- ▶ 3 independent 24 bit counters with 1-, 2-, or 4-times evaluation
- ▶ interrupts on reference positions
- ▶ programmable counter modes for frequency or event counting and pulse width measuring
- ▶ differential RS422 and TTL-compatible inputs
- ▶ optionally opto-isolated
- ▶ software drivers for various operating systems available





## Active CAN PCI Interface



### CAN

#### CAN-PCI2

- ▶ CAN host interface for PCI systems active high performance CAN field bus adapter
- ▶ PCI standard height short form factor
- ▶ compatible to intelligent CAN-PCI board CAN-PCI/K2
- ▶ local intelligence with MC68332
- ▶ 256 kB SRAM, 16 bit wide
- ▶ 64 kB DPRAM, 16 bit wide
- ▶ 512 kB Flash
- ▶ 3.3V and 5V PCI interface
- ▶ up to 2 SJA1000 CAN controller for 2 independent CAN channels
- ▶ optionally opto-isolated CAN interfaces
- ▶ ISO/DIS 11898
- ▶ 9-pin D-SUB connector
- ▶ ICANOS firmware on-board
- ▶ CANopen optionally available

## High-Performance Active Interface



### CAN

#### CAN-PCIH

- ▶ active PCI CAN field bus controller
- ▶ local intelligence with IBM PowerPC 405
- ▶ PCI interface with bus master capabilities
- ▶ 1 MB Flash
- ▶ 64 MB local memory
- ▶ 2 SJA1000 CAN controller for 2 independent CAN/CANopen channels
- ▶ 2 additional CAN interfaces can be field installed via the extension kit for CAN-PCIH
- ▶ optionally opto-isolated CAN interfaces
- ▶ ISO/DIS 11898
- ▶ 9-pin D-SUB connector (2 channel solution)
- ▶ ICANOS firmware on-board
- ▶ CANopen optionally available

# Passive CAN PCI Interface



## CAN

### CAN-PCIL

- ▶ CAN field bus controller for PCI-bus systems
- ▶ short form factor
- ▶ 32 bit PCI 2.2 target interface
- ▶ 3.3V and 5V PCI interface
- ▶ only one PCI-bus slot occupied
- ▶ up to 2 CAN interfaces with SJA1000 CAN controllers
- ▶ 11bit ID and 29bit ID CAN specifications supported
- ▶ ISO/DIS 11898, optionally opto-coupled
- ▶ 9-pin D-SUB connector for each CAN interface at PCI bracket

# Passive CAN Interface in PCI Express mini card format



## CAN

**NEW**

### CAN-mPCIe

- ▶ passive CAN adapter card in PCI Express mini card format
- ▶ 1 CAN 2.0a/b channel based on SJA 1000 controller
- ▶ 11-bit and 29-bit identifiers supported
- ▶ ISO/DIS 11898
- ▶ optionally opto-isolated
- ▶ 9-pin D-SUB connector on external board
- ▶ onboard line termination resistor 120 Ohm, enabled/disabled by software
- ▶ 2 diagnostic LEDs (green, yellow)

# Passive CAN PCIeXpress Interface



## CAN

### CAN-PCIeL

- ▶ CAN fieldbus controller for PCIeXpress bus systems
- ▶ PCIe short form factor
- ▶ 1x PCIe 1.1 target interface
- ▶ up to 4 CAN interfaces with SJA1000 CAN controllers
- ▶ 11 bit ID and 29 bit ID CAN specifications supported
- ▶ ISO 11898-2, optionally opto-coupled
- ▶ 9-pin D-SUB connector for 2 CAN interface at PCI bracket
- ▶ 2 additional CAN interfaces can be field installed via extension kit

# CAN Interface for USB Ports



## CAN

### CAN-USB

- ▶ CAN to USB connection
- ▶ SJA1000 CAN controller
- ▶ 128 kB Flash for firmware
- ▶ up to 64 kB SRAM
- ▶ firmware upgrade over USB
- ▶ CAN interface refers to ISO/DIS 11898, opto-isolation
- ▶ 9-pin D-SUB male connector
- ▶ plug 'n' play
- ▶ software controlled termination of CAN line
- ▶ bus powered device, no AC adaptor necessary
- ▶ dimensions (w x d x h) 55 x 55 x 20 mm
- ▶ software drivers for Windows 2000/XP and Linux
- ▶ four diagnostic LEDs
- ▶ optional rail-mounting

## Active CAN Interface for PC/104



### CAN

#### CAN-104

- ▶ active high performance CAN field bus controller
- ▶ local intelligence with MC68332
- ▶ 256 kB SRAM, 16 bit wide
- ▶ 64 kB DPRAM, 16 bit wide
- ▶ 512 kB Flash
- ▶ up to 2 SJA1000 CAN controller for 2 independent CAN channels
- ▶ optionally opto-isolated CAN interfaces
- ▶ ISO/DIS 11898
- ▶ 9-pin D-SUB connector
- ▶ ICANOS firmware on-board
- ▶ CANopen optionally available
- ▶ software drivers for various operating systems available

## High-Performance CAN Interface for 6U CompactPCI



### CAN

#### CPCI-CAN

- ▶ up to 4 intelligent CAN channels
- ▶ compatible to well-known VMOD-ICAN3
- ▶ 32 bit PCI 2.2 target interface (PLX 9030)
- ▶ 3.3V and 5V PCI interface
- ▶ single slot double Euro-Card format (6U)
- ▶ diagnostic LEDs on front panel
- ▶ front panel connection of CAN interfaces
- ▶ back panel connection of CAN interfaces via CompactPCI J4 connector

## Passive CAN Interface for PC/104(+)



### CAN

#### CAN-104L(+)

- ▶ passive and low cost CAN adapter card
- ▶ up to 2 CAN 2.0a/b channels based on SJA 1000 controller
- ▶ 11-bit and 29-bit identifiers supported
- ▶ ISO/DIS 11898
- ▶ optionally opto-isolated
- ▶ 9-pin D-SUB connector for each CAN channel at front panel
- ▶ onboard line termination resistor 120 Ohm, enabled/disabled by software
- ▶ 2 diagnostic LEDs (green, yellow)

## Intelligent CAN Interface for PMC Sockets



### CAN

#### CAN-PMC2

- ▶ intelligent PMC CAN field bus controller
- ▶ local intelligence with IBM PowerPC 405 GP PCI interface with DMA capabilities
- ▶ 1 MB Flash
- ▶ 64 MB SDRAM
- ▶ up to 4 SJA1000 CAN controller for 4 independent CAN channels
- ▶ optionally opto-isolated CAN interfaces
- ▶ ISO/DIS 11898
- ▶ 9-pin D-SUB connector (1 or 2 channel solution)
- ▶ 25-pin D-SUB connector (4 channel solution)
- ▶ all I/Os are available at front and at Rear I/O
- ▶ ICANOS firmware on-board
- ▶ CANopen optionally available
- ▶ software drivers for various operating systems available



# CAN Interface for Fiber Optic



**CAN**

## **CAN-OPTokit**

- ▶ fiber optic link between a CAN host interface and a copper based CAN network
- ▶ for isolated and noise immune link
- ▶ requires Janz CAN host interface without internal transceiver
- ▶ permissible network length is determined by the optical and electrical delays
- ▶ network length can be arbitrarily divided into copper or fiber cable length ISO/DIS 11898 9-pin D-SUB connector
- ▶ max. length of optical Link 40 m (POF cable) and 300 m (HCS cable)
- ▶ total bus length (optical + copper) 70 m/500 KBit to 520 m/125 KBit

# Modular CAN Interfaces in several formats



**CAN**

## **CAN-VME3/2K (FOR 3U)**

## **CAN-VME6/2K (FOR 6U)**

## **CAN-CP3/2K (FOR 3 U)**

## **CAN-CP6/2K (FOR 6U)**

## **CAN-PCI/K2**

- ▶ active CAN adapter cards based on VMOD-ICAN3 module
- ▶ MODULbus carrier boards for several formats (CompactPCI 3U and 6U), VMEbus (3U and 6U) and PCI
- ▶ MC68332 microcontroller onbard
- ▶ 256 kB SRAM, 16 bit
- ▶ 64 kB DPRAM, 16 bit
- ▶ 512 kB Flash
- ▶ optionally opto-isolated
- ▶ ISO/DIS 11898, CAN 2.0a/b
- ▶ 9-pin D-SUB connector for each channel
- ▶ ICANOS firmware onboard
- ▶ device drivers for several operating systems available



## Overview CAN Host

System Architecture	
CAN Controller	
CAN Channels	1 channel
	2 channels
	4 channels
CPU onboard	
CAN Specification	CAN 2.0A (11 bit identifier)
	CAN 2.0A (29 bit identifier)
	CANopen
Operating System Support	Windows 2000/XP/7/8
	Windows CE 6.0
	Windows Embedded Compact 7
	Windows Embedded Standard 7
	Linux

# Interfaces

CAN-PCI2	CAN-PCIH/30	CAN-PCIL/2	CAN-PCleL	CAN-mPCleL	CAN-USB	CAN-104	CAN-104L(+)	CPCI-CAN	CAN-PMC	CAN-OPTokit
PCI	PCI	PCI	PCle	PCle mini card	USB	PC/104	PC/104, PC-104+	CompactPCI	PMC	
NXP SJA 1000	NXP SJA 1000	NXP SJA 1000	NXP SJA 1000	NXP SJA 1000	NXP SJA 1000	NXP SJA 1000	NXP SJA 1000	NXP SJA 1000	NXP SJA 1000	NXP SJA 1000
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X			X	X	X	X	X
	X							X		
MC68332	k	none	none	none	Risc	MC68332	none	MC68332	MC68332	none
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X
		X	X	X	X		X			
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X	X



# Software for Embedded Systems

## Software as a platform

Software is a very important part of our products but, in most cases, application programming is not the main topic we discuss! For us, software is a platform on which customers build their solutions. Software separates customers from the responsibility of being aware of hardware changes – that is our responsibility! Customers use standardized and well-defined software interfaces to connect their applications for machine control and monitoring with the world outside.

We provide a constant functionality over all types of systems as far as is possible. From the hardware side, this is realized by using nearly identical peripheral interfaces. So our systems differ in form factor and performance, but they all have CAN and EtherCAT interfaces available; USB is supported too, and serial interfaces are present. From software side, pre-installed and preconfigured software components provide a nearly-identical environment also.

## Software adapted to customer's requirements

Nevertheless, customers have their own individual requirements regarding hardware and software. Normally, standard software and standard interfaces are not able to fulfill these needs completely, and minor adaptations are always needed. Fortunately that is our strength!

For that reason, we at Janz Tec AG maintain our own software development department, so we can provide solutions exactly suited to our customer's needs.

Aspects of real-time software development are not a special task for us – Janz Tec AG has gained a lot of experience in real-time software development over many years. That is our daily business!

## Know-how protection and access control

The more universal that embedded systems become the easier it is to duplicate software to similar systems - software that has been developed with a lot of effort! Additionally, access control is an important concern for our customers!

Whether it is preventing copying and protecting license revenues, or to protecting investments, or for authentication and data privacy issues, the CodeMeter technology from WIBU systems offers standard yet versatile solutions to all these application scenarios.

As a result of customer requests, Janz Tec AG can integrate CodeMeter technology, so that customer applications can use it as an integral part of the system.



# Operating System Support

## Wide range of supported operating systems

Normally, an operating system is the basis on which Janz Tec systems' customers build their applications. Often, pre-configured operating systems images are used which not only contain the pure operating system files – they also need device drivers, services, and interfaces, all configured and running.

Each operating system has its own special capabilities and features, so customers often have their own preferences regarding the software environment. That is the reason why Janz Tec AG offers a wide range of supported operating systems. Customers are able to select the most appropriate operating environment.

Windows CE, Windows Embedded Compact or Linux are often used for ARM CPUs. For X86-based operating systems, the complete range of Microsoft operating systems is supported, but images for Linux and QNX are also available.

Additionally, our customers can have a completely customized operating system created if needed, although a completely pre-configured system is available without the need for further installation or configuration steps.

# Device Drivers and SDKs

## Device drivers

Software support at Janz Tec AG always implies more than the installation of an operating system – it also includes all device drivers needed for peripheral devices. Device drivers for third-party components are pre-installed, drivers for customer-development hardware can be created, preinstalled and, of course, tested. The object is to provide a system that doesn't require further setup by the customer.



## Software development kits

Software development kits consists of libraries, documentation, and examples for device drivers developed by Janz Tec AG. Customers can order corresponding licenses and will get extensive support when including the software into their applications.

Current versions of device driver packages and software development kits – for example for updating a system – are always available for download from our homepage.

Linux					
QNX					
Windows 8					
Windows 7					
WE8S					
WES 7					
WEC 7					
WinCE 6.0					
	emPC-A500	emPC-A/iMX6	emPC-X	emPC-CX +	IPC systems



# CAN-Tools

## Device drivers

Working with the CAN bus is much easier when the transfer of messages can be made visible. Furthermore, the configuration of a complete CANopen network is a very complex task when done manually. For these reasons, Janz Tec AG provides a collection of tools which helps customers to configure nodes, handle problems, and to understand what is happening on the bus. So we provide tools from emtas GmbH which are adapted to work with Janz Tec CAN interfaces.

## CANinterpreter

CANinterpreter is a tool for CAN message visualization and sending CAN messages. CAN messages will be recorded with a timestamp, contents can be interpreted dependent on a selected higher layer protocol. Traces can also be exported to text files.

## CANopen DeviceExplorer

CANopen DeviceExplorer provides easy-to-use CANopen master functionalities and therefore allows the analysis and configuration of complete CANopen networks. Information about each CANopen node is read from electronic data sheets or can be scanned directly from each connected device. Using standardized device configuration files (DCF) device configurations can be saved or imported. Additionally, data for entire CANopen networks can be stored in project files. With help of the built-in scripting capability, users can create their own test and control applications with very little effort.

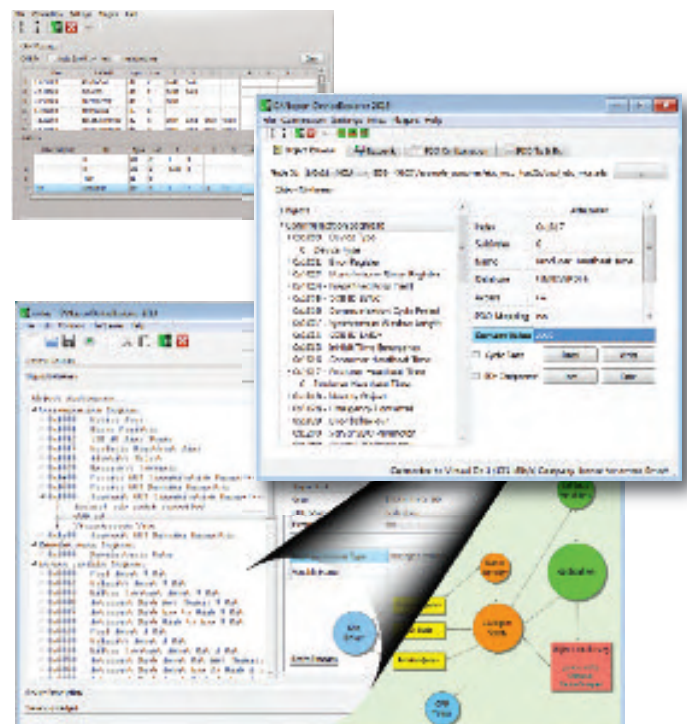
**CANopen**®

**EtherCAT**®

**Modbus**

**PROFI**®  
**BUS**

**PROFI**®  
**NET**





# Real-time machine control

# Visualization and machine monitoring



## Real-time environment

Machine control requires a real-time processing unit in most cases. Janz Tec AG provides a complete environment for real-time processing based on CODESYS, the leading IEC 61131-3 programming environment in the world. We provide both CODESYS V2 as well as CODESYS V3, each pre-installed and exactly adapted to the system on which it is running. Peripheral interfaces, bus systems and I/Os are already configured and usable when a customer starts the system the first time. Real-time environment, installation, and configuration are combined into one single package named emCONTROL – available for all Janz Tec systems.

Since interfaces are nearly identical, customers can easily choose between several system types for their range of projects. Hardware can even be changed if more performance is needed or if machines need more complexity over time, with correspondingly more complex programming. Modular machines can be equipped with a system that meets the exact performance and cost needed.

## SoftMotion

For integrating motors and drives into a system, CODESYS SoftMotion expansion provides function blocks standardized by the PLCopen organization. SoftMotion is available as an option for emCONTROL. Naturally, SoftMotion also comes preconfigured and pre-licensed.

## Wide range of supported operating systems

The emVIEW systems are especially suitable for visualization and monitoring purposes.

emCONTROL supports this in several ways. On the one hand, CODESYS comes with two optional visualization packages integrated in the programming environment. Customers can create own visualization screens easily via drag and drop with the CODESYS target visualization. Furthermore, CODESYS also contains the web visualization which enables users to access the GUI screens with a simple web browser. When ordering this package, a corresponding web server and a browser plugin will come preinstalled, licensed, and pre-configured on a system. The web visualization feature is extremely suitable for systems which do not have a display. Visualization can be realized without a further system and it can be accessed without an additional software installation on client machines.

## OPC server

CODESYS V3 always contains a free OPC server. So it is easy to provide data from the real-time environment to all relevant applications. Simply define a variable to be exported in the OPC namespace – that's all! Because OPC is standardized, access from OPC clients of all types is possible, either locally installed or running on a remote system.

## SCADA system integration

Integrating a system from Janz Tec into complex SCADA software is as easy as it can be. Using the OPC server, each SCADA system can be configured to access real-time data via this interface.

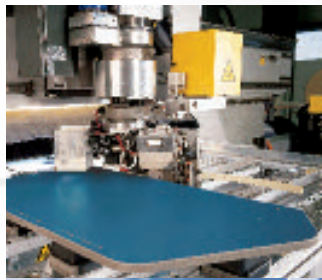


# CODESYS

V2/V3

# Industries

Industrial computer systems are used in a wide variety of industries. Well-known companies from the machine building and plant engineering, power and energy, transportation, the medical and the automotive sectors are all part of Janz Tec AG's customer base. They all profit from almost 30 years of experience and the individual solutions provided by the company from Paderborn.



## Machine building and Plant engineering

Whether it's control systems for process technology equipment, electrical automation, measuring in testing technology, robotics or the use of machine tools – Janz Tec AG offers future-oriented solutions to a wide range of sectors in the capital goods industry, for example machine and plant engineering.



## Power and energy

The call for regenerative forms of energy, which are characterised by a high degree of environmental-friendliness, is becoming louder and louder especially due to the current events such as the reactor catastrophe in Fukushima, Japan. Janz Tec AG is also focusing on the power and energy sector with its forward-looking products.



## Transportation

German industry is worldwide technology leader in many areas of the transportation sector. Thanks to its innovative and individually-aligned products, Janz Tec AG also plays a part in providing systems which meet the requirements on efficient and environmentally-friendly solutions.



## Medical

Medical uses high-quality, reliable and complex systems. Janz Tec AG develops precisely-tailored, high-availability computer systems and electronic components for these applications.



## Automotive

Germany is considered to be one of the most important automotive locations worldwide with its leading car manufacturers such as Daimler, BMW, AUDI and VW in addition to a huge base of subcontractors. Janz Tec AG is a supplier to various sectors of the automotive sector with individual computer systems and electronic assemblies.

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