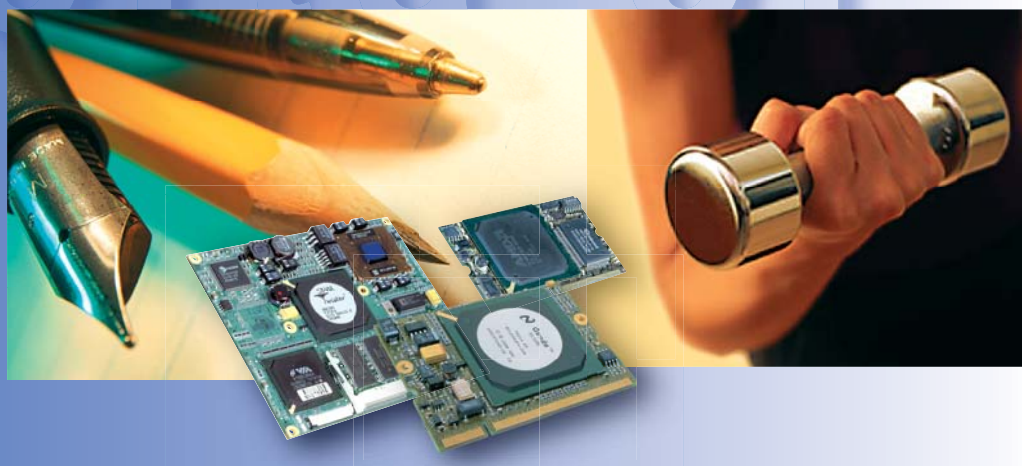
The World of Embedded Computing



Modules & Boards

Intel® Applied Computing Platform Provider

kontron
... always a Jump ahead!

➤ We create digital brains for a more intelligent world!

➤ With the merger of JUMPtec AG and Kontron AG, the new Kontron group is now the world´s largest supplier of embedded computer technology to a diversified customer base in the communications, industrial automation, medical, transportation, point of information/sale, mobile, network security, defence and public safety markets. And with its corporate headquarter located in Munich, Kontron shows a strong presence in Europe. When it comes to embedded computing, you can focus on your core capabilities – and rely on Kontron as your global partner for a successful long term business relationship.

➤ Based on internationally accepted industry standards for hardware, software and connectivity, we can now provide you with an extended product range. It extends from off-the-shelf and custom-engineered embedded computer modules to modular computer systems up to turnkey applications, each designed to meet your current and future needs.

➤ More than 1400 employees worldwide are working in the new Kontron group to provide you with one of the largest range of products based on cutting-edge embedded computer technology. With engineering, manufacturing, integration, project management, technical services and sales teams in Europe, North America and the Asia-Pacific regions we are close to you, wherever you are. With our superior services and excellent technical support you significantly reduce your time-to-application and gain a clear competitive edge.

➤ More than 400 highly qualified engineers in R&D, technical support and project management work together with our experienced sales teams and sales partners to work out a solution that is optimised to your individual application demands, based on standard products, custom-tailored or custom-engineered solutions. We help you to evolve your embedded application from proprietary to solutions based on standard platforms and orientated to future requirements.

➤ Together with our major industry partners such as Intel, National Semiconductor, Motorola, IBM, Microsoft and Wind River we help you to get your applications to market quickly. Kontron has been an Intel® ACPP platform solutions provider since the program´s inception in 1999.

➤ The Kontron organisation is ISO 9001 certified to ensure consistency and the highest level of quality in products and services on a global basis.

➤ Kontron products are the preferred choice for any application that requires longevity and highly reliable products that are typically integrated, high performance and dedicated, and installed in a wide range of demanding and mission-critical environments.

➤ You are invited to check out our product guide and visit our web site at **www.kontron.com**.
We are ready to answer any questions and solve any challenge you may have.

➤ The World of Embedded Computing

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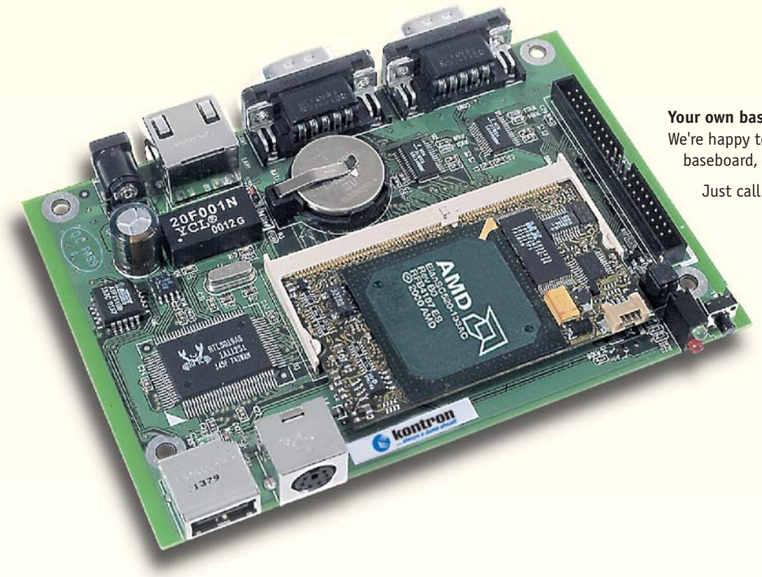
➤ DIMM-PC the smallest Module-PC



Your own baseboard
We're happy to design your specific DIMM-PC baseboard, dedicated to your application.

Just call and stay ...
... always a Jump ahead!

Feature	DIMM-PC/386-B	DIMM-PC/386-I	DIMM-PC/386-IE	DIMM-PC/520-I	DIMM-PC/520-IU
CPUs supported	386SX, ALi M6117C	386SX, ALi M6117C	386SX, ALi M6117C	586DX, AMD™ Elan SC520	586DX, AMD™ Elan SC520
CPU max. Speed	40 MHz	40 MHz	40 MHz	133 MHz	133 MHz
DRAM on board	2 MByte	8 MByte	8 MByte	16/32 MByte	16/32 MByte
IDE Interface	2 devices	one ext. device	one ext. device	one ext. device	one ext. device
On Board Flash Disk	1.6 MByte (Int 13h)	16 MByte (IDE)	16 MByte (IDE)	16/32 MByte (IDE)	16/32 MByte (IDE)
Preinstalled OS	DR DOS	DR DOS	DR DOS	DR DOS	DR DOS
Special Features			10 Base-T Ethernet Crystal CS8900		1x USB 1.1 OHCI
Common DIMM-PC features	Keyboard Controller, Watchdog, I²C Bus, alphanum LCD Support, E²PROM BIOS Setup, JIDA Support, JRC Support, RTC, 2x serial (TTL, 16550 comp.), 1x enhanced printer port, Floppy Interface				
Power (typical)	1.5 W @ 33 MHz	1.5 W @ 33 MHz	1.5 W @ 33 MHz	2 W @ 133 MHz	2 W @ 133 MHz
Expansion	DIMM-PC Bus (ISA)	DIMM-PC Bus (ISA)	DIMM-PC Bus (ISA)	DIMM-PC Bus (ISA)	DIMM-PC Bus (ISA)
Dimension	68 x 40 mm	68 x 40 mm	68 x 40 mm	68 x 40 mm	68 x 40 mm

When to use the DIMM-PC® solution:

Your system needs are so unique or complex you must design a custom solution. DIMM-PC® simplifies your effort and reduces your design costs.

You need a low-to-mid performance embedded computer. DIMM-PC® CPU modules are based on x86 Intel® and AMD™ processors.

You may need features such as Ethernet, Graphics, or Serial I/O, DIMM-PC® I/O modules (Ethernet, Graphics, and Serial) may be added separately.

How to use the DIMM-PC® solution:

Design your system as an application-specific baseboard with DIMM-PC® CPU and I/O plug-in sites. DIMM-PC® modules plug into standard SO-DIMM sockets, small and easy to add to designs.

Your baseboard design can include ISA peripherals and I/O connections. Design your baseboard subsystem as standard ISA peripherals. Route the DIMM-PC® I/O to connectors of your choice.

Plug-in the DIMM-PC® CPU and I/O components into your design. DIMM-PC® modules are easily added, removed, or changed, even in the field.

Starter Kit and DIMM-PC® I/O Modules accelerate your time-to-market.

DIMM-PC Starter Kit
To accelerate your time-to-market.

➤ DIMM-PC I/O Modules

DIMM-PC/COMBO2
CRT and Flat Panel Graphics
2x serial (TTL)
Ethernet (10 MBit)

DIMM-PC/VGA2
CRT and Flat Panel Graphics

DIMM-PC/ETH+COM
2x serial (TTL)
Ethernet (10MBit)

DIMM-PC/BT1
BlueTooth™ Module
On board antenna
Transparent to the Operating System

DIMM-PC/ISDN
16 Bit ISDN Adapter

DIMM-PC/ETIS
Ethernet (10 MBit) + ISDN

DIMM-PC/MD
Modem Module V.92

DIMM-PC/ETH+MD
Ethernet (10 Mbit) + Modem Module V.92

➤ X-board™ – Reduced to the maX

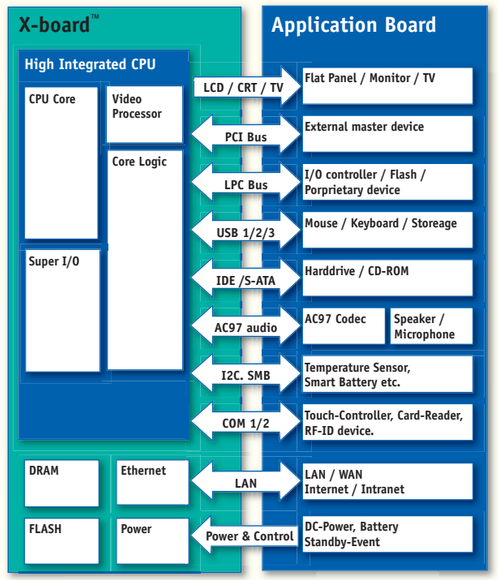
Reduced to the size of a business card (68 x 49mm), the X-board™ offers all the essential features needed for even more compact and cost effective embeeded system solutions. With integrated graphics, LAN, USB, PCI, and audio interfaces, X-board™ offers the perfect mixture of interfaces for the next generation of embedded applicaitons. Today's X-board™ offers up to 128 MByte of on-board DRAM and Flash storage. Legacy burdons like the ISA bus have been left out of the specifaciton of the X-board™ modules allowing room to focus on the essential interfaces for the future. Now, it is possible to allow integration of alternative CPU architectures in addition to the x86 - like XSCALE, ARM or MIPS. With the inclusion PCI and LPC expansion busses, low and high end expansion is possible. To eliminate cooling devices and ensure long battery runtime, X-board™ is optimized for low power consumtion.

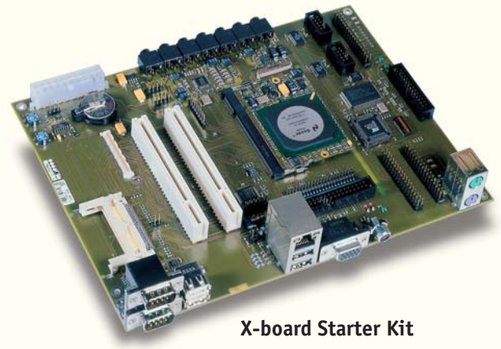
X-board™
Reduced to the maX

Your own baseboard

We're happy to design your specific X-board™ baseboard, dedicated to your application.

Just call and stay ... always a Jump ahead!





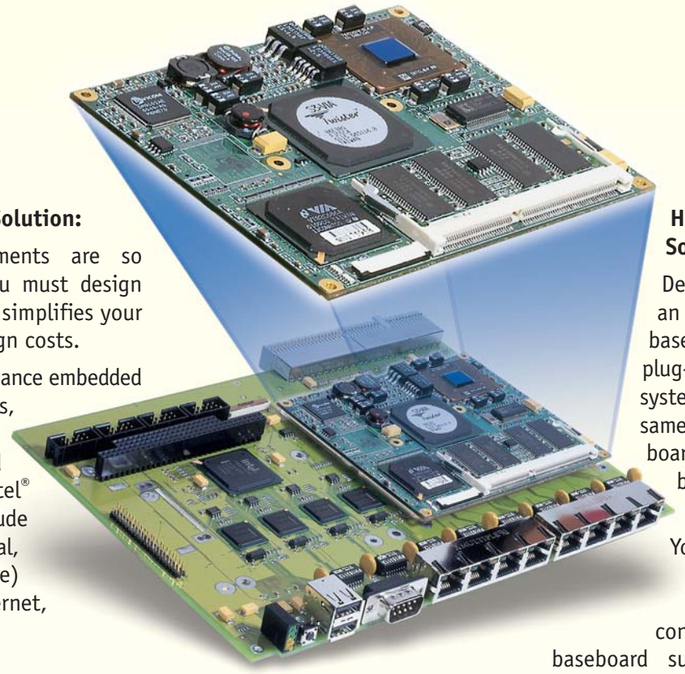
X-board Starter Kit

To accelerate your time-to-market.

➤ X-board™

Feature	X-board<861>	X-board<862>
Processor	Geode SC1200	Geode SC1100
CPU Clock Speed	266 MHz	266 MHz
FSB	66 MHz	66 MHz
Cache	16 kByte (L1)	
Chipset	Geode SC1200	Geode SC1100
On board DRAM	Up to 128 MByte	Up to 128 MByte
On board Flash	Up to 128 MByte	Up to 128 MByte
Video Controller	Integrated	-
Video Memory	up to 4 MByte (UMA)	-
Max. Resolution	1280x1024	-
LCD Interface	18 Bit digital	-
TV-Out	standard NTSC/PAL	-
Expansion Bus	PCI 32 Bit / 33 MHz, LPC Bus	
Audio Support	AC97 link (external coded)	
Harddisk	1 IDE Channel	
USB	3 Channels	
Ethernet	10/100 MBit	
PS/2-Keyboard	Keyboard via USB	
PS/2-Mouse	Mouse via USB	
Serial Ports	2x UART (TTL Signal)	
LPT	Possible via USB or LPC	
Floppy Disk	Possible via USB or LPC	
Power Management	ACPI / APM 1.2	
Dimension	68 x 49 mm	
Power Consumption	< 4 W	3 W
BIOS	Insyde	
JRC / JIDA	✓ / -	
Darkboot / Lanboot	✓ / ✓	- / ✓
Watchdog	✓	
Real Time Clock	RTC with CMOS data backup	
Cooling	passive/self	
Operating Temperature	0 - 65°C	
Extended Temperature	upon request	

➤ ETX – the Standard for Custom Designs



When to use the ETX Solution:

Your system requirements are so unique or complex you must design a custom solution. ETX simplifies your effort and reduces design costs.

You need a high performance embedded computer and Graphics, Ethernet and Audio. ETX modules are based on the latest Intel® processors and include standard PC I/O (serial, parallel, USB, and more) in addition to Ethernet, Graphics and Audio.

Your own baseboard

We're happy to design your specific ETX baseboard, dedicated to your application.

Just call and stay ...
... always a Jump ahead!

How to use the ETX Solution:

Design your system as an application-specific baseboard with an ETX plug-in site. The resulting system has virtually the same profile as a single board solution. Your baseboard can be a low cost, low layercount board.

Your baseboard design can include PCI and ISA peripherals and I/O connections. Design your baseboard subsystems as standard ISA or PCI peripherals. Route the ETX I/O to connectors of your choice.

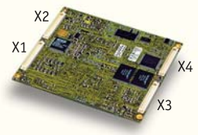
Plug-in the ETX compact CPU component into your design. ETX modules are compact, low profile and interchangeable, just like an IC.

Starter Kit accelerates your application developments with ETX modules.

The ETX interface consists of the PCI and ISA busses and several I/O interfaces. It is assembled with four 100-pin, very low profile surface connectors:

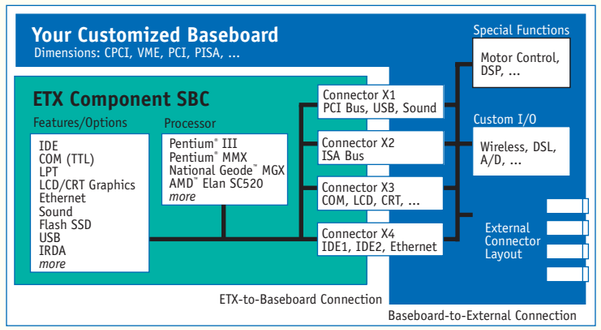
ETX Connector X2
ISA bus (16-bit)

ETX Connector X1
PCI bus (32-bit), USB, Sound



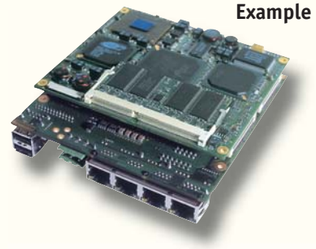
ETX Connector X4
EIDE (x2), Ethernet, Feature

ETX Connector X3
VGA, LCD (LVDS), COM1, COM2, IrDA, Mouse, Keyboard



Feature	ETX-P3m	ETX-P3, ETX-C3	ETX-P1	ETX-VE	ETX-mgx
CPUs supported	Mobile Intel® Pentium® III, Intel® Celeron®	Mobile Intel® Pentium® III, Intel® Celeron®	Mobile Pentium® processor w/MMX™ technology	VIA® Eden Plattform ESP4000/ESP8000	National Semiconductor® Geode™
CPU max. Speed	400/800/1000/ 1200 MHz	400/500/700 MHz	266 MHz	400/800 MHz	200/266 MHz
Chip Set	VIA Twister-T	Intel BX440 AGPset	ALi1541/1543C	VIA Twister-T	CS5530
Bus Speed	133 MHz	100 MHz	66 MHz	133 MHz	66 MHz
Cache	ETX-P3m: 512 k (L2 on Chip) ETX-P3m: 256 k (L2 on Chip) Celeron	ETX-P3: 256 k (L2 on Chip) ETX-C3: 128 k (L2 on Chip)	512 k (L2)	64kB (L2 on chip)	16 k (L1)
DRAM max. (type)	512 MByte (SDRAM) 1024 MByte with special module	256 MByte (SDRAM)	256 MByte (SDRAM)	512 MByte (SDRAM)	256 MByte (SDRAM)
DRAM Socket	1x SO-DIMM, 144 Pin	1x SO-DIMM, 144 Pin	1x SO-DIMM, 144 Pin	1x SO-DIMM, 144 Pin	1x SO-DIMM, 144 Pin
SM Bus support	✓	✓	✓	✓	-
Flash Disk (on board)	-	-	(optional)	(optional)	CompactFlash socket
USB 1.1 compliant	4 ports	2 ports	2 ports	4 ports	2 ports
USB Boot / legacy support	✓ / ✓	✓ / ✓	✓ / ✓	✓ / ✓	✓ / ✓
Ethernet	10/100Base-T	10/100Base-T	10/100Base-T	10/100Base-T	10/100Base-T
Ethernet Controller	Intel 82551ER	Intel 82559ER	Intel 82559ER	Intel 82551ER	Davicom DM9102AT
Audio	VIA VT82C686B AC97	ESS ES1938S	ESS ES1938S	VIA VT82C686B AC97	NS LM4548 (AC97)
Graphics Controller	VT8603C (S3 Savage 4)	ATI Rage Mobility	ATI Rage Mobility	VT8603C (S3 Savage 4)	CS5530
Graphics Memory	up to 32 MByte UMA	4/8 MByte	4/8 MByte	up to 32 MByte UMA	up to 4 MByte UMA
Flat Panel Interface	JILI Interface (LVDS)	JILI Interface (LVDS)	JILI Interface (LVDS)	JILI Interface (LVDS)	JILI Interface (LVDS)
Power Management	ACPI, APM 1.2	APM 1.2	APM 1.2	ACPI, APM 1.2	APM 1.2
Power (typical)	12 W @ 5 V (P3, 800 MHz)	12 W @ 5V (P3, 500 MHz)	10 W @ 5 V	~7 W @ 5 V (500 MHz)	3 W @ 5 V (200 MHz)
Common Features	E^2PROM BIOS Setup, LAN Boot, JRC support, I^2C Bus (only ext. Slaves), 2x EIDE (Ultra DMA-33), Keyboard- and Mouse Interface, Dark Boot, Boot Logo, RTC, JIDA Support, Watchdog, Floppy Interface shared on LPT, 2x serial ports (TTL, 16550 comp.), IrDA, enhanced Printer Port (shared with Floppy)				

Application Example



microSERVER, maximumCONNECTIVITY@minimumSIZE

The ***microSERVER*** is a carrier board, allowing the rapid development of numerous ETX based solutions. Sometimes it is not necessary to design an own baseboard, a small embedded PC will do the job. Among all ETX standard interfaces, the ***microSERVER*** offers two independent 10/100Base-T controllers and a DIMM-IO socket for further enhancements like BlueTooth™ modules or modems. So building intelligent and scaleable routers or segmenting a network is now an easy task.

The ***microSERVER*** presents
- Scaleability via ETX modules
- All ETX standard interfaces
- Up to three separate 10/100Base-T ports
- Mounting possibility for 2,5" HDD or CompactFlash Card™
- DIMM-IO socket for xDSL (10Base-T), Modem, ISDN, BlueTooth™ modules
- 5V direct or 9 – 32V power input

➤ PC/104 PC/104+

When to use the PC/104 and PC/104-Plus Solution:

Your system requires limited form factor and expansion capabilities. PC/104 modules create compact, rugged systems, and can easily be expanded.

PC/104 enables time-to-market supplies and an off-the-shelf solution. PC/104 modules are readily available, no need to design any custom electronics.

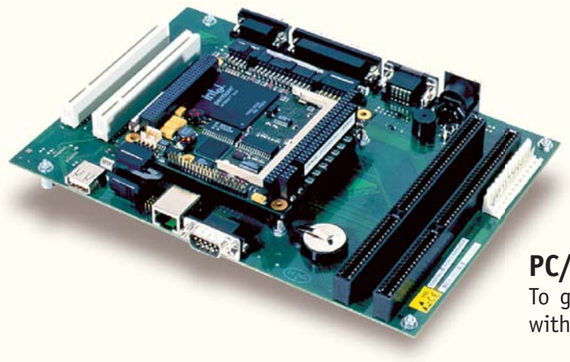
How to use the PC/104 and PC/104-Plus Solution:

Choose a PC/104 SBC based on processor performance and basic I/O features. PC/104 SBCs are delivered with a variety of processing power and integrated I/O.

Select application specific PC/104 I/O adapters. Unique I/O, data acquisition or other modules are available from many vendors.

Stack the PC/104 SBC and I/O adapters together for a complete solution. Connection to system peripherals is accomplished by standard cable from the PC/104 modules.

Feature	MOPS/386A	MOPS/520	MOPS/686+	MOPSlcd6	MOPSlcdGX1	MOPSlcd7
CPUs supported	ALi® 386SX	ELAN™ SC520	Pentium® MMX™, passive cooling at 166 MHz	Pentium® MMX™, passive cooling at 166 MHz	Geode™ GX1	Celeron® or Pentium® III
CPU max. Speed	40 MHz	133 MHz	166/266 MHz	166/266 MHz	300 MHz	300/500/700 MHz
Chipset	singlechip	singlechip	ALi M1531 / M1543C	ALi M1531 /M1543C	CS5530A	VIA TwisterT
DRAM max. (type)	2 MByte (EDO)	16/32/64 MByte (SDRAM)	128 MByte (SDRAM)	128 MByte (SDRAM)	256 MByte (SDRAM)	512 MByte (SDRAM)
DRAM Socket	Soldered on	Soldered on	1x SO-DIMM, 144 Pin	1x SO-DIMM, 144 Pin	1x SO-DIMM, 144 Pin	1x SO-DIMM, 144 Pin
IDE Interface	4 MByte flash onboard, 1x EIDE	1x EIDE	1x EIDE	1x EIDE	1x EIDE	1x EIDE
Graphics Controller	-	-	-	PCI C&T 69000	on-chip	on-chip
Graphics Memory	-	-	-	2 MByte	UMA up to 4 MByte	UMA up to 32 MByte
Flat Panel Interface	-	-	-	JIPA	JILI	JILI
Ethernet	10Base-T	10/100Base-T	10/100Base-T	10/100Base-T	DUAL 10/100Base-T	10/100Base-T
Ethernet controller	Crystal CS8900	Davicom DM9102A	Intel® 82559ER	Intel® 82559ER	Davicom DM9102A	Davicom DM9102A
USB	-	2	1	1	2	2
Mouse	-	✓	-	-	✓	✓
Power (typical)	2.5 W	3,75 W	7 W	8 W	approx. 5 W	
Expansion	PC/104	PC/104-Plus	PC/104-Plus	PC/104-Plus	PC/104	PC/104-Plus
MOPS Family Features	2 x RS232, Lan Boot, I²C, Watchdog, JIDA-Support, JRC-Support, RTC, Dark Boot, Floppy Interface, Printer Port, Keyboard					
Special Features	8x 10 Touch Matrix, LED character display interface	3x RS-232, 1x TTL, CAN-Bus-Option (Intel® 82527)	fanless Intel® Pentium® MMX™ @ 166 MHz		Dual LAN, CompactFlash socket Type I	Celeron® 300 with passive cooling



PC/104-StarterKit
To get you up and running quickly with PC/104 modules.

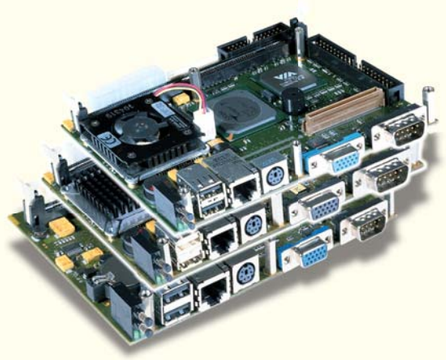
➤ Accessories

PC/104-PCMCIA-1
PCMCIA Adapter
(2x Type II or 1x Type III)

chipDISK-IDE
IDE compatible flash disk
32...256 MByte
direct mountable and lockable

Compact Flash Adapter
2.5" Format
CompactFlash Type I, II
and Microdrive

➤ 3,5" SBC



Your JRex benefits

Front interfaces stay mechanically and electrically the same. Unchanged enclosures maximise investment reuse. SDRAM-DIMM memory and ATX power supply support plug&work of cost effective desktop components. JILI interface for instant flatpanel adaption.

JRex reduces time to market

JRex lowers system cost

Feature	GX1LCD/3.5“	786LCD/3.5“	JRex-GX1	JRex-C3	JRex-P3	JRex-VE
Form Factor	3,5“	3,5“	3,5“	3,5“	3,5“	3,5“
Processor	Geode™ GX1	Socket 370 Pentium® III and Celeron®	Geode™ GX1	ultra low power Intel® Celeron®	low power Intel® Pentium® III	VIA EDEN
CPU Clock Speed	Up to 300 MHz	Up to 1 GHz	300 MHz	300 MHz	700 MHz	600 MHz
FSB	66/100 MHz SDRAM clock	66/100/133 MHz	66 MHz	100 MHz	100 MHz	133 MHz
Chipset	CS5530A	SiS630	CS5530A	VIA TwisterT	VIA TwisterT	VIA TwisterT
BIOS	Phoenix™ + I.T.	Phoenix™ + I.T.	Phoenix™			
Power Management	APM 1.2	APM 1.2 / ACPI 1.0	APM 1.2	APM 1.2 / ACPI 1.0	APM 1.2 / ACPI 1.0	APM 1.2 / ACPI 1.0
Cooling	Passive	Active	Passive	Passive	Active	
SDRAM (max.)	256 MByte	512 MByte	256 MByte	512 MByte	512 MByte	512 MByte
DRAM-Socket type	SO-DIMM	SO-DIMM	SDRAM-DIMM			
Cache	L1: 16 kByte	L2: Integrated in CPU	L1: 16 kByte	L2: 256 kByte	L2: 256 kByte	L2: 64 kByte
HDD / Compact Flash Disk	4x EIDE / ✓	4x Ultra DMA 33/66 / ✓	EIDE / ✓	EIDE (UDMA-66) / ✓	EIDE (UDMA-66) / ✓	EIDE (UDMA-100) / ✓
FDD	2x 1.44/2.88	2x 1.44 / 2.88	2 x 1.44/2.88			
PC/104 / PC/104+	✓ / ✓	- / ✓	-			
Graphic Controller	CS5530A	SIS630 / 128 Bit 3D	on-chip			
Video RAM (UMA)	up to 4 MByte	up to 64 MByte	up to 4 MByte	up to 32 MByte	up to 32 MByte	up to 32 MByte
VGA	CRT/LCD	Dual CRT / LCD	CRT/LCD, JILI-interface			
USB / IrDA	2x / 4 MBit	2x (5x) / 4 MBit	2x / via JFLEX™			
Ethernet 10/100 MBit	1x	1x	1x			
Serial Ports	2x	2x	1x, expandable via JFLEX™			
IEEE 1394 Firewire	-	-	via JFLEX™			
Watchdog Timer	✓	✓	✓			
System Monitoring	✓	✓	-	✓	✓	✓
Sound	SB 16	AC3/AC97/SPDIF	via JFLEX™			
MPEG/DVD	SW MPEG1	HW MPEG2	via JFLEX™			
Operating Temp.	0 - 60°C	0 - 60°C	0 - 60°C			
Dimension	102 x 147 mm	102 x 147 mm	102 x 147 mm			
Optional Extension Modules	A&V Modules	A&V Modules	JFLEX™	JFLEX™	JFLEX™	JFLEX™

➤ Audio & Video Modules for GX1LCD & 786LCD Series

PanelLink Transmitter

LVDS Transmitter

LCDADPT 3.3V + 5V

DSTN 3.3V + 5V (GX1LCD only)

DVI+TV-out (XGA) 2nd CRT (786LCD only)

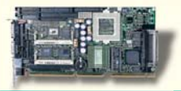
Audio Bracket

➤ JFlex Expansions

JFLEX™	Communication1:	Mulitimedia1:	Visualisation1:	Sound1:
	2x LAN, 2x USB, Firewire	DVI or TV Out, Sound (AC97, SPDIF), Firewire	1x COM, VGA&CRT with JIPA interface and CT69000 2 MByte VRAM	AC97, jackplug (line-in, line-out, mic-in)

➤ Single Board Computers

➤ 5,25", PICMG, ISA SBC



Feature	786LCD/5.25" PLUS	786LCD/MG	786LCD/S PLUS	786LCD/ST	GX1LCD/S PLUS
Form Factor	5,25"	3/4 PICMG	Half-Size	Half-Size	Half-Size
CPUs supported	Socket-370 Pentium® III and Celeron® incl. Tualatin	Socket-370 Pentium® III and Celeron®	Socket-370 Pentium® III and Celeron®	Socket-370 Pentium® III and Celeron® incl. Tualatin	Geode® GX1
CPU max. Speed	1,4 GHz	1 GHz	1 GHz	1,4 GHz	300 MHz
Bus Speed	66/100/133	66/100	66/100	66/100/133	66/100 SDRAM clock
DRAM max. (type)	512 MByte	1 GByte	1 GByte	1 GByte	256 MByte
DRAM Socket	1x DIMM	2x SODIMM 144-pin	2x SODIMM 144-pin	2x SODIMM 144-pin	1x SODIMM 144-pin
Cache	L2: Integrated in CPU	L2: Integrated in CPU	L2: Integrated in CPU	L2: Integrated in CPU	16 kByte
IDE Interface	2x 2 UDMA 100	2x 2 UDMA 66	2x 2 UDMA 66	2x 2 UDMA 100	1x 2 UDMA 33
Floppy Interface	Dual	Dual	Dual	Dual	Dual
Serial	4x 232	1x 485/422/232 3 x 232	1x 485/422/232 3 x 232	1x 485/422/232 3 x 232	1x 485/422/232 3 x 232
Printer	1x ECP or EPP	1x ECP or EPP	1x ECP or EPP	1x ECP or EPP	1x ECP or EPP
Graphics Controller	SiS630ST 128 Bit 2D/3D MPEG2/DVD	SiS630ST 128 Bit 2D/3D MPEG2/DVD	SiS630ST 128 Bit 2D/3D MPEG2/DVD	SiS630ST 128 Bit 2D/3D MPEG2/DVD	Geode 5530A 4MB shared
Graphics Memory	up to 64 MByte	up to 64 MByte	up to 64 MByte	up to 64 MByte	up to 4 MByte
Flat Panel Interface	24 Bit TTL 3.3 V LVDS*	LVDS/Panellink/DVI TV-OUT/24 Bit TTL 3.3 V & 5 V*	LVDS/Panellink/DVI TV-OUT/24 Bit TTL 3.3 V & 5 V*	LVDS/Panellink/DVI TV-OUT/24 Bit TTL 3.3 V & 5 V*	18 Bit TTL 3.3 V
Ethernet	3x 10/100Base-T Wake on Lan	1x 10/100Base-T Wake on Lan	1x 10/100Base-T Wake on Lan	1x 10/100Base-T Wake on Lan	1x 10/100Base-T Wake on Lan
Audio	Virtual AC-3, AC97, SPDIF SB 16 compatibel	Virtual AC-3, AC97, SPDIF SB 16 compatibel	Virtual AC-3, AC97, SPDIF SB 16 compatibel	Virtual AC-3, AC97, SPDIF SB 16 compatibel	SB 16 compatibel
USB	5x	2x (up to 5x)	2x (up to 5x)	2x (up to 5x)	2x
Keyboard / Mouse	✓ combined	✓ combined	✓ combined	✓ combined	✓ combined
Watchdog	✓	✓	✓	✓	✓
Battery-backed RTC	✓	✓	✓	✓	✓
Solid State Disk	CompactFlash Socket	CompactFlash Socket DiskOnChip Socket	CompactFlash Socket DiskOnChip Socket	CompactFlash Socket DiskOnChip Socket	CompactFlash Socket DiskOnChip Socket
Power	11..35 W	11..35 W	11..35 W	11..35 W	4..8 W
Expansion	PCI, A&V Modules	PCI, ISA, PC/104, A&V Modules	ISA, PC/104, PC/104+, A&V Modules	ISA, PC/104, PC/104+, A&V Modules	ISA, PC/104, PC/104+, A&V Modules
Dimension	203 x 146 mm	250 x 122 mm	190 x 122 mm	190 x 122 mm	185 x 122 mm

*LVDS, PanelLink, DVI & TV-Out via Video Modules

➤ Audio & Video Modules for GX1LCD & 786LCD series

PanelLink Transmitter

LVDS Transmitter

LCDADPT 3.3V + 5V

DSTN 3.3V + 5V (GX1LCD only)

DVI+TV-out (XGA) 2nd CRT (786LCD only)

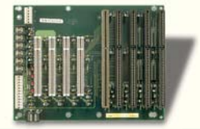
Audio Bracket

Audio Bracket GX1LCD/S

➤ PISA® Half-Size

Feature	coolMONSTER/S	coolMONSTER/C3	coolMONSTER/P3	coolMONSTER/P3
CPUs supported	Fanless Low Power Intel® Pentium® w/MMX™	Fanless ULP Intel® Celeron® Processor	Low Power Intel® Pentium® III Processor	Low Power Intel® Pentium® III Processor
CPU max. Speed	266 MHz	300 MHz	400/700 MHz	850 MHz
chipset	ALi® M1541/M1543C	Intel® 440BX	Intel® 440BX	Intel® 440GX
DRAM max. (type)	256 MByte (SDRAM)	256 MByte (SDRAM)	256 MByte (SDRAM)	512 MByte (SDRAM)
DRAM Socket	1x DIMM, 168 Pin	1x DIMM, 168 Pin	1x DIMM, 168 Pin	1x DIMM, 168 Pin
L2 Cache	512 kByte on chip	128 kByte on chip	256 kByte on chip	256 kByte on chip
Graphics Controller	AGP C&T 69000	AGP ATI® Rage Mobility	AGP ATI® Rage Mobility	AGP ATI® Rage Mobility
Graphics Memory	2 MByte on chip	4 MByte on chip	4/8 MByte on chip	8 MByte on chip
Flat Panel Interface	JIPA	JILI-LVDS	JILI-LVDS	JILI-LVDS
Ethernet Controller	Intel® GD82559ER	Intel® GD82559ER	Intel® GD82559ER	Intel® GD82559ER
Power (typical)	10.5 W @ 5 V	15 W to 20 W @ 5V	15 W to 2 0W @ 5V	estim. 35 W @5 V
Expansion	PISA® slot	PISA® slot	PISA® slot	PISA® slot
Common Features	4x RS-232 (one swichable to RS-485), 1x EPP/ECP, 10/100Base-T Ethernet, LAN Boot, Dark Boot,16-bit PCI Sound, 1x USB, Keyboard, Mouse, dual Floppy Interface, 2x EIDE (UDMA-33), Watchdog, I²C Bus, RTC, 16..256 MByte chipDISK			

➤ PISA® Backplanes



	PISA-2	PISA-2P3I	PISA-3P4I	PISA-B441A	PISA-B111B
PISA	1x	2x (1x shared)	4x (1x shared)	1x	1x
ISA	1x	1x	-	4x	2x (1x shared)
PCI	-	2x (1x shared)	3x (1x shared)	4x	1x (1x shared)
Multilayer	✓	✓	✓	✓	✓
Power Connector	✓	✓	✓	✓	✓
Keyboard Socket	-	-	✓	✓	-
Size	170 x 51 mm (6.7 x 2.0 “)	170 x 101 mm (6.7 x 4.0 “)	170 x 146 mm (6.7 x 5.8 “)	220 x 170 mm (8.7 x 6.7 “)	170 x 60 mm (6.7 x 2.4 “)

➤ Graphic Controller & mobile Panel PC

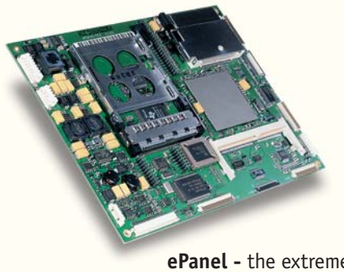
Products		dFLAT-Series			aFLAT-series				PC/104
		PCI-Graphic-Cards		AGP-Graphic-Cards	analog Flatpanel Controller				PC/104-Board
Feature		PCI-SPRINT-6B	VAMP550-PCI	AGP-SPRINT-7	CRTtoLCD-1	CRTtoLCD-2	CRTtoLCD-3	CRTtoLCD-1-TC	PC/104-VGALCD-6
Max. Resolution		XGA (1024x768)	XGA (1024x768)	SXGA (1280x1024)	SXGA (1280x1024)	SXGA (1280x1024)	UXGA (1600x1200)	SXGA (1280x1024)	SVGA (800x600)
QVGA (320 x 240) Support		✓				✓	✓		
Memory		2 MByte	2 MByte	4 MByte		1,5 MByte	1,5 MByte		1 MByte
Colors		62 K @ 1024x768	62 K @ 1024x768	62 M @ 1024x768	16 M	16 M	16 M	16 M	64 K @ 800x600
2D/3D Acceleration				✓					
MPEG-2 HW-Decoder				✓					
Display Types	monoSTN	✓	✓						✓
	colorSTN	✓	✓	✓					✓
	EL	✓	✓						
	TFT	✓	✓	✓	✓	✓	✓	✓	✓
	Plasma	✓	✓						
Cable-Interface	JIPA (36-Bit Digital)	✓			✓	✓	✓		✓
	JILI (2x24 Bit LVDS)			✓	✓	✓	✓		
	JILI-40				✓	✓	✓	✓	
	KAB-FLEX-32				✓	✓	✓	✓	
	KAB-FLEX-50							✓	
Panel Signal		TTL	TTL	LVDS	TTL / LVDS	TTL / LVDS	TTL / LVDS	TTL / LVDS	TTL
Controller		C&T 69000	C&T 65550	ATI Rage Mobility	Genesis gmZAN1	Genesis gm5020	Genesis gm5060	Genesis gmZAN1	Topro 6508
Input Signal					VGA - SXGA 70 Hz	VGA - SXGA 70 Hz	VGA - UXGA 70 Hz	VGA - SXGA 70 Hz	
Bus Type		PCI	PCI	AGP					ISA
Special Feature		Windows CE support		Windows CE & VxWorks support	no software drivers needed			Touch Controller	
Supply Voltage		5 V (PCI Bus)	5 V (PCI Bus)	5 V (AGP Bus)	7,0 V - 14,4 V	7,0 V - 14,4 V	7,0 V - 14,4 V	7,0 V - 14,4 V	5 V (ISA-Bus)
Dimension		119 x 61 mm	100 x 160 mm	134 x 90 mm	180 x 119,5 mm	180 x 119,5 mm	180 x 119,5 mm	95 x 118,6 mm	90 x 96 mm

➤ Graphic

One of our key competences is the ability to support a variety of flat panel displays.

Your system requires flat panel display support. Kontron has the know-how to provide the needed control solution.

With a wide range of graphic products, Kontron has the display interfacing technology to meet your requirements.



ePanel - the extreme flat single board computer

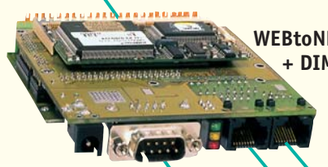
➤ ePanel

Do you need an ultraflat single board computer to be mounted directly behind the Flatpanel? ePanel-mgx is a complete, one side assembled PC with a maximum height of 7 mm, based on **SC1200@266 MHz CPU.** For this proven x86 platform a wide range of software is available. Beneath the very low power consumption (<7 W) the high number of interfaces is highly remarkable, which makes this a system running completely autarchic.

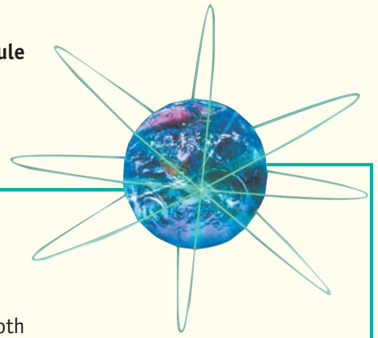
- 100 MBit Ethernet, 3x USB, 2x RS232
- NTSC/Pal video input, TV output
- Touch (4/8 wire) and matrix controller
- PCMCIA interface, e.g. Bluetooth up to 100 m,
- Wireless LAN, CAN, etc.
- Wide range DC power supply (8 to 28 V)
- Smart-Battery backup support
- 1x CF-Socket
- Flexible I/O adapter solution
- Dimensions: 140 x 180 mm

The interfaces for TTL- and LVDS-Flatpanels are already integrated.
Typical applications are e.g. mobile panel-PCs, in-seat-video or in-door-video systems.

➤ Embedded Internet



WEBtoNET/BE1
+ DIMM-PC module



When to use Embedded Internet?

Your system needs to be „connected". Embedded Internet Technologies enable quick status overview, simplified remote maintenance and remote administration.

You want a „connectivity" add-on to your embedded system without the expense of additional hardware. The intelligent WEBtoNET software is the best way to fulfill this requirement.

You want to boot an embedded system from a LAN, without an Ethernet connection. WEBasDISK supports this and offers many other possibilities.

You have an ingenious idea that needs a small yet scaleable network device. microSERVER provides you with the base hardware platform needed to create smart servers, gateways, bridges, routers, ...

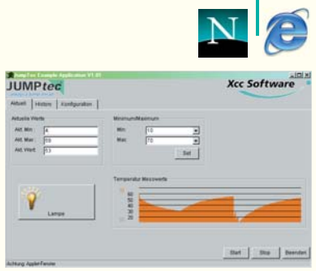
How to use the Embedded Internet Solutions?

Choose a vendor who can offer you both a hard- and software solution. It takes more than an Ethernet jack to create an „Embedded Internet".

Choose WEBtoNET for your application. The software handles all communication requirements without the need for extensive hardware resources.

Simply attach WEBasDISK to the IDE harddisk port. The combination of hard- and firmware provides you with a transparent IDE to TCP/IP converter. Flash memory caches data to reduce traffic and it improves availability.

Design your solution with an ETX module and use the microSERVER carrier board. This complete set of interfaces and functionality enables more than just one network application.



microSERVER

application example

microSERVER/HDD
+ ETX Module

For more details, please refer to product pages ETX.

➤ WEBtoNET

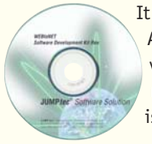
the connectivity platform to your information

WEBtoNET is a licensed webserver. This Embedded Control Server software component is easy to integrate into any application via a comfortable API (Application Programming Interface). WEBtoNET autonomously takes care of communication with other network nodes or faraway devices. Among the directed distribution of information with standard Internet techniques, WEBtoNET offers the following features:

- Browser accessible file manager
- Innovative Control Variable Protocol for dynamic data exchange
- Easy-to-use API
- Information transport and alert messages incl. attachments via Email/SMTP
- Integrated TCP/IP Stack with libraries for direct access
- SSI (Server Side Include)
- HTTP 1.0
- CGI commands and scripts
- Low memory requirements (RAM and storage), only 75 kBytes are needed!

The Software Development Kit

This SDK allows you, to embed WEBtoNET into individual programs.



It contains the required software libraries and Java Applets like sliders, buttons or digital bars. It is very easy to generate graphical user interfaces and remote operating consoles. As an option, the SDK is available including 100 WEBtoNET licences.

The demo box

The Demo box makes installation of the software redundant. On a DIMM-PC, operating system and Embedded Control Server WEBtoNET are already preinstalled. Many sample applications and web pages are stored here. This enables you to explore the rich functionality. Look and see the usability of this product family. The Demo box contains:

- DIMM-PC CPU
- RS232C serial interface
- 10 MBit Ethernet interface
- ISDN module
- 8 Relay outputs
- 5 Digital inputs
- LINUX preinstalled
- Embedded Control Server WEBtoNET preinstalled, license included
- Ready-to-go and test

WEBtoNET/SK3

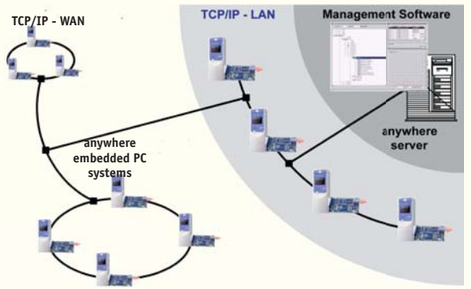
➤ WEBasDISK

the intelligent storage and update solution

- Transparent and bi-directional data conversion from IDE interface to TCP/IP Ethernet
- Automatic data synchronization
- Unlimited storage capacity, only depending on connected server
- Onboard flash disk for data caching and local operation
- Emergency mode on missing server/network connection
- Remote configurable via integrated web server by browser
- Acts like a common hard disk drive, Master-/Slave capable
- 10/100 Base-T Ethernet controller
- 2.5" Hard disk drive mechanics and dimensions
- Supports all (RT)OS, i.e. DOS, Linux, VxWorks, QNX, MS WIN 9x/ME/NT/NTE/WIN CE.NET...

WEBasDISK/32

WEBasDISK is a bi-directional data converter for hard disk drive which transforms read/write requests into TCP/IP packages. Connected to the IDE interface of an embedded PC, WEBasDISK allows this system to boot any operating system from any server, even from an Internet server. In addition, while booting, WEBasDISK compares all local data with the information available on this server. In case of any differences, files are synchronized automatically in both directions. This functionality allows automated software updates of in-field-systems on the fly. In case of missing server or network connection, WEBasDISK switches to local mode and enables the attached embedded system to operate from the onboard flash disk.



The advantages especially for Slim-client systems are tremendous. All data is stored on a server and is backuped and secured by the already used IT infrastructure. Even on a network failure, no data or files are lost due to the local operation possibility. When the network or the server is available again, created information is automatically synchronized. This major feature provides the opportunity of simple and centralized software administration of numerous connected embedded systems by maintaining only one server.

➤ Box PCs

Multimedia Industrial BOX PCs

Embedded multimedia application is a rapidly growing segment in the embedded PC market. The applications require high power CPU, faster graphic performance, better sound quality, MPEG2/ DVD decoding and compact form factor.

Multimedia Industrial PC's are ideal solution for the newly emerging multimedia application such as Plasma display system applications, Multimedia kiosks and highly graphic oriented embedded applications.

Feature	PDE BOX /DVD	PDE BOX / Standard	1.5U BOX
Dimension	425x200x61 mm	425x200x61 mm	440x440x67 mm
CPU Board	786LCD/S	786LCD/S	786LCD/MG
CPU	Socket 370 Celeron™, Pentium® III and VIA C3	Socket 370 Celeron™, Pentium® III and VIA C3	Socket 370 Celeron™, Pentium® III and VIA C3
Memory	128/256 MByte (512 MByte on request)	128/256 MByte (512 MByte on request)	128/256 MByte (512 MByte on request)
HDD	1x 3,5"	1x 3,5"	2x 3,5"
CD/DVD	✓	-	✓ (Optional)
Serial Port	2x RS232C (RS 485 optional)	2x RS232C (RS 485 optional)	4x RS232C (RS 485 optional)
Parallel Port	1x	1x	-
USB	2x	2x	2x
Ethernet	10/100Base-T	10/100Base-T	10/100Base-T
Video	CRT/Plasma (16x9) / LCD	CRT/Plasma (16x9) / LCD	CRT/Plasma (16x9) / LCD
Digital Video out	✓	✓	Optional
Sound	SB16/AC3/AC97/SPDIF	SB16/AC3/AC97/SPDIF	SB16/AC3/AC97
DVD/MPEG 2 decoding	HW MPEG2	HW MPEG2	HW MPEG2
Expansion Slot	-	-	3x PCI
Power Supply	115/230 V AC	115/230 V AC	115/230 V AC
Material	Sheet metal	Sheet metal	Sheet metal
Operating Temperature	+5°C to +4°OC	+5°C to +40°C	+5°C to +40°C

Feature	PDE-2-PCI/Standard	PDE-2-PCI/DVD	I-BOX
Dimension	425x221x73 mm	425x221x73 mm	300x175x91 mm
CPU Board	786LCD/5.25 Plus	786LCD/5.25 Plus	786LCD/S
CPU	Socket 370 Celeron™, Pentium® III up to 1.26 GHz	Socket 370 Celeron™, Pentium® III up to 1.26 GHz	Socket 370 Celeron™, Pentium® III and VIA C3
Memory	128/256 MByte (512 MB on request)	128/256 MByte (512 MB on request)	128/256 MByte (512 MB on request)
HDD	1x 3.5"	1x 3.5"	1x 2.5"
CD/DVD	-	✓	-
Serial Port	2x RS232C	2x RS232C	2x RS232C (RS 485 optional)
Parallel Port	1x	1x	1x
USB	5x	5x	2x
Ethernet	3x 10/100Base-T	3x 10/100Base-T	10/100Base-T
Video	CRT/Plasma (16x9) / LCD	CRT/Plasma (16x9) / LCD	CRT/Plasma (16x9) / LCD
Digital Video out	-	-	✓
TV-out	✓	✓	-
Sound	SB16 compatible in/out	SB16 compatible in/out	-
DVD/MPEG 2 decoding	HW MPEG2	HW MPEG2	HW MPEG2
Expansion Slot	2x PCI	2x PCI	-
Power Supply	95 - 265 V AC	95 - 265 V AC	18 - 36 V DC
Material	Sheet metal	Sheet metal	Extruded alminum
Operating Temperature	+5°C to +40°C	+5°C to +40°C	+5°C to +40°C

➤ Optional Accessories

19" Rack mount brackets

➤ PDE Series

PDE series are ideal for wide screen plasma display application for professionals.

- ➤ Video support from 42" to 61" plasma display with 16 x 9 format
- ➤ Multimedia functionality
- ➤ MPEG2/DVD decoding
- ➤ Industrial PC features
- ➤ Ready to use without extra hardware development

➤ Spezial Features

➤ JIPA

Thanks to JIPA (Kontron Intelligent Panel Adaptation), connecting flat panel displays is no longer a problem. JIPA allows the graphic controller to detect the connected display and automatically perform all necessary configurations. JIPA speeds up design time and time to market with this plug and work technology.

➤ JILI

The JILI (Kontron Intelligent LVDS Interface) condept is very similar to that of JIPA. It allows connection to flat panel displays and enables all necessary hard- and software setting adjustments to be made automatically. JILI is based on LVDS display signals while JIPA is based on a digital interface. LVDS adaptations such as those enabled by JILI, allow for the use of longer display cables and reduce the EMI (Electro Magnetic Influence) of a system.

➤ JRC

JRC (Kontron Remot Control) enables remote control of a Kontron embedded system from a host PC. It features remote configuration, remote software installation, and remote system check using only a serial interface.

➤ JIDA-Interface

Most Kontron SBC boards are equipped with unique hardware features that cannot be accessed with a standard API. The JIDA-Interface (Kontron Intelligend Device Architecture) allows access to these features in a hardware independent manner.

This includes Embedded System functionality such as:

- Configure and trigger watchdog
- Set LCD backlight and contrast
- Read/Write User Bytes in EEPROM
- Get board serial number
- Read Boot Counter
- Access to I²C-Bus

The JIDA-Interface is included in the BIOS of Kontron boards. The functionality is accessible through an INT 15h BIOS extension.

The JIDA32 Library API implements JIDA for 32 bit operating systems in a simple and easy-to-use DLL or library-based set of functions. The API is compatible across all boards and platforms. Supported operating systems include all Win32 operating systems (Windows 9x/NT/2000, Windows CE and NT Embedded), Linux, Lynx and VxWorks.

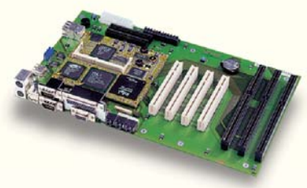
➤ Evaluation Kit

➤ VxWorks

Most of Kontron's SBC boards support Wind River's VxWorks. This very powerful operating system is used in applications with hard realtime requirements. To enable our customers to quickly begin VxWorks development, Kontron offers VxWorks Evaluation Kits for ETX and DIMM-PC. The kits contain the Kontron hardware platform and a complete VxWorks Board Support Package.

➤ Linux

Linux is free, powerful operating system. To speed new development based on Linux, Kontron offers DIMM-PC and a ETX Linux Evaluation Kits containing all required hard- and software to start development immediately.



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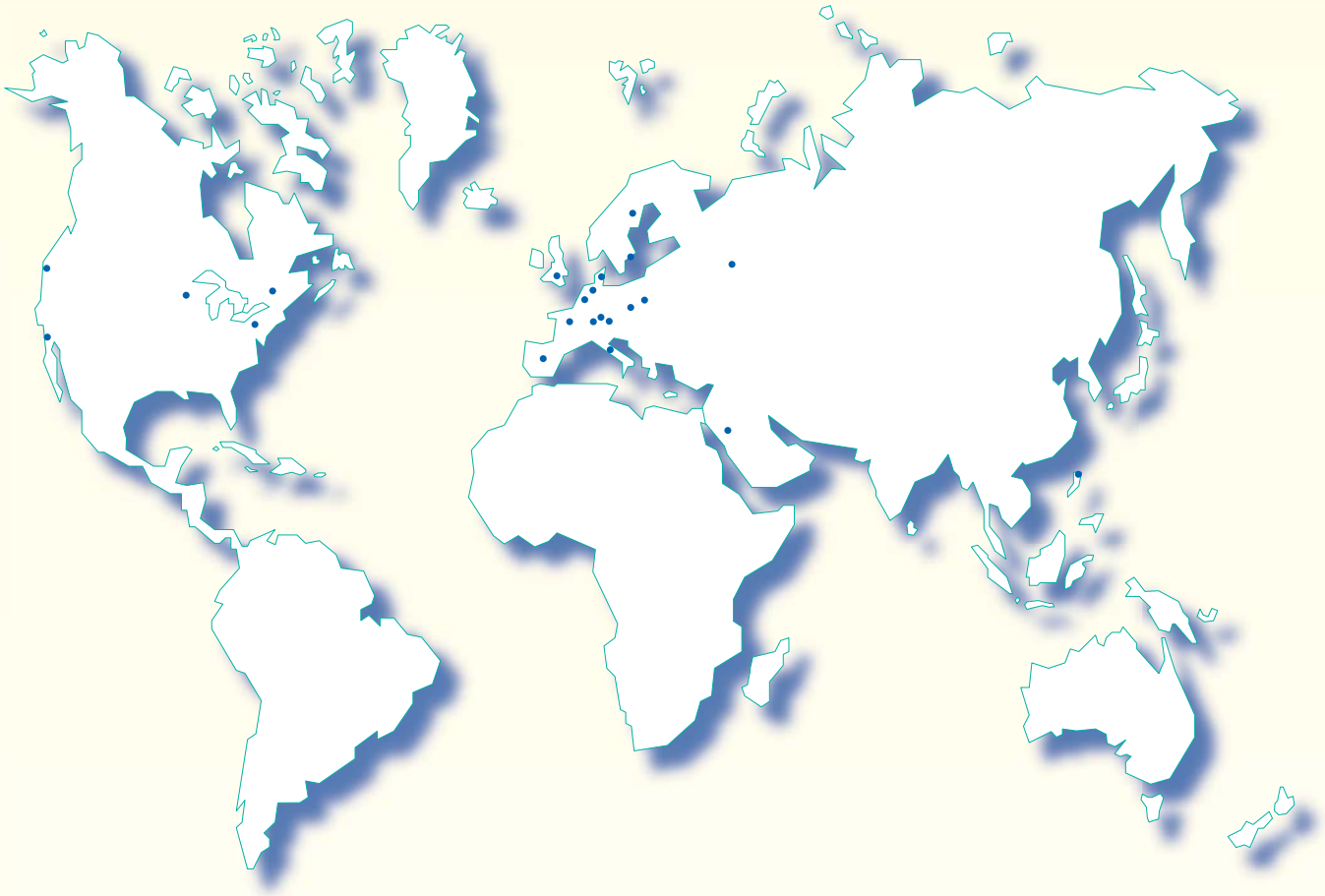

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