



» MICROSPACE® Single Board Computers and Box PCs «

- » PC/104, PC/104-Plus,
PCI/104-Express
- » Ruggedized Box PCs



» PC/104-Plus «

The Atom™ based PC/104-plus Board with ISA Interface



PC/104-Plus CPUs

MICROSPACE® MSM200S

Processor/Performance	Intel® Atom™ Z510/Z530 (1.1/1.6 GHz)
Chipset	US15W
Bus	PCI-BUS:Option, ISA: yes (8 bit / no DMA / no Interrupt)
Memory	soldered 0.5-2 GByte
Video Controller	int. graphic Controller
Video Memory	128 (UMA)
LCD Interface	24 bit LVDS
CRT Interface	yes, up to 1920x1200 with reduced blanking
IDE Interface P-ATA	1x
IDE Interface S-ATA (SII 3132)	2x SATA300
COM1 / COM2	RS232C, RS422/485 / RS232C, RS422/485
USB	6x 2.0
Ethernet	1 GByte LAN
Sound	HDA (ALC882-7.1), 2x Stereo, SPDIF
RTC Battery onboard	900mAh (typ. 10 years)
Standard Temperature	-25°C to +70°C
Extended Temperature	-40°C to +85°C
Dimensions (W x L in mm)	90 x 96 mm

Further PC/104-Plus on page 4/5 »

PC/104

For building reliable embedded PCs, we offer a broad selection of PC/104 modules. If the customer does not find the required computer module in the standard product portfolio, we will

develop and manufacture a custom computer system. Complete cable sets can be delivered with all CPU modules to facilitate the customer's entry into the world of PC/104.

PC/104 CPUs



MICROSPACE® MSM586SL*

Processor/Performance	AMD ELAN™ 520 / 133 MHz
Chipset	SC520-133
Bus	ISA-BUS: 8/16 bit
Memory	32-64 MByte DRAM soldered
IDE Interface P-ATA	1x
COM1 / COM2	RS232C, RS422/485 / RS232C, RS422/485
COM3 / COM4	RS232C, RS422/485 / RS232C, RS422/485
USB	-
Ethernet	-
RTC Battery onboard	400mAh (typ. 5 years)
Standard Temperature	-25°C to +70°C
Extended Temperature	-40°C to +85°C (E48)
Dimensions (W x L in mm)	90 x 96
Special Features	Passive cooling, DOC-socket 32pin, soldered RAM



MICROSPACE® MSM586SEL*

Processor/Performance	AMD ELAN™ 520 / 133 MHz
Chipset	SC520-133
Bus	ISA-BUS: 8/16 bit
Memory	32-128 MByte DRAM, SODIMM
IDE Interface P-ATA	1x
COM1 / COM2	RS232C, RS422/485 / RS232C, RS422/485
COM3 / COM4	RS232C, RS422/485 / RS232C, RS422/485
USB	2x V1.1 / 2.0
Ethernet	LAN port 1: 10/100 BASE-T
RTC Battery onboard	400mAh (typ. 5 years)
Standard Temperature	-25°C to +70°C
Extended Temperature	-40°C to +85°C (E48)
Dimensions (W x L in mm)	90 x 96
Special Features	Passive cooling, DOC-socket 32pin

PC/104 Peripherals



MICROSPACE® MSMX104

Function	4x serial	Standard Temperature	-25°C to +70°C
ISA-BUS	yes (8 bit)	Extended Temperature	-40°C to +85°C
BUS Compatibility	PC/104	Dimensions (W x L in mm)	90 x 96
Controller	4x 16C550	Weight	80 g
1st Interface	4x COM RS232	Software Support	DOS, WIN, Linux
Power normal (typ.)	5V/2W	MTBF	100,000 h

PC/104 Power Supply



MICROSPACE® MSMPS104A

Function	Power supply
Protective Features	Reverse polarity, Fuse, Overload
Vinput (nom.)	12V (8V-20V)
1st Output	5V, 10Amp
2nd Output	12V, 1Amp
Power normal	75W, n=90%
Standard Temperature	-25°C to +60°C
Extended Temperature	-40°C to +85°C (reduced power to 50W)
Special Features	EN60950
Accessories	Heatpipe cooler PSCS










MICROSPACE® MSMPS104B

Function	Power supply, UPS option
Protective Features	Reverse polarity, Fuse, Overload
Vinput (nom.)	24V, 36V, 42V, 48V (20V-55V)
1st Output	5V, 10Amp
2nd Output	12V, 1Amp
Power normal	75W, n=80%
Standard Temperature	-25°C to +60°C
Extended Temperature	-40°C to +85°C (reduced power to 50W)
Special Features	Charger regulator interface: COM/SMB interface, Load voltage range: 20V-55V, Rechargeable battery: Pb, Pb-Gel
Accessories	Battery PS12BAT, Heatpipe cooler PSCS

* Please note: Not for new design

PC/104-Plus CPUs	 MOPSLcdLX	 MICROSPACE [®] MSM800SEL	 MICROSPACE [®] MSM800SEV	 MICROSPACE [®] MSM800BEV	 MICROSPACE [®] MSM800XEL	 MICROSPACE [®] MSM800XEV	 MOPS-PM*	 MICROSPACE [®] MSM855/B2*
Processor/Performance	AMD Geode™ LX800 / 0.5GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	Intel® Pentium® M / Celeron® M 600MHz up to 1.4 GHz	Intel® Processor® / 1000MHz / Pentium® / 1400 / 1800MHz
Chipset	CS5536 AD	CS5536 AD	CS5536 AD	CS5536 AD	CS5536 AD	CS5536 AD	855GME	855GME
Bus	PC/104-Plus: Option	PCI-BUS: Option (3slot)	PCI-BUS: Option (3slot)	PCI-BUS: Option (3slot)	PCI-BUS: Option (2slot)	PCI-BUS: Option (2slot)	PC/104-Plus	ISA-Bus PC/104: 8/16bit +DMA, PCI-Bus: Option (3slot)
Memory	128-1024 MByte	128-1024 MByte	128-1024 MByte	128-1024 MByte	soldered 256 MByte	soldered 256 MByte	128-1024MB	128-1024MB
Video Controller	int. graphic Controller	int. graphic Controller	int. graphic Controller	int. graphic Controller	int. graphic Controller	int. graphic Controller	int. graphic Controller	int. graphic Controller
Video Memory	16MB (UMA)	16 MByte (UMA)	16 MByte (UMA)	16 MByte (UMA)	16 (UMA)	16 (UMA)	16-64MB (UMA)	16-64MB (UMA)
LCD Interface	24bit, 240x320 to 1600x1200	24 bit, 240x320 to 1600x1200	24 bit, 240x320 to 1600x1200	24 bit, 240x320 to 1600x1200	24 bit, 240x320 to 1600x1200	24 bit, 240x320 to 1600x1200	18bit, 1600x1200	18bit, 1600x1200
CRT Interface	yes	yes	yes	yes	yes	yes	yes	yes
IDE Interface P-ATA	1x EIDE (UDMA-33)	1x	1x	1x	1x	1x	1x	1x
IDE Interface S-ATA (SIL 3132)	-	-	-	-	-	-	-	-
COM1 / COM2	RS232C / RS232C	RS232C / RS232	RS232C / RS232	RS232C / RS232	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C
COM3 / COM4	-	-	-	-	-	-	-	-
USB	2x 2.0	4x 2.0	4x 2.0	4x 2.0	4x 2.0	4x 2.0	2x 2.0	5x 2.0
Ethernet	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	2x 10/100 BASE-T (LAN 1 / LAN2)
Sound	-	-	AC97	AC97	-	AC97	-	AC97-5.1
RTC Battery onboard	-	-	400mAh	400mAh	-	400mAh (typ. 5 years)	-	80mAh or external 900mAh
Standard Temperature	0°C to +60°C	0°C to +60°C	0°C to +60°C	0°C to +60°C	0°C to +60°C	0°C to +60°C	0°C to +60°C	-25°C to +50°C / +60°C / +70°C
Extended Temperature	-	-25°C to +70°C	-25°C to +70°C	25°C to +70°C, -40°C to +85°C (with large cooler and E48 or with thermo junction and E48)	25°C to +70°C, -40°C to +85°C (with large cooler and E47 or thermo junction and E48)	25°C to +70°C, -40°C to +85°C (with large cooler and E47 or thermo junction and E48)	-	-40°C to +50°C / +70°C
Dimensions (W x L in mm)	90 x 96 Lan Boot, Watchdog, JIDA-Support, JRC-Support, Dark Boot, 32 MB - 1GB	90 x 96/99	90 x 96/99	90 x 96/99	90 x 96/99	90 x 96/99	90 x 96	90 x 96
Special Features	chipDISK	-	-	-	soldered RAM	soldered RAM	Full feature compatibility within the MOPS family, low cost, low power	LAN boot, Watchdog

PC/104-Plus Peripherals	 MICROSPACE [®] MSMCA104+	 MICROSPACE [®] MSMCA104+ISOL	 MICROSPACE [®] MSMG104+	 MICROSPACE [®] MSMW104+	 MICROSPACE [®] MSMX104+	 MICROSPACE [®] MSME104+	 MICROSPACE [®] MSMGE104+
Function	CAN	CAN	Video frame grabber	FireWire	8x serial	Ethernet LAN	1Gigabit-LAN
ISA-BUS	-	-	-	-	-	-	-
PCI-BUS	yes	yes	yes	yes	yes	yes	yes
PCI Express-BUS	-	-	-	-	PC/104-Plus	-	-
BUS Compatibility	PC/104-Plus	PC/104-Plus	PC/104-Plus	PC/104-Plus	PCI	PC/104-Plus	PC/104-Plus
Controller	Peak-CAN	Peak-CAN	BT878A	TSB43AB22	EXAR 17C158	i82551	i82541
Memory	-	-	-	-	-	32 kByte	32 kByte
1st Interface	CAN DSUB9, CiA DS102-1	CAN DSUB9, CiA DS102-1	1st channel CVBS	IEEE 1394 A	8ch RS232C	RJ45	RJ45
2nd Interface	CAN DSUB9, CiA DS102-1	CAN DSUB9, CiA DS102-1	2nd channel CVBS	IEEE 1394 A	8ch RS422	-	-
3rd Interface	-	-	3rd channel CVBS /SVideo	-	8ch RS485	-	-
Power normal (typ.)	3.3V/5V/2W	3.3V, 5V/4W	5V/2W	3.3V/3W	3.3V/3W	3.3V/1W	3.3V/2W
Power Management	-	-	-	-	-	-	-
Standard Temperature	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C
Extended Temperature	tdb	tdb	-40°C to +85°C	-40°C to +70°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Dimensions (W x L in mm)	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96
Weight	80 g	30 g	35 g	70 g	70 g	70 g	70 g
Software Support	Win, Linux	Win, Linux	WIN, CE, Linux	WIN, Linux	WIN, Linux	WIN, CE, Linux	WIN, Linux
MTBF	200,000 h	200,000 h	200,000 h	>200,000 h	>200,000 h	200,000 h	100,000 h
Special Features	Reset using software commands	500V isolated, Reset using software commands	Digital I/O, PAL, NTSC	-	8x 10pin header	100/10Mbit/sec.	-
Accessories	-	-	-	-	-	-	-

* Please note: extended lifetime, not for new design.

» PCI/104-Express «



Stackable PCI/104-Express bus specification

PCI Express is a point-to-point connection with a 2.5 GHz data rate. The high transmission rate requires a fitting loading system. This should enable high speeds and simultaneously fulfill the requirements of the applications for high stability and reliability for use in a rough environment, as well as the basic mechanical requirements of the PC/104 architecture. The connector assembly selected for this purpose is a modified version of the Samtec high-density Q2 connector assembly, which was optimized for a module spacing of 15.24 mm.

With the PCI/104 Express Bus, we facilitate the market acceptance for the PC/104 form factor for a period of at least ten more years. PCI/104 Express has the bandwidth to support high-speed applications such as 1- and 10-Gbit Ethernet, high-end graphics processing, customer-specific FPGA and DSP requirements and I/O-intensive applications.

We offer a PCI/104 Express CPU board with Intel® Core™2 Duo processor with a clock rate of up to 2x 1.6 GHz (MSM945P), as well as a PCI/104 Express with the new Intel® Atom™ CPU Z510 / Z530 (MSM200X/XU/XP).

Several PCI/104 Express peripheral cards, e.g. fourfold 1-Gbit Ethernet LAN controller (MSM4E104EX), one ExpressCard adapter (MSMEC104EX), one fourfold frame grabber (4XBT878, 16 channels) (MSMG104EX/A), one twofold SATA300 adapter (MSMSA104EX) and power-supply modules are available.

PCI/104-Express CPUs



MICROSPACE® MSM945P

Processor/Performance	Intel® Core™ Duo L2400 / Intel® Core™2 Duo L7400 (2x 1.6 GHz / 2x 1.5 GHz)
Chipset	945GME
Bus	PCI-BUS: Option, PCI Express-BUS: on the bottom, PCI-BUS: Option
Memory	512-3072 MByte DRAM
Video Controller	i945GME
Video Memory	8-224 MByte
LCD Interface	SDVO
CRT Interface	yes
IDE Interface P-ATA	1x
IDE Interface S-ATA (Sil 3132)	2x SATA 300
COM1 / COM2	RS232C / RS232C
COM3 / COM4	-
USB	4x 2.0, 2x PCI104ex
Ethernet	10/100 BASE-T
Sound	ALC882-7.1
RTC Battery onboard	80mAh (or ext. 900mAh)
Standard Temperature	-25°C to +60°C/+70°C
Extended Temperature	-40°C to +70°C
Dimensions (W x L in mm)	90/117 x 96/99

PCI/104-Express CPUs



MICROSPACE® MSM945



MICROSPACE® MSM200X



MICROSPACE® MSM200XP



MICROSPACE® MSM200XU

Processor/Performance	Intel® Core™ Duo L2400 / Intel® Core™2 Duo L7400 (2x 1.6 GHz / 2x 1.5 GHz)	Intel® Atom™ Z510/Z530 / 1.1/1.6 GHz	Intel® Atom™ Z510/Z530 / 1.1/1.6 GHz	Intel® Atom™ Z510/Z530 / 1.1/1.6 GHz
Chipset	945GME	US15W	US15W	US15W
Bus	PCI-BUS:Option	PCI-BUS: Option, PCI Express-BUS: not assembled	PCI-BUS: Option, PCI Express-BUS: on the bottom	PCI-BUS: Option, PCI Express-BUS: on the top
Memory	256-3072 MByte DRAM	soldered 0.5-2 GByte	soldered 0.5-2 GByte	soldered 0.5-2 GByte
Video Controller	i945GME	int. graphic Controller	int. graphic Controller	int. graphic Controller
Video Memory	8-224 MByte	128 MByte (UMA)	128 MByte (UMA)	128 MByte (UMA)
LCD Interface	SDVO	24 bit LVDS	24 bit LVDS	24 bit LVDS
CRT Interface	yes	yes, up to 1920 x 1200 with reduced blanking	yes, up to 1920 x 1200 with reduced blanking	yes, up to 1920 x 1200 with reduced blanking
IDE Interface P-ATA	1x	1x	1x	1x
IDE Interface S-ATA (SIL 3132)	2x SATA 300	2x	2x	2x
COM1 / COM2	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C	RS232C / RS232C
COM3 / COM4	-	RS232C, RS422/485 / RS232C, RS422/485	RS232C, RS422/485 / RS232C, RS422/485	RS232C, RS422/485 / RS232C, RS422/485
USB	4x 2.0	4x 2.0	4x 2.0	4x 2.0
Ethernet	10/100 BASE-T	1 GByte LAN	1 GByte LAN	1 GByte LAN
Sound	ALC882-7.1	HDA (ALC882-7.1), 2x Stereo, SPDIF	HDA (ALC882-7.1), 2x Stereo, SPDIF	HDA (ALC882-7.1), 2x Stereo, SPDIF
RTC Battery onboard	80mAh (or ext. 900mAh)	900mAh (typ. 10 years)	900mAh (typ. 10 years)	900mAh (typ. 10 years)
Standard Temperature	-25°C to +60°C/+70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C
Extended Temperature	-40°C to +70°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Dimensions (W x L in mm)	90/117 x 96/99	90 x 96 mm	90 x 96 mm	90 x 96 mm

Further PCI/104-Express CPUs

PCI/104-Express Peripherals



MICROSPACE® MSMGE104EX



MICROSPACE® MSM4E104EX



MICROSPACE® MSMEC104EX



MICROSPACE® MSMMI104EX



MICROSPACE® MSMSA104EX



MICROSPACE® MSMFW104EX



MICROSPACE® MSMG104EX



MICROSPACE® MSMG104EX-A



MICROSPACE® MSMGS104EX



MICROSPACE® MSMSP104EX



MICROSPACE® MSMC104EX

Function	1 GByte-LAN	4x 1 GByte LAN	ExpressCard-Adapter	PCIe MiniCard adapter	2x SATA300	FireWire, IEEE1394B	4x Frame grabber	4x Frame grabber	GSM-UMTS	Spacer Kit for PCI/104e	8 channel serial port
ISA-BUS	-	-	-	-	-	-	-	-	-	-	-
PCI-BUS	pass-through	pass-through	pass-through	pass-through	pass-through	pass-through	pass-through	pass-through	pass-through	-	pass-through
PCI Express-BUS	yes, 1x Lane	yes, 1x lane	yes, 1x lane	yes, 1x lane	yes, 1x lane	yes, 1x lane	yes, 1x lane	yes, 1x lane	yes, 1x lane	PCI/104-Express	1x lane
BUS Compatibility	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express	PCI/104-Express
Controller	82573L (Intel®)	4x 82574L (Intel®)	-	-	SIL 3132	TI	4x BT878A, PAL, NTSC	4x BT878A, PAL, NTSC	HC-25	-	8 ch. UART
Memory	-	-	-	-	-	-	-	-	-	-	-
1st Interface	1 GByte LAN (RJ45)	4x 1 GByte LAN (RJ45)	ExpressCard	PCIe MiniCard	2x SATA	1x IEEE1394A	16x Video, MCX (90°)	16x Video, MCX (180°)	GSM module	-	8 ch. RS232C (+/-9V) or
2nd Interface	2x USB	-	-	SIM card	2x USB	2x IEEE1394B	4x SVideo, MCX	4x SVideo, MCX	SIM card	-	8 ch. RS422 (1/8 load) or
3rd Interface	-	-	-	-	-	-	-	-	Headset	-	8 ch. RS485 (1/8 load) or
Power normal (typ.)	5V, 3.3V/4W	5V, 3.3V/4W	5V/3W	5V/8W	5V, 3.3V/2W	5V, 3.3V/1W	5V, 3.3V/6W	5V, 3.3V/6W	5V, 3.3V/5W	-	5V/3W
Power Management	-	-	yes	yes	-	12V	-	-	yes	-	-
Standard Temperature	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-	-20°C to +70°C
Extended Temperature	-	-40°C to +70°C	-	-	-	-40°C to +70°C	tbd	tbd	-40°C to +70°C	-	-40°C to +85°C
Dimensions (W x L in mm)	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 96	90 x 14	90 x 96
Weight	60 g	80 g	65 g	55 g	65 g	75 g	95 g	95 g	65 g	15 g	70 g
Software Support	WINXP, Linux, VxWorks, QNX	WINXP, Linux	XP, VISTA	XP, VISTA	XP, VISTA, Linux	WINXP, Linux	WIN, Linux	WIN, Linux	WINXP, Linux	-	XP, VISTA
MTBF	100,000 h	100,000 h	100,000 h	100,000 h	200,000 h	200,000 h	100,000 h	100,000 h	100,000 h	500,000 h	200,000 h
Special Features	-	PCI-switch:PLX 8505	Hot plug support: depending on BIOS/OS	-	Bandwidth: 2x 300MByte/s, RAID 0/1	Bandwidth: 2.5x 800Mbit/Sek.	Bandwidth: 133MByte/sec. max., TTL i/o, 8bit	Bandwidth: 133MByte/sec. max., TTL i/o, 8bit	Bandwidth: (max.) HSDPA 3.6 Mb/s, GSM-Edge: Quadband, UMTS: 850/1900/2100MHz	Complies to PCI/104-Express	RS422/85-TX, RX, CTS, RTS, +/-, 8x onboard termination
Accessories	-	-	-	WLAN-MC, GSM-MC	-	-	MSMG104EX-Cable (MCX-BNC)	MSMG104EX-Cable (MCX-BNC)	GSM/UMTS	-	-



» MICROSPACE® MPCX28R «



The fan-less Atom™ rail computer EN50155

The MPCX28R includes all the standard interfaces (COMs, Video, Sound, USB, LAN) as well as an additional external SATA300 connector. On the front is an exchangeable SATA300 hard disk or SSD drive as well as a CF bracket for mass storage. The RTC battery is service friendly, being accessible from the front. Expansion options include GPS, GSM and WLAN. The housing is a robust aluminum profile which integrates passive, maintenance-free and fan-free cooling. Customer specific functions such as WakeOnMove, RingWake, WakeOnRing or WakeOnLan can be realized using FPGA and a microcontroller.

Applications

- » Integration in railway vehicles
- » Passenger entertainment, passenger safety
- » For 24-110V galv. 1.5kV isolated rail power supply
- » EN50155, TX certified, M12 connectors, 1500V isolation

Rail market

The MICROSPACE® computer systems for rail applications fulfill the EN50155 rail standard and function on inputs of 24VDC to 110VDC. In addition, certified and insulated power supply packs are used (voltage code I24-I110). Together with a SSD mass storage device,

these computers function from -25 to +70 degrees Celsius. All fittings are coded and lockable. The temperatures and voltages are monitored and logged. These computers include optional GPS, GSMUMTS and WLAN.

MICROSPACE® Railway



MPCX27R



MPCX27RL



MPCX28R



MPCR50R



MPCF50R

	MPCX27R	MPCX27RL	MPCX28R	MPCR50R	MPCF50R
Processor/Performance	Intel® Atom™ 510 / 1.1 GHz	Intel® Atom™ 510 / 1.1 GHz	Intel® Atom™ Z530 / 1.6 GHz	Intel® Core™ Duo L2400 / Intel® Core™ 2 Duo L7400 (2x 1.6 GHz / 2x 1.5 GHz)	Intel® Core™ Duo L2400 / Intel® Core™ 2 Duo L7400 (2x 1.6 GHz / 2x 1.5 GHz)
HDD	SSD-Drive (2.5") SATA2, 32 GByte	SSD-Drive (2.5") SATA2, 32 GByte	Option: 2.5" 80 GByte or 32 GByte SSD	80 GByte 2.5" or 32 GByte SSD	80 GByte 2.5" or 32 GByte SSD
CompactFlash	-	-	Option	yes	yes
Memory	1 GByte	1 GByte	1 GByte	2 GByte	2 GByte (max. 3 GByte)
Graphics/Resolution	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / QXGA (CRT) / UXGA (DVI-D)	int. graphic Controller / QXGA (CRT) / UXGA (DVI-D)
Video Interface 1	CRT (M12)	CRT (M12)	DVI-D	CRT	CRT
Video Interface 2	LVDS (int.)	3.5"-LCD 640x 480	Customer specific DVI-A	DVI-D	DVI-D
COM1 / COM2	RS232C (M12) / RS232C or GPS (M12)	RS232C (M12) / RS232C or GPS (M12)	RS232C, RS422/485 (DSUB9) / RS232, RS422/485 (DSUB9)	RS232 (DSUB9) / RS323 (DSUB9)	RS232 (DSUB9) / RS323 (DSUB9)
COM3 / COM4	-	-	-	RS232, CAN (DSUB9) / RS232, CAN (DSUB9)	RS232, CAN (DSUB9) / RS232, CAN (DSUB9)
USB	2x 2.0 (M12)	2x 2.0 (M12)	2x 2.0 front, 2x 2.0 back, 1x 2.0 (M12) back	2x 2.0 front, 1x 2.0 (M12) front	2x 2.0 front, 1x 2.0 (M12) front
LAN Port A	100/10 MByte-LAN (M12), with LAN boot, WakeOnLan	100/10 MByte-LAN (M12), with LAN boot, WakeOnLan	100/10 MByte-LAN (M12), with LAN boot, WakeOnLan	10/100 BASE-T (M12) with LAN boot	10/100 BASE-T (M12)
LAN Port B	100/10 MByte-LAN (M12)	100/10 MByte-LAN (M12)	100 BASE-T (M12), WakeOnLan	1 GByte-LAN (RJ45) with LAN boot	1 GByte-LAN (RJ45)
Sound	ALC882-7.1 (intern)	ALC882-7.1 (intern)	2x Stereo (ALC882-7.1)	2x Stereo (ALC882-7.1), of which 1x 10W (DSUB9)	AC97-2.3
Digital Input/Output	-	-	DC-isolated in/output	4x opto output, 4x opto input	4x opto output, 4x opto input
DC voltage input (not isol.), V1248	8-58VDC/typ.15W	8-58VDC/typ.15W	10-54VDC/typ.15W	8-58VDC/typ.40W	8-58VDC/typ.35W
DC voltage input (1.5kV isol.), Ixx	24/36/48/72/110VDC, 15W	24/36/48/72/110VDC, 15W	24/36/48/72/110VDC/typ.15W	24/36/48/72/110VDC/typ.40W	24/36/48/72/110VDC/typ.35W
Expansion	2x PCIe Mini Card, PCI/104ex	2x PCIe Mini Card, PCI/104ex	2x PCIe Mini Card, 1x PCI/104	2x PCIexpress MiniCard, 1x PCI/104express slot, 1x PCI ExpressCard slot	2x PCIexpress MiniCard, 2x PCI/104express slot, 1x PCI ExpressCard slot
Protection class	IP65, EN50155	IP65, EN50155	IP52, EN50155	IP40, EN50155	IP40, EN50155
Standard Temperature	-25°C to +55°C (T1) (with HD)	-25°C to +55°C (T1) (with HD)	-25°C to +55°C (T1) (with HD)	-25°C to +55°C (T1) (with HD)	-25°C to +55°C (T1) (with HD)
Extended Temperature	-25°C to +70°C (T3) (with SSD)	-25°C to +70°C (T3) (with SSD)	-25°C to +70°C (T3) (with SSD)	-25°C to +70°C (T3) (with SSD)	-25°C to +70°C (T3) (with SSD)
Dimensions (W x L x H in mm)	130 x 180 x 68	130 x 180 x 68	159 x 190 x 66	480 x 132 x 250	300 x 320 x 60
Weight	2.4 kg	2.4 kg	1.6 kg	6 kg	3 kg
Special Features	Option: WLAN PCIe MiniCard, GSM PCIe MiniCard, GPS A1080	Option: WLAN PCIe MiniCard, GSM PCIe MiniCard, GPS A1080	WakeOnMove, RingWake, WakeOnRing, PowerSaveMode	-	-

The industrial market

The MICROSPACE® computer systems for the industrial market cover applications for measurement engineering, for industrial automation and control, and include data capture for stationary information terminals (POI). Power supply is through the

12V or 24V PLC or with a power adaptor (110/220VAC). Mounting possibilities include desktop, DIN top-hat rails, 19" or wall mounts.

MICROSPACE® Industrial



	MPC20	MPC21	MPC21A	MPC21B	MPC21C	MPC25	MPC26	MPCV800	MPCF50	MPCF50A	MPCR50
Processor/Performance	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5 GHz	AMD Geode™ LX800 / 0.5GHz	Intel® Atom™ Z510/1.1 GHz	Intel® Atom™ Z510/1.1 GHz	AMD Geode™ LX800 / 0.5 GHz	Intel® Core™ Duo L2400 / Intel® Core™ 2 Duo L7400 (2x 1.6 GHz / 2x 1.5 GHz)	Intel® Core™ Duo L2400 / Intel® Core™ 2 Duo L7400 (2x 1.6 GHz / 2x 1.5 GHz)	Intel® Core™ Duo L2400 / Intel® Core™ 2 Duo L7400 (2x 1.6 GHz / 2x 1.5 GHz)
HDD	Optional	Optional	Optional	Optional	Optional	Optional	Optional	160 GByte, 2.5"	320 GByte (SATA)	320 GByte (SATA)	1x 250 GByte to 2x 1 TByte in 3.5"-BAY
CompactFlash	CF 256 MByte installed	CF 256 MByte installed	CF 256 MByte installed	CF 256 MByte installed	CF 256 MByte installed	CF 256MB installed	CF 256MB installed	-	-	-	1x
Memory	256 (max. 1 GByte)	256 (max. 1 GByte)	256 (max. 1 GByte)	256 (max. 1 GByte)	256 (max. 1 GByte)	1 GB soldered	1 GB soldered	512 MByte (max. 1 GByte)	1 GByte (max. 3 GByte)	1 GByte (max. 3 GByte)	2 GByte (max. 3 GByte)
Graphics/Resolution	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / UXGA	int. graphic Controller / QXGA (CRT) / UXGA (DVI-D)	int. graphic Controller / QXGA (CRT) / UXGA (DVI-D)	int. graphic Controller / QXGA (CRT) / UXGA (DVI-D)
Video Interface 1	CRT	CRT	CRT	CRT	CRT	DVI-D	DVI-D	CRT	CRT	CRT	CRT
Video Interface 2	-	-	-	-	-	-	-	-	DVI-D	DVI-D	DVI-D
COM1 / COM2	-	RS232C (DSUB9) / -	RS232C (DSUB9) / RS232 (DSUB9)	RS232C (DSUB9) / RS232 (DSUB9)	RS232C (DSUB9) / RS232 (DSUB9)	-	RS232/RS232	RS232C / RS232C	-	-	DB DSUB9, RS232 / DB DSUB9, RS232
COM3 / COM4	-	-	RS232C (DSUB9) / RS232C (DSUB9)	CAN1 (DSUB9) / CAN2 (DSUB9)	-	-	-	-	-	-	-
USB	4x 2.0 (1x internal)	4x 2.0 (1x internal)	4x 2.0 (1x internal)	4x 2.0 (1x internal)	4x 2.0 (1x internal)	6x 2.0 (of which 1x internal)	6x 2.0 (of which 1x internal)	4x 2.0	6x 2.0	6x 2.0	4x 2.0
LAN Port A	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	1GB-LAN (PCIe)	1GB-LAN (PCIe)	10/100 BASE-T (RJ45)	10/100 BASE-T (RJ45) with LAN boot	10/100 BASE-T (RJ45) with LAN boot	10/100 BASE-T (M12) RJ45 with LAN boot
LAN Port B	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	10/100 BASE-T	-	100MB-LAN	100MB-LAN	1 GByte (RJ45)	1x 1 GByte LAN (RJ45)	3x 1 GByte LAN	1 GByte-LAN-RJ45
Sound	Stereo In/Out	Stereo In/Out	Stereo In/Out	Stereo In/Out	Stereo In/Out	Stereo In/Out	Stereo In/Out	-	ALC882-7.1	ALC882-7.1	ALC882-7.1
Digital Input/Output	-	-	4x opto isol. 50V/1A	-	-	-	-	24 programmable I/O	-	-	4x opto output, 4x opto input
DC voltage input (not isol.), V1248	10V-28V/typ.10W	10V-28V/typ.10W	10V-28V/typ.10W	10V-28V/typ.10W	10V-28V/typ.10W	10V-28V/typ.12W	10V-28V/typ.12W	-	-	-	-
DC voltage input (1.5kV isol.), Ixx	-	-	-	-	-	-	-	-	-	-	-
Expansion	-	-	-	-	-	PCIexpress MiniCard	PCIexpress MiniCard	MiniPCI, PC/104-Plus (max. 2 cards)	MiniPCI	PCIexpress MiniCard	2x PCIexpress MiniCard, 2x PCI/104express slot 1x PCI ExpressCard slot
Protection class	-	-	-	-	-	-	-	IP40	IP40	IP40	IP40
Standard Temperature	0°C to +50°C (with HD)	0°C to +50°C (with HD)	0°C to +50°C (with HD)	0°C to +50°C (with HD)	0°C to +50°C (with HD)	0°C to +40°C (with HD)	0°C to +40°C (with HD)	+5°C to +50°C (with HD)	+5°C to +50°C (with HD)	+5°C to +50°C (with HD)	-20°C bis +50°C (with HD)
Extended Temperature	-25°C to +70°C (without HD)	-25°C to +70°C (without HD)	-25°C to +70°C (without HD)	-25°C to +70°C (without HD)	-25°C to +70°C (without HD)	-25°C to +50°C (without HD)	-25°C to +50°C (without HD)	-25°C to +70°C (with SSD/CF)	-25°C to +70°C (with SSD)	-25°C to +70°C (with SSD)	-40°C bis +70°C (SSD, no HD)
Dimensions (W x L x H in mm)	165 x 110 x 27	165 x 110 x 46	165 x 110 x 46	165 x 110 x 46	165 x 110 x 46	165 x 110 x 27	165 x 110 x 27	292 x 146 x 83	310 x 256 x 42	310 x 256 x 42	480 x 132 x 250
Weight	500 g	700 g	700 g	700 g	700 g	500 g	500 g	3 kg	3 kg	3 kg	6 kg
Special Features	fanless, incl. DC power cable	MiniPCI-socket, PCI/104-slot, incl. DC power cable	MiniPCI-socket, incl. DC power cable	MiniPCI-socket, incl. DC power cable	MiniPCI-socket, incl. DC power cable	fanless	fanless	Videointerface 3: LVDS, 18 bit	3D-Support: DirectX9	3D-Support: DirectX9	Option: WLAN, GSM-UMTS CAN, IBIS, GPS

Vehicular market

MICROSPACE® computer systems for mobile use in vehicles (battery input of 12V, 24V, 28V, 42V) have e1 clearance and function in a broad temperature range. The input power packs coded V1248 are especially protected in vehicular environments (over current,

over voltage, current reduction at motor start, reverse polarity protection). Special automotive hard disks, CompactFlash or solid-state drives are used as mass storage devices. These computers include optional GPS, GSM-UMTS and WLAN.

MICROSPACE® Vehicle



MPCX28



MPCX50

Processor/Performance	Intel® Atom™ Z530 / 1.6 GHz	Intel® Core™ Duo L2400 / Intel® Core™2 Duo L7400 (2x 1.6 GHz / 2x 1.5 GHz)
HDD	(Option: 2.5" 80 GByte or 32 GByte SSD)	SATA - E38, 80 GByte (opt. 32 GByte SSD)
CompactFlash	Option	yes
Memory	1 GByte DDR2	2 GByte (max. 3 GByte)
Graphics/Resolution	int. graphic Controller / UXGA	int. graphic Controller / QXGA (CRT) / UXGA (DVI-D)
Video Interface 1	DVI-D	CRT
Video Interface 2	Customer specific DVI-A	DVI-D
COM1 / COM2	RS232C, RS422/485 (DSUB9) / RS232, RS422/485 (DSUB9)	RS232C, RS422/485 (DSUB9) / RS232, RS422/485 (DSUB9)
COM3 / COM4	-	RS232C, RS422/485, intern / RS232, RS422/485, intern
USB	2x 2.0 back, 2x 2.0 front	2x 2.0 front, 1x 2.0 (M12) front
LAN Port A	1 Gbit/s (RJ45) with LAN boot, WakeOnLan	10/100 BASE-T (RJ45), with LAN boot
LAN Port B	1 Gbit/s (RJ45)	1 GByte-LAN, with LAN boot, WakeOnLan
Sound	2x Stereo (ALC882-7.1)	2x Stereo (ALC882-7.1), of which 1x 10W
Digital Input/Output	DC-isolated in/output	4x output, 4x opto input
DC voltage input (not isol.), V1248	10-54VDC/typ.15W	8-58VDC, 35W
DC voltage input (1.5kV isol.), Ixx	-	24/36/48/72/110VDC/typ.35W
Expansion	2x PCIexpress MiniCard, 1x PCI/104	2x PCIexpress MiniCard, 1x PCI/104express slot, 1x ExpressCard
Protection class	IP52	IP40
Standard Temperature	-25°C to +55°C (with HD)	-25°C up to +55°C (with HD)
Extended Temperature	-25°C to +70°C (with SSD, no HD)	-40°C up to +70°C (with SSD)
Dimensions (W x L x H in mm)	159 x 187 x 66	320 x 132 x 250
Weight	1.5 kg	5 kg
Special Features	WakeOnMove, RingWake, WakeOnRing, PowerSaveMode	Option: WLAN, GSM-UMTS/GPRS, CAN, IBIS, GPS

Medical market

The MICROSPACE® computer systems for the medical field are EN60601 certified and fulfill security restrictions so that if patient contact occurs there will be no improper high current flow. The systems possess medical grounding clamps and are insulated

accordingly. Systems have been installed in operating theaters and intensive care stations but also in doctor's offices and patient's rooms.

MICROSPACE® Medical



MPC50M

Processor/Performance	Intel® Core™ Duo L2400 / Intel® Core™2 Duo L7400 (2x 1.6 GHz / 2x 1.5 GHz)	LAN Port A	10/100 BASE-T (RJ45) with LAN boot
HDD	1x 250 GByte-SATA (max. 2x 1 TByte-SATA)	LAN Port B	1 GByte LAN (RJ45)
Memory	2 GByte (max. 3 GByte)	Sound	ALC882-7.1
Graphics/Resolution	int. graphic Controller / QXGA (CRT) / UXGA (DVI-D)	Expansion	MiniPCI, 2x PCI32Bit slot, PCI Express
Video Interface 1	CRT	Protection class	IP40, medical ground contact
Video Interface 2	DVI-D	Standard Temperature	+5°C to +35°C
COM1 / COM2	DSUB9 Dsub / DSUB9 DSub	Extended Temperature	tbd
USB	1x 2.0 front , 4x 2.0 back, 2x 2.0 internal	Dimensions (W x L x H in mm)	300 x 280 x 160
		Weight	6 kg
		Special Features	Optical drive: (PATA) DVD-R/W, CD-R/W, Video interface 3 LVDS

Defense market

The MICROSPACE® computer systems that are designed for military applications are extremely robust and protected, and utilize military connectors. This allows the MPCX27MIL computer to be totally immersed in water. The operating temperature range is -40 to +85 degrees Celsius and the computer achieves the highest resistance to vibration and shock. Additionally, a 3D

acceleration sensor is built into the MPCX27MIL product family allowing measurement in each axel of values from 1mG to 6G. For expandability, a PCI/104-Express slot is available with 48 reserve input and output signals over a MIL connector. These computers include optional GPS, GSM-UMTS and WLAN.

MICROSPACE® Defense



MPCX27MIL

Processor/Performance	Intel® Atom™ 510 / 1.1 GHz	LAN Port A	100/10 MByte-LAN (MIL) with LAN boot (LAN wake)
HDD	32 GByte (SSD)	LAN Port B	100/10 MByte-LAN (MIL)
Memory	1 GByte	Sound	3x Stereo ALC882 (MIL)
Graphics/Resolution	int. graphic Controller / UXGA	DC voltage input (not isol.), V1248	8V-58VDC / typ. 15W (MIL)
Video Interface 1	MIL	Expansion	PCI/104ex
Video Interface 2	intern	Protection class	IP67
COM1 / COM2	RS232C (MIL) / RS232C or GPS (MIL)	Standard Temperature	-40°C to +85°C @ 1.1 GHz MIL810
USB	4x 2.0 (MIL)	Dimensions (W x L x H in mm)	110 x 150 x 60
		Weight	2.55 kg

About Kontron

Kontron, the global leader of embedded computing technology, designs and manufactures standards-based and custom embedded and communications solutions for OEMs, systems integrators, and application providers in a variety of markets. Kontron engineering and manufacturing facilities, located throughout Europe, Americas, and Asia-Pacific, work together with streamlined global sales and support services to help customers reduce their time-to-market and gain a competitive advantage. Kontron's diverse product portfolio includes: boards and mezzanines, Computer-on-Modules, HMIs and displays, systems, and custom capabilities.

Kontron is a Premier member of the Intel® Embedded Alliance.

For half-a-decade now, Kontron has been named a VDC *Platinum Embedded Board Vendor*. Based entirely on user feedback, industry professionals evaluate vendors on over 45 non-product related criteria. Kontron is only one of two companies to receive the Platinum award 5-years running.

Kontron is listed on the German TecDAX stock exchange under the symbol "KBC".

For more information, please visit: www.kontron.com

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