Solution Guide

Embedded Computer

2006 DIGITAL-LOGIC

smart embedded computers

Memberships

General Member of the
Intel ®
Communications
Alliance

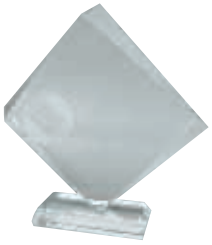
Microsoft®
Windows®
Embedded
Partner

Awards

2004
GOLD VENDOR:
PC/104 FAMILY

2003
PLATINUM VENDOR:
PC/104 FAMILY

Finalist as Entrepreneur
of the Year 2003



FDP KMU-Award 2001

DLAG HQ CC 01.2006 dt/en 10'000

Das Unternehmen

The Company

Felix Kunz Chairman and CEO

Weltweit führend
in der Embedded Computer-Technologie entwickelt, produziert und vertreibt DIGITAL-LOGIC Rechnersysteme im Kleinstformat – sogenannte Embedded Computer. Der Embedded Computer dient ähnlich einem menschlichen Gehirn als Steuerzentrale von Geräten und ist für den Benutzer nicht sichtbar.

Technologieführend
begegnet das High-Tech-Unternehmen dem starken Marktzuwachs durch innovative Produkte. DIGITAL-LOGIC vertreibt hochstehende Embedded Computer in unterschiedlichen Marktsegmenten und weltweit über Tochterfirmen und Distributionspartner.

Universell einsetzbar
bewähren sich Embedded Computer seit Jahren erfolgreich in Einsatzbereichen wie Navigation, Telekommunikation, Medizinal- und Messtechnik, Internet-Anwendungen, Produktionssteuerungen, Point of Sales, Informationsterminals usw.

Vielfältige Produkte
umfassen das Sortiment vom weltweit kleinsten Pentium-Computer in Kreditkartengrösse (smartModule), über MICROSPACE Single-Board-Computer (PC/104, Slot-PC, EPIC, EBX) bis zu kundenspezifischen Embedded Computern und Computer-Systemen für hohe individuelle Ansprüche.

Globale Vernetzung
bieten Embedded Computer dank Anbindung an das Internet durch GSM, ISDN- oder LAN-Anschluss. Der DIGITAL-LOGIC Embedded Computer funktioniert als Webserver und lässt Maschinen, Haushaltgeräte, Benutzer und Serviceanbieter durch das Internet kommunizieren.

As a world leader
DIGITAL-LOGIC develops, manufactures and distributes miniaturized computers, commonly called embedded computers. Such a computer system, embedded within a device, functions as the brain of that device.

Technology leading,
DIGITAL-LOGIC is a high-tech company with an excellent growth record and a broad market base. DIGITAL-LOGIC products are sold internationally through subsidiary companies, distributors and the internet.

Universally in use,
embedded computers have been successfully deployed for many years. Such computers are successfully used in navigation systems, telecommunications, medical technology, internet applications, control technology, point of sales and information terminals etc.

Manifold products,
distributed world-wide, range from the world's smallest Pentium with a credit-card size footprint (smartModul) to MICROSPACE single-board computers in PC/104, Slot-PC, EPIC and EBX form factors. Customized embedded computers and computer Systems meet the specific requirements of customer's needs.

Globally connected
to the internet by embedded computers equipped with a GSM, an ISDN or LAN interface. DIGITAL-LOGIC's embedded computers can function as webservers. Machines, home appliances, users and service providers can become internet ready.

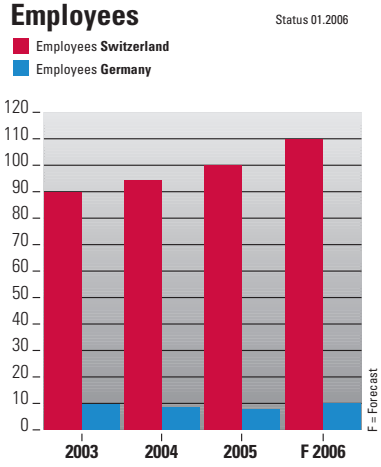
Das Unternehmen

Die 1992 gegründete DIGITAL-LOGIC AG ist weltweit technologieführend. Entwickelt und produziert werden Miniatur-Computersysteme basierend auf der Intel®-Architektur mit vorwiegend x86- und Pentium®-Prozessorleistung. Das Lieferprogramm umfasst die Standardprodukte mit den Embedded Computer Boards, Embedded Computer Modulen und den MICROSPACE® Computer Systemen.
DIGITAL-LOGIC AG ist nach ISO9001:2000 zertifiziert.

Vertrieb

Im wachstumsstarken Embedded Computer-Markt verfügt DIGITAL-LOGIC über eine erstrangige Stellung. Die Gruppe ist weltweit mit Tochter-/Partnerunternehmen präsent. Erfahrene Vertriebsspezialisten und Ingenieure betreuen den Kunden vor Ort und liefern ihm die geeigneten Standard- oder kundenspezifisch massgeschneiderten Embedded Computer.

MitarbeiterInnen
Employees



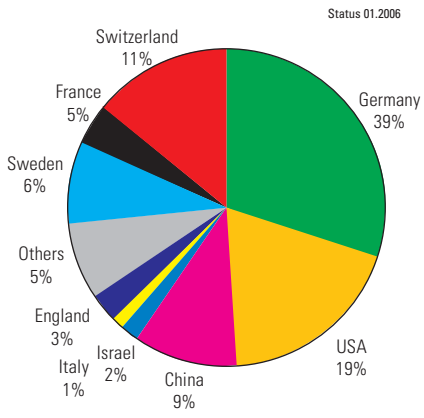
The Company

Founded in 1992, DIGITAL-LOGIC AG is a technology leader and manufactures extremely powerful embedded computers. Computer designs are focused on the world-wide standards, i.e. Intel® x86 architecture, based on Pentium® performances. The product range consists of Embedded Computer Boards, Embedded Computer Modules and MICROSPACE® Computer Systems. DIGITAL-LOGIC AG holds the ISO9001:2000 certificate.

Sales

DIGITAL-LOGICis strongly placed in the fast-growing embedded computer market and is represented by daughter-/partner companies throughout the world. Experienced sales specialists and engineers are at the customer's disposal in all branch offices to ascertain any requirement and to find the ideal solution, offering advice, experience and competence for standard and customized products.

Umsatz nach Ländern
Turnover Shared by Countries



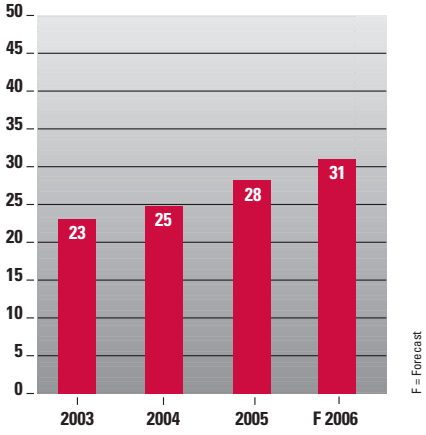
Produktion

Alle DIGITAL-LOGIC-Produkte werden in Luterbach auf modernsten Produktionsanlagen gefertigt, die drei SMT-Linien (Surface Mounted Technology) sowie verschiedene Anlagen für Montage, Produktetests, Lackierungen und Burnin umfassen.

RoHS-Konformität

DIGITAL-LOGIC hat den Bleifrei-Lötprozess bereits in der Produktion erfolgreich installiert, um per 30.6.2006 alle MICROSPACE® Produkte RoHS-konform anzubieten. Ab Q4/2005 werden die Produkte mit dem RoHS-Lötprozess hergestellt, sodass ab 1.1.2006 weitgehend alle Lieferungen in Bleifreiausführung erfolgen. Eine interne Projektgruppe hat den RoHS-Lötprozess definiert, dokumentiert und validiert. Somit ist die kompetente Unterstützung des Kunden während der RoHS-Umstellung gewährleistet. Alle Produkte können im Artikelnamen mit RoHS identifiziert werden.

Umsatz **konsolidiert/IFRS** in CHF Mio.
Turnover
Status 01.2006



Manufacturing

DIGITAL-LOGIC embedded computer products are all manufactured in ultra-modern facilities. DIGITAL-LOGIC offers a full range of value-added solutions, including application baseboard manufacture, system-level assembly and test, conformal coating, burnin test, and extended temperature screening. The production department has three SMT (Surface Mounted Technology) production lines and a final assembly/configuration line.

RoHS-Conformity

DIGITAL-LOGIC has paid full attention to convert all MICROSPACE® products to be conform with the RoHS guidelines by June 30, 2006. Beginning in Q4/2005 DIGITAL-LOGIC starts RoHS conform production, to secure lead-free deliveries from 1.1.2006. DIGITAL-LOGIC has established an internal task force, who researched and validated the process extensively. With these actions taken, DIGITAL-LOGIC assures qualified support to the customers during the RoHS conversion. The recognition of the RoHS version will be integrated in the respective article name.

Technische Unterstützung

Im DIGITAL-LOGIC Support-Center Schweiz sowie im Tochterunternehmen in Deutschland beraten speziell ausgebildete Ingenieure den Kunden, damit innerhalb kürzester Frist das geeignete DIGITAL-LOGIC-Produkt zum Einsatz gelangt.
Allfällige Reparaturabwicklungen (RMA) erfolgen rasch und kundenfreundlich.
Die Standard-Garantiezeit beträgt 24 Monate. Supportspezialisten verfügen nebst den Schaltplänen auch über die Source-Codes aller eingesetzten BIOS-Programme.

Global Support

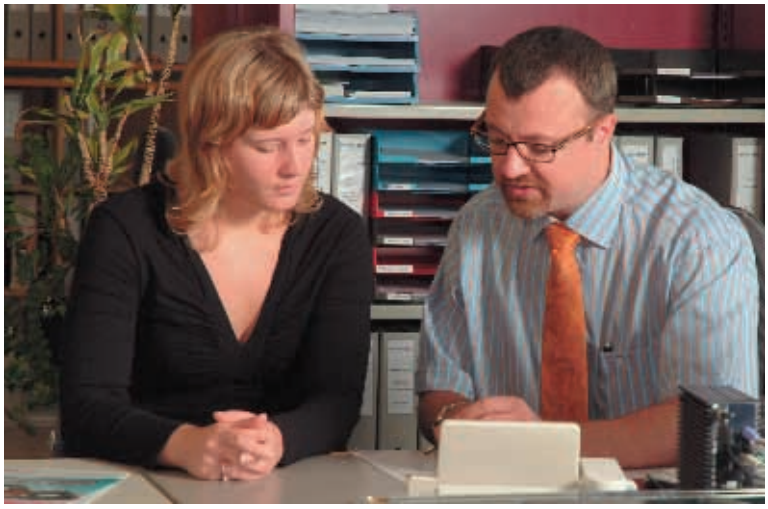
The DIGITAL-LOGIC Support Centers at the headquarter and at the subsidiary company in Germany provide customers with all the information needed to integrate a MICROSPACE product successfully into a specific application.
Specifications, drivers, and technical information are available through the support website.
All products are covered by a 24-month warranty. If necessary, the repair center also provides prompt RMA-service. The development department has the source codes of all applied BIOS-programs at its disposal.

Design-Kompetenz

Ingenieure von DIGITAL-LOGIC entwickeln seit 1992 PC-Systeme für Embedded Computer Anwendungen. Basierend auf umfassender Erfahrung und Fachkompetenz werden alljährlich mehrere Kunden-Designs und Standard-Designs neu entwickelt.

Quality in Design

The Quality Assurance Team is in charge of design reviews for all board products. A series of thorough tests is made during the development process. Customers profit from DIGITAL-LOGIC's experience since 1992 in designing x86-based computers.



Internet

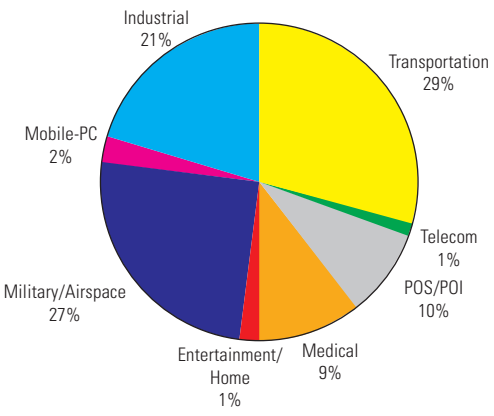
DIGITAL-LOGIC nützt das Internet als starkes Kommunikationstool und bietet Kunden ein On-line-Support-Center. Die Website ermöglicht den Anwendern weltweit technische Unterstützung und Information. Neu können sich Kunden online über den Status ihrer «Returned Material Accreditation» (RMA) informieren. www.digitallogic.com enthält einen umfassenden Download-Bereich für technische Spezifikationen, Treiber und Tools sowie eine Rubrik «Frequently Asked Questions» (FAQ) mit Antworten auf die wichtigsten wiederkehrenden Fragen.

www.digitallogic.com

DIGITAL-LOGIC utilizes the web site at www.digitallogic.com to give its customers not only useful information but also the best possible support. From its special online support center, all technical specifications, drivers and tools of DIGITAL-LOGIC products can be easily downloaded. Customers can now also inform themselves online about the status of their «Returned Material Accreditation» (RMA). The FAQ area provides answers to technical questions.

Umsatz nach Branche
Turnover by Segments

Status 01.2006



Marktsegmente der DIGITAL-LOGIC Embedded Computer und Anwendungsbeispiele

Telekommunikation	Telefonsysteme, Vermittlerstationen, elektronische Telefonbücher, mobile Telefon-/Internet-Systeme
Point-of-Sale, Point-of-Interest	Kassensysteme, Geldautomaten, Verkaufsautomaten, Informationsterminals
Medizinaltechnik	Beatmungsgeräte, Herzmonitoren, Blutanalysegeräte, Hirnstrom-analysegeräte, Röntgenapparate, Computertomografen, Datenlogger
Verkehr und Transport	Zugskontrollsysteme, Verkehrssysteme, Telematik, Passagier-Information, Navigation
Industrie	Steuerungstechnik, Maschinensteuerungen, Anzeige- und Bediensysteme, speicherprogrammierbare Steuerungen (SPS)
Mobile Computer	Laptops, Notebooks, mobile Datenerfassungsgeräte, Internet-Anwendungen
Aviatik, Militär	Flugzeugnavigation, Flugrechner für unbemannte Fluggeräte, Kommunikations-Server und weitere sehr robuste militärische Anwendungen
Entertainment/ Home	Media Center Anwendungslösungen

Market Segments of DIGITAL-LOGICS's Embedded Computers and Typical Applications

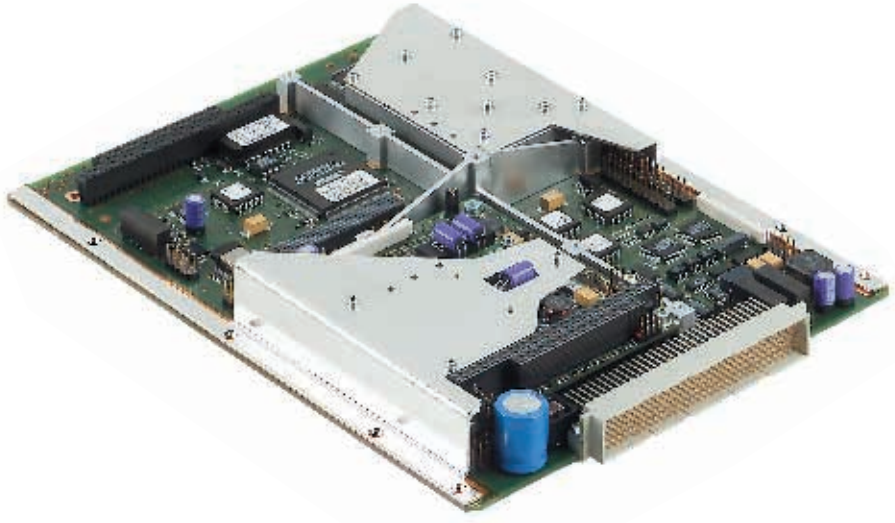
Telecommunications	Telephone systems, switching stations, electronic telephone books, mobile telephone/Internet systems
Point-of-Sale, Point-of-Interest	Checkout systems, ATMs, vending machines, information terminals
Medical Technology	Respiratory equipment, heart monitors, blood analysis equipment, brain activity analyzers, X-ray equipment, computer-aided tomographs, data loggers
Transportation	Traincontrol systems, Traffic control, Telematic, Passenger Information, Navigation
Industry	Control technology, machine controllers, programmable logic controllers (PLCs), Human Machine Interfaces (HMI)
Mobile Computers	Laptops, notebooks, mobile data input devices, Internet applications
Avionics, Military	Aircraft navigation, flight calculators for unmanned flight equipment, communication servers, and additional extremely rugged military applications
Entertainment/ Home	Media Center Application solution

Das Unternehmen
Standort Deutschland

The Company
Location Germany

Mit DIGITAL-LOGIC GmbH Siegen, als 100% Tochterunternehmen, ist DIGITAL-LOGIC AG in Deutschland vertreten. Die Tochtergesellschaft konzentriert sich hauptsächlich auf den Vertrieb der DIGITAL-LOGIC Standardprodukte.
Das DIGITAL-LOGIC GmbH-Team in Siegen berät kompetent, kundenfreundlich und mit Unterstützung der DIGITAL-LOGIC Schweiz.

DIGITAL-LOGIC GmbH Siegen represents the DIGITAL-LOGIC AG in Germany as 100% subsidiary company. The company concentrates mainly on selling standard products of DIGITAL-LOGIC AG.
The team of DIGITAL-LOGIC GmbH Siegen offers competent, customer friendly advise supported by DIGITAL-LOGIC Switzerland.



Quality Management

Zuverlässigkeit

Gründliche Produkte- und Stresstests der einzelnen Komponenten garantieren die hohe Zuverlässigkeit von über 50'000 h MTBF (Mean Time Between Failure). Auf eigenen Test- und Simulationssystemen werden alle relevanten Messungen durchgeführt und dokumentiert. Die Embedded Computer durchlaufen vor ihrer Auslieferung strenge Freigabetests und werden im Dauerbetrieb in der Klimakammer gealtert. Jedes Produkt erhält ein Prüfzertifikat.

Reliability

Every component of DIGITAL-LOGIC's embedded computer has been carefully crafted to withstand the rigors of harsh embedded environments; design, component selection, design qualification and manufacturing process specification are subject to exacting standards and tests.
These include temperature screening, vibration, active burnin stress, over/under temperature-stress, over/under voltage-stress and EMI/EMC analysis. Most DIGITAL-LOGIC products have predicted MTBF that exceeds 50'000 hours. Each product is delivered with a test-certificate.

Durchgeführte Messungen
Test standards

EMI/CE:	EN61000-6-3/-6-2 EN55022/55024
ESD:	EN50082-1/-2 EN61000-4-2
Temperature:	IEC60068-2-1, MIL-STD-810
RoHS/WEEE:	Directive 2002/96/EC
Humidity:	IEC60068-2-78, MIL-STD-810
Vibration/Shock:	IEC60068-2-6/-27, MIL-STD-810
Safety:	EN60950, UL
e1:	Störaussendung gemäss 95/54EG Radiation according 95/54/EG Störfestigkeit gemäss 95/54/EG Immunity according 95/54/EG

ISO9001:2000 zertifiziert

Alle Prozessdaten, inklusive Datumcodes der einzelnen Bauteile, werden in einer Qualitäts-Informations-Datenbank (QIS) aufgezeichnet. Sämtliche Testresultate, Support- und Reparaturfälle werden lückenlos in dieser Datenbank registriert, sodass jeder Prozess rückverfolgbar ist.

Produktelebensdauer

DIGITAL-LOGIC verwendet in der Regel Bauteile, die ab Produktefreigabe mindestens 5 Jahre verfügbar bleiben. Im Falle einer unerwarteten Bauteilabkündigung führt DIGITAL-LOGIC ein form- und funktionskompatibles Redesign durch, sodass die Applikation kaum beeinträchtigt wird. DIGITAL-LOGIC verwendet ausschliesslich INTEL und AMD Prozessoren und Chipsätze.

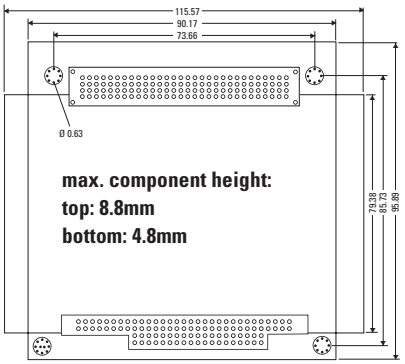
Product Lifetime

DIGITAL-LOGIC usually selects only components with an availability of at least 5 years after release of the design. In the event of an unexpected component discontinuation, DIGITAL-LOGIC produces a form and function compatible replacement, that has an insignificant impact on the application. DIGITAL-LOGIC exclusively uses INTEL and AMD processors and chipsets.

ISO9001:2000 certified

DIGITAL-LOGIC is committed to a comprehensive program of continuous improvement, as evidenced by frequent internal and supplier audits, ongoing customer satisfaction survey program, and quarterly management reviews. All quality-relevant information is recorded in the quality information system (QIS), and includes process data regarding manufacture, support and repairs.

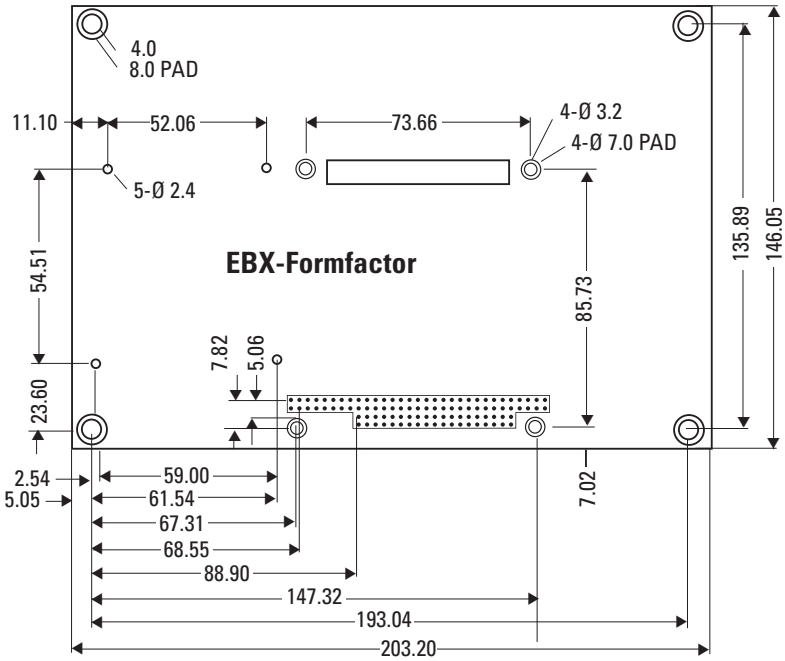
Embedded Computer Board Formfaktoren



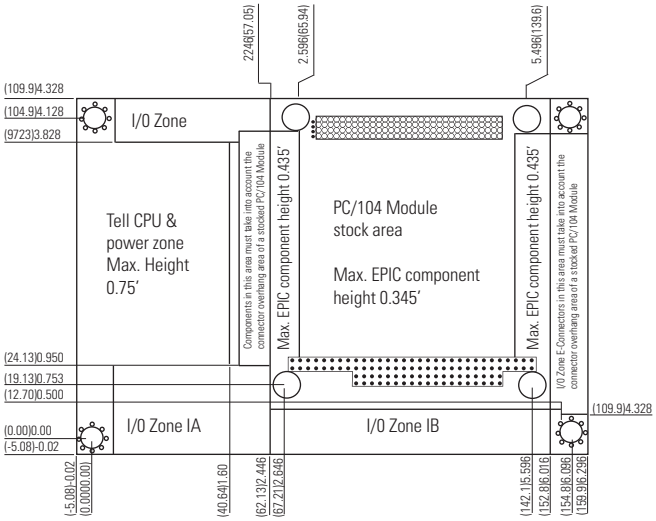
PC/104-*Plus* Formfactor

EPIC definiert einen neuen Industrie offenen Standard für Embedded Computer Boards mit kleinem Formfaktor, genannt Embedded Platform for Industrial Computing™ oder EPIC. Es ist ein Single Board Computer mit multiplen I/O Erweiterungs-Optionen und in der Grösse zwischen Industrie-Standards PC/104 und EBX. Diese Boardgrösse wird moderne Prozessoren sowie komplexe I/O-Funktionen für Applikationen wie Daten-Akquisition, Video-Aufbereitung, Telekommunikation, Netzwerk-Systeme, Bewegungssteuerung u.s.w., unterstützen.
Die Spezifikation definiert PC/104-Erweiterungen. Zukünftige Updates werden jedoch PCI Express und/oder andere Konstruktionen beinhalten. Der EPIC-Standard bietet die Plattform für Embedded Systeme der kommenden Generation in allen Anwendungsbereichen wie Industrie, Handel, Militär, Transport etc.

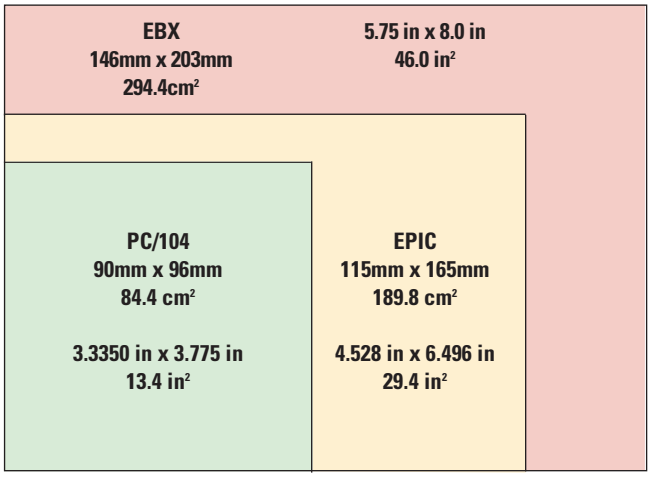
Embedded Computer Board Form Factors



EPIC is to define a new industry open standard for small form factor embedded computer boards, called Embedded Platform for Industrial Computing™ or EPIC. It is a single Board Computer with multiple I/O expansion options. Its size is midway between the industry standard PC/104 module and EBX board. This board size will support advanced processors plus complex I/O functions for applications involving data acquisition, video processing, telecommunications, networking, motion control plus the associated field wiring termination, I/O circuit protection, etc. The specification defines PC/104 expansions; however, future updates will embrace PCI Express and/or other fabrics. The EPIC standard provides a platform on which to build the next generation of feature-rich, embedded systems for industrial, medical, military, transportation and commercial applications.



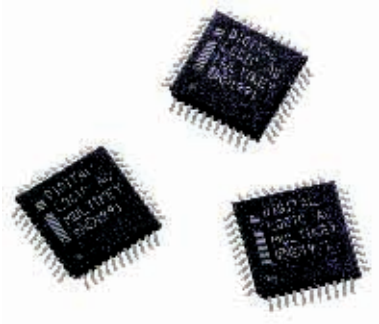
EPIC-Formfactor



Embedded PC Advantages

Vorteile der Embedded Computer

Die meisten Embedded Computer-Anwendungen weisen kaum Gemeinsamkeiten auf. Einige davon sind spezielle Funktionen, die ein normaler Büro-PC nicht besitzt. Um auch rauhen Umgebungsanforderungen standzuhalten, stellt DIGITAL-LOGIC verschiedene Ergänzungsfunktionen wie Solid State Disk, erweiterte Arbeitstemperatur, Remote Access usw. für ihre Produkte zur Verfügung.



Embedded PC Advantages

Most embedded applications have little or nothing in common. Yet there are several embedded computer features that are commonly required by many different systems, regardless of the application. A set of these advantageous features such as Solid State Disk, enhanced temperature, remote access can be integrated into DIGITAL-LOGIC products.

Batterieloser Betrieb

Um eine batterieunabhängige Anwendung zu gewährleisten, speichern alle BIOS von DIGITAL-LOGIC die Setup-Parameter zusätzlich zum RTC-RAM auch in einem EEPROM ab. Für die Kundenapplikation sind im EEPROM 1024 Bytes reserviert. Die Batterie ist nur als Backup für die Echtzeit-Uhr notwendig.

Batteryless Operation

All DIGITAL-LOGIC products employ a serial EEPROM chip to store a backup copy of the RTC-RAM data and an extra 1024 byte area for OEM use. Batteryless operation allows the use of DIGITAL-LOGIC products in explosion proof designs.

Solid State Disk

Oft erlauben Umgebung oder Anwendungsart keinen Einsatz mechanischer Datenträger, wie Harddisk oder Floppydisk. Als Alternative ist eine Halbleiterdisk verfügbar, die eine Harddisk emuliert. Die Solid State Disk steht in den Varianten Onboard-Flashdisk, DiskOnChip, Compact-Flashkarte, IDE-Flashdisk oder PCCard-Flashkarte zur Auswahl.

Solid State Disk

True embedded computers have rigorous specifications for power consumption, weight and immunity to adverse environmental conditions. These may prohibit the use of mechanical storage media such as floppy and harddisk drives. DIGITAL-LOGIC provides several Solid State Disk solutions, such as onboard Flashdisk, DiskOnChip, Compact-Flashcard, IDE-Flashdisk or PC-Card-Flashdisk.

Arbeitstemperatur

DIGITAL-LOGIC-Standardprodukte sind für einen Temperaturbereich von -25°C bis +60°C und in einigen Fällen bis +70°C konzipiert. Ein erweiterter Temperaturbereich von -40°C bis +85°C ist auf Wunsch lieferbar.

Niedrige Stromaufnahme

Alle DIGITAL-LOGIC-Produkte verwenden speziell ausgewählte Bauteile, damit das Gesamtsystem möglichst stromsparend funktioniert. Daraus resultieren wesentliche Anwendungsvorteile für den Kunden, z.B. Verzicht auf eine aktive Kühlung, optimierte Betriebsdauer und -sicherheit.

Remote Access

Sämtliche Rechner sind mit einer Remote-Funktion versehen. Diese erlaubt die vollständige Kontrolle des Rechners (Tastatur, Video, Floppy) über die serielle Schnittstelle.

Extended Operating Temperature

DIGITAL-LOGIC products are available in a standard operating range of -25°C to +60°C, in some cases up to 70°C. On request, an extended temperature range of -40°C up to +85°C can be delivered.

Low-Power Consumption

All products integrate the latest technology to reduce overall power consumption. This prolongs the operating time of battery-powered mobile systems and increases the maximum operating temperature. In addition, reliability and MTBF are optimized.

Remote Access

For all DIGITAL-LOGIC products, the BIOS supports keyboard, screen and floppydisk redirection from the target to a serially connected host-PC.

DIGITAL-LOGIC's Schnittstellen

PCI Express™

Zusätzlich zum 32 Bit Parallel Bus bietet DIGITAL-LOGIC 4-16 PCI Express Lanes. Der Kunde kann somit seine Embedded Computer Applikation jederzeit mit der neusten PC-Leistung aufrüsten. Der PCI Express ist eine Low Pin Count Schnittstelle mit maximaler Bandbreite pro Pin. Daraus resultieren sehr kompakte Lösungen mit höchster I/O Leistung und optimierten Kosten. Die einfache Anbindung von Geräten mit hohem Bandbreiten-Anspruch oder sehr schnellem Video wird garantiert.

Serial ATA Interface

Serial ATA überbietet Parallel ATA bezüglich Leistung und Geschwindigkeit. Beginnend bei Transferraten von 150 Mbit/sek. ist eine zukünftige Steigerung bis 600 Mbit/sek. möglich.
SATA ist vollkommen protokoll- und softwarekompatibel zum Parallel ATA.

High Speed USB

DIGITAL-LOGIC Produkte bieten bis zu 8 USB V2.0 Ports. USB V2.0 überträgt mit einer Geschwindigkeit bis zu 480 Mbit/sek.

Digital Audio Interface

Zusätzlich zum Standard-Audio-Support bietet DIGITAL-LOGIC eine digitale Audio-Schnittstelle für den AC97 oder den High Definition Audio Codecs (HDA). Folgende Funktionen sind erhältlich:

- **DVD Audio**
- **Multi Stream Fähigkeit**
- **Telefonie (VoIP)**
- **Dolby 5.1/6.1/7.1**
- **Dynamic Connector Konfiguration**
- **Konferenz**
- **THX**
- **Verbesserung zur Energie-Einsparung**

Intel® Pentium® M / Celeron® M / Core™ Duo

Verfügbarkeit länger als 2010

Der Intel® Pentium® M / Celeron® M Prozessor verwendet eine neue Mikroarchitektur, um laufenden und zukünftigen Anforderungen des Embedded Computers gerecht zu werden. Ideal geeignet für den Einsatz in den Bereichen Kommunikation, Transaktionsterminals und industrielle Applikationen, vereinigt er fortschrittliche Prozessor-Technologie und Softwarekompatibilität mit den Vorgängern der Intel® Prozessor Familie.

Intel® Prozessors:

Product Number	Core speed (GHz)	FSB (MHz)	L2 Cache	max. Power Dissipation	VID	Package
130nm Process Technology						
Celeron® M 300 ULV	600 (MHz)	400	512kB	7.0W	1.004V	uFC-BGA
90nm Process Technology						
Celeron® M 373 ULV	1.0	400	512kB	5.5W	0.940V	uFC-BGA
Processor 120 ULV	800 (MHz)	400	0kB	5.0W	0.940V	uFC-BGA
90nm Process Technology						
Pentium® M 760	2.0	533	2MB	27W	1.116V	uFC-PGA
Pentium® M 745	1.8	400	2MB	21W	1.276V	uFC-PGA
Pentium® M 738 LV	1.4	400	2MB	12W	1.116V	uFC-BGA
65nm Process Technology						
Core Duo L2400 LV	2x 1.6	667	2MB	15W	1.187V	uFC-BGA
Celeron® M 423 ULV	1.0	533	1MB	5.5W	0.875V	uFC-BGA

DIGITAL-LOGIC's Interfaces

PCI Express™

DIGITAL-LOGIC offers up to 16 PCI Express lanes in addition to the 32 bit parallel PCI bus. With these lanes, up to 16 external devices can be connected. The customer therewith gets the opportunity to upgrade his embedded computer application with the newest PC performance. PCI Express is a low pin count interface with maximum bandwidth per pin. Cost optimization and very compact solutions with the highest I/O performance are the results. An easy connection of devices with a high demand for bandwidth or very fast video is guaranteed with the 4 PCI Express lanes.

Serial ATA Interface

Serial ATA outbids parallel ATA regarding performance and speed. Starting at a transfer rate of 150 Mbit/sek. a future increase of up to 600 Mbit/sek. is possible.
SATA is completely protocol and software compatible to parallel ATA.

High Speed USB

DIGITAL-LOGIC products offer up to 8 USB V2.0 ports. The transfer rate of USB V2.0 is up to 480 Mbit/sek.

Digital Audio Interface

In addition to standard audio support DIGITAL-LOGIC offers a digital audio interface for AC97 or High Definition Audio codec (HDA). Available are the following features:

_ DVD Audio
_ Multi Stream Capabilities
_ Telephony (VoIP)
_ Dolby 5.1/6.1/7.1
_ Dynamic Connector Configuration
_ Conferencing
_ THX
_ Power Saving Improvements

Intel® Pentium® M / Celeron® M

Availability over 2010

The Intel® Pentium® M / Celeron® M processor utilizes a new microarchitecture to meet the current and future demands of the embedded computer. Ideally suitable for the operation in communication, transaction terminals and industrial applications it combines advanced processor technology and software compatibility with previous members of the Intel® processor family.

AMD Processors Longlife status (availability over 2010)

Product	Core speed (MHz)	FSB internal	L2 Cache	Thermal	VID	Package
ELAN520	133	66MHz	0kB	2W	2.5V	BGA
GEODE LX800	500	333MHz	128kB	2W	1.2V	BGA

DIGITAL-LOGIC's Embedded BIOS

DIGITAL-LOGIC Embedded BIOS
Die herkömmlichen Funktionen eines Büro-Computers genügen im Normalfall den Embedded Computer-Benutzern nicht. Dank der langjährigen Erfahrung im Embedded Markt erweitert DIGITAL-LOGIC die BIOS-Funktionen.

Watchdog
- Der Watchdog generiert wahlweise NMI, Hardware Reset oder Software Interrupts
- Auslöser kann die Software sein und / oder eine externe OEM Hardware
- Er kann einzelne Ereignisse in wählbaren Zeitabständen feststellen und / oder auch eine Kombination dieser Ereignisse und erlaubt eine flexiblere Überwachung der Embedded Software Anwendung.

Kundenspezifische CMOS Einstellungen
Da viele Embedded Module Anwender ihre eigenen CMOS ROM-Default-Einstellungen benötigen, erlaubt das Embedded BIOS von DIGITAL-LOGIC das Speichern von kundenspezifischen Defaults im Flash Memory. Dies reduziert die Notwendigkeit kundenspezifischer BIOS Versionen.

Speicherung der Herstellerdaten
Das Flash-BIOS von DIGITAL-LOGIC enthält Informationen über Boards und Herstellung, wie z.B. Serienummer, Artikelnummer, Herstellungs- und Reparatur-Daten und Versionen. Der Zugriff auf alle BIOS-Informationen erfolgt mit Hilfe der DIGITAL-LOGIC API's.

Benutzer-Daten-Speicher
Da einige Embedded-Anwendungen die Speicherung kritischer und wichtiger Daten verlangen, bietet DIGITAL-LOGIC 1024Byte an permanentem Speicherplatz auf dem EEPROM.
Die gesicherten EEPROM-Daten sind immer verfügbar.

CMOS Battery Backup
Der EEPROM-Speicher enthält eine Backup-Kopie der BIOS CMOS-Einstellungen. Bei fehlender oder entladener RTC-Batterie startet das System trotzdem mit dem korrekten BIOS-Setup.

Kunden-Logo
Um die PC-Funktionalitäten in einer Embedded Computer Anwendung nicht anzuzeigen, kann das BIOS während des Aufstartens (POST) ein Kunden-Logo anzeigen, anstelle des herkömmlichen Diagnosebildschirms. Mit dem Embedded BIOS kann der Kunde sein eigenes OEM-Logo in das Standard-BIOS integrieren.

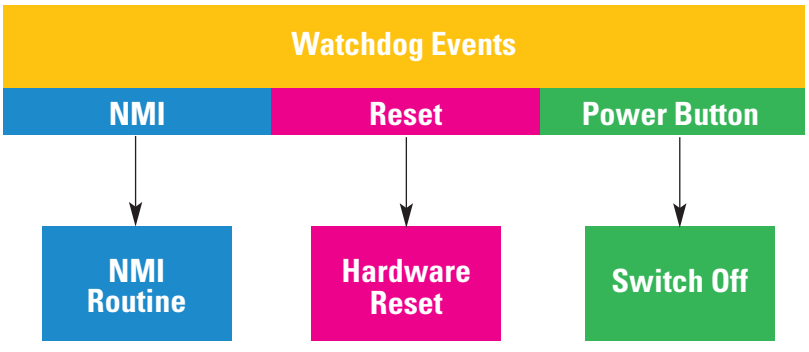
Hardware-Überwachung
Wichtig für die zuverlässige System-Funktionalität ist eine Überwachung der kritischen Komponenten (z.B. Lüfterdrehzahl, Spannungen, Temperaturen). Das DIGITAL-LOGIC BIOS beinhaltet hierzu bereits die nötige Unterstützung.

System Statistiken
Das BIOS registriert Laufzeitinformationen wie Bootanzahl, Fehleranzahl usw. Auf diese Informationen kann mit der Verwendung des API von DIGITAL-LOGIC zugegriffen werden.

ACPI Support
Das BIOS von DIGITAL-LOGIC unterstützt Power Management und System Konfiguration nach ACPI V1.1 und V2.0 Spezifikationen.

Windows Tool
Mit Hilfe des DIGITAL-LOGIC Windows Tools können alle BIOS- und Herstelldaten angezeigt werden.

Onboard Microcontroller
Der Microcontroller steuert unabhängig von der CPU einige der Embedded-Funktionen wie das Powermanagement, das System Monitoring oder den I²C Bus.



DIGITAL-LOGIC's Embedded BIOS

DIGITAL-LOGIC Embedded BIOS
The standard functions of office computers are usually not enough for embedded computer users. With a lot of experience in the embedded market, DIGITAL-LOGIC has extended their own BIOS functionality.

Watchdog
_ The Watchdog generates electively NMI, hardware reset or software interrupts
_ Triggers can be software and / or external OEM hardware
_ It can assert single events in selectable time intervals
_ It allows a more flexible monitoring of the embedded software application

Customer Specific CMOS Defaults
As a lot of embedded module users need their own CMOS ROM default settings, the embedded BIOS of DIGITAL-LOGIC allows the storage of customer specific defaults in the flash memory. As a result, the requirement for customized BIOS versions is reduced.

Storage of Manufacturer Data
DIGITAL-LOGIC's flash BIOS offers many information on boards and manufacturing. For example: serial number, article number, manufacturing- and repair date and versions. All information can be accessed through DIGITAL-LOGIC's API.

User Data Storage
As some embedded applications require storage of critical and important data, DIGITAL-LOGIC provides 1024 Bytes of non volatile storage in the EEPROM on every embedded product. The stored EEPROM data are always available.

CMOS Battery Backup
The EEPROM memory holds a backup copy of the BIOS CMOS settings. If there is no backup battery applicable or the battery has failed, the system starts with the correct BIOS setting out of the EEPROM memory.

Customer Logo
To hide the PC functionality in an embedded computer application, the BIOS can display a customer logo instead of a conventional diagnostic output during POST. The customer can now integrate an OEM logo into a standard BIOS all by himself, when using the DIGITAL-LOGIC embedded BIOS.

Hardware Monitoring
Monitoring of all critical components (e.g. fan speed, voltages, temperatures) increases the system reliability. The BIOS of DIGITAL-LOGIC already integrates the necessary routines.

System Statistics
The BIOS also keeps track of runtime information like boot and failure counter. This information can be accessed by using the API of DIGITAL-LOGIC.

ACPI Support
DIGITAL-LOGIC's BIOS supports power management and system configuration according to ACPI V1.1 and V2.0 specification.

Windows Tool
Embedded BIOS features and manufacturing data are accessible with a DIGITAL-LOGIC windows tool.

Onboard Microcontroller
The microcontroller controls independently some of the embedded features such as power management, system monitoring or the I^2C bus.

LCD / BIOS Anpassung

Zu jedem eingesetzten BIOS / LCD-BIOS besitzt DIGITAL-LOGIC den Source-Code, der im Bedarfsfall eine kundenspezifische Modifizierung erlaubt. LCDs werden gegen Pauschalvergütung an die DIGITAL-LOGIC-PCs angepasst. Von Seiten des Kunden sind dazu das LCD-Datenblatt, der LCD-Stecker sowie das betreffende Display, inklusive Backlight-Konverter erforderlich.

LCD/BIOS Adaption

DIGITAL-LOGIC has at its disposal the source code of all offered BIOS, which can be modified for customers, if necessary. For a flat rate LCDs can be adapted to DIGITAL-LOGIC products. For this the LCD-datasheet, the LCD-connector, as well as the LCD with backlight converter are required.

Intel® Embedded Video Driver Support

Feature, Version	Alternative Video Driver Version 5.0 (IEGD)	Standard Video Driver Version 5.0 (GMA)
Graphic Controller	i855GME + i915GM + i945GM	i855GME + i915GM + i945GM
Non Standard Resolution	**	*
Direct 3D/ Draw		
OpenGL		
Dual Independent		
Dual DVI		
Dual LVDS		
Runtime GUI		
Configuration GUI		
DVO Port Driver SDK		
Display Control API		
Rotation		
Centering / Scaling		
Port On / Off Control		
ACPI for Windows		
2nd Overlay Support		
Motion Compensation		
WHQL Certified		
CETK Certified		
Vista Support		
WinCE V5.0		
WinCE V6.0		

Not supported Supported V5.0 (since Q1/2006) Supported V6.0 (Q3/2006)

*Intel® Video BIOS/Treiber Standard-Auflösungen

*Intel® Video BIOS/Driver Standard Resolutions

Resolution	CRT	DVI	LVDS**
640 x 480	✓	✓	✓
800 x 600	✓	✓	✓
1024 x 768	✓	✓	✓
1152 x 864	✓		**
1280 x 720	✓		**
1280 x 768	✓	✓	**
1280 x 960	✓		**
1280 x 1024	✓	✓	✓
1400 x 1050	✓	**	**
1600 x 900	✓	**	**
1600 x 1200	✓	✓ 60Hz	✓
1856 x 1392	✓		
1920 x 1080 i	✓	✓ 60Hz	
1920 x 1200	✓		
1920 x 1440	✓		
2048 x 1536	✓		

**Die gewünschte Auflösung muss individuell an das LCD Display angepasst werden

**The requested resolution must be individually adapted to the LCD display

Driver Support

Device	DOS	WINME		WIN2000		WINNT4 / NT4e		WINXP / XPe		WINCE 4.1		Linux		Vx Works	QNX
	DLAG	DLAG	OS	DLAG	OS	DLAG	OS	DLAG	OS	DLAG	OS	DLAG	OS	DLAG	DLAG
LAN Intel 82551/ER	x			x		x		x		x		x			
ISDN		x		x		x		x	x						
FrameGrabber BT878				x		x		x				x			
DOC2000	x			x		x		x	x	x		x			x
PCMCIA TI 4520			x		x		x		x		x		x		
FireWire IEEE 1394			x		x				x				x		
ATI M7		x		x		x		x					x		
ATI M1		x		x		x		x					x		
VGA 855GME		x		x		x		x		x		x	x		
CX 23416/880				x				x				x			

DLAG = You will find these drivers on our product CDs

OS = These drivers are integrated in the original CD of the operating system

The Company

Embedded Computer Modules ECM

Embedded Computer Boards ECB

Customized Embedded Computers CEC

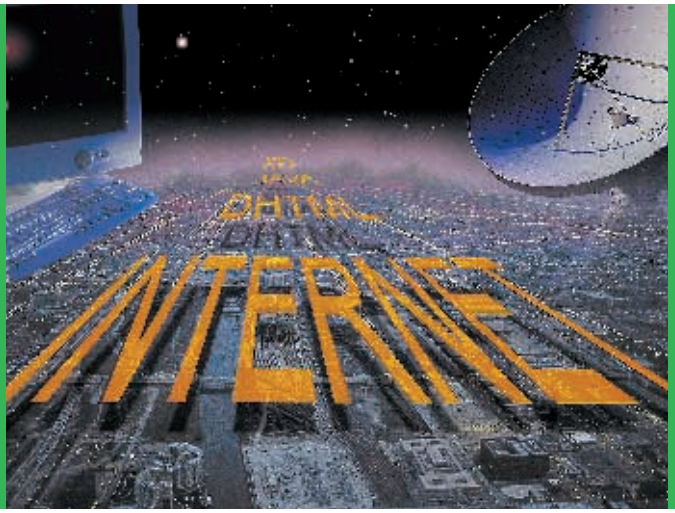
Technical Information

smartModule, smartModuleExpress

Vielfältige Einsatzbereiche

..... elektronische Telefonbücher, Internet-Anwendungen, Webpads, Settop-Boxen, Navigationssysteme, Passagierunterhaltung, Geld- und Billett-automaten, Infoterminals, medizinische Apparate, Analysegeräte, Industriesteuerungen, Prozessüberwachungen, mobile Datenterminals usw.....

Information



Internet

Der Embedded PC als Bauteil

smartModule sind Multichip-Module. Sie beinhalten die gesamte Funktionalität eines normalen PCs. Alle Signale und Schnittstellen sind auf einem einzigen Bus, dem smartBus480, zusammengefasst, sodass keinerlei Verkabelung notwendig wird. Der smartBus stellt gleichzeitig die Technologieschnittstelle dar. Die Applikation wird dadurch unabhängig von der dynamischen Entwicklung der PC-Architektur. Auch künftige smartModule bleiben mechanisch, elektrisch und funktional kompatibel.

The Embedded PC in One Component

smartModules are multichip-modules which integrate all standard PC-features. All signals and interfaces are connected to the smartBus480 connector.
No cables are needed to interface the smartModule. In addition, the smartBus480 is a technological interface. The customer's application is fully independent of any changes in the PC-architecture or devices. Future smartModules will be mechanically, electrically and functionally compatible.

Der neue Embedded Standard

**smartModule-PCs erlauben die einfachste, zeitsparendste und günstigste Integration eines Embedded PCs in eine kundenspezifische Anwendung. Das bedeutet weniger Entwicklungsaufwand, tiefere Designkosten und minimales Inbetriebnahmerisiko.
Einige smartModule besitzen eine integrierte Flashdisk, die bei Auslieferung mit einem ROM-DOS formatiert und boot-bereit ist.
Der Anwender steckt den smartModule-PC auf sein Trägerboard, schraubt das Modul mit vier Schrauben fest, schaltet die Versorgungsspannung ein und schon bootet der PC.**

The New Embedded Standard

By integrating a smartModule into a proprietary OEM-design, the need for multiple boards, cables, or the development of customized PC-design is eliminated.
smartModules are cost-effective, timesaving and safe alternatives to fully custom-designed PCs. Some smartModule integrate a bootable flashdisk, which is loaded and formatted with ROM-DOS. The smartModule must only be plugged into the application board and affixed with four screws. After that the power supply can be started and the PC will boot the integrated DOS.

Vorteile

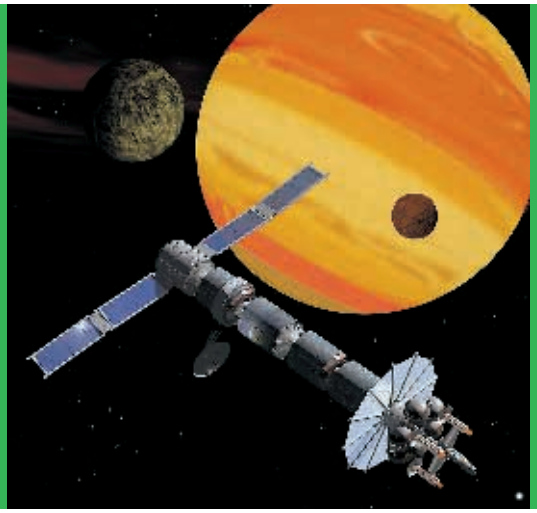
- **kurze Entwicklungszeit**
- **Reduktion der Herstellungskosten**
- **bestes Preis-/Leistungsverhältnis**
- **volle PC-Kompatibilität**
- **keine Verkabelungskosten**
- **höchste Systemzuverlässigkeit**
- **sehr robust**
- **vibrationsunempfindlich**
- **verschiedene Prozessorleistungen**
- **platzsparend**
- **sehr geringes Gewicht**
- **einfach austauschbar**

Advantages

- short design cycle
- reduced manufacturing costs
- best price/performance ratio
- fully PC-AT compatible
- no cables needed
- absolute reliability
- very rugged
- shock-resistant
- different performance levels
- smallest form factor
- lowest weight
- easy replacement

Typical Applications
.... Internet appliances, web-terminals, set-top-boxes, electronic telephone directories, navigation systems, passenger entertainment, cash and ticket systems, infoterminals, medical equipment and instruments, industrial technical controls, mobile data terminals etc.....

Sales



Communications

COMExpress

smartModuleExpress erfüllt die gesamte PC-Funktionalität. Die neuen, schnellen, seriellen Busse (PCIe, SATA, PEG) erfordern eine neue Steckerverbinder-Definition wie COMExpress. COMExpress ist ein offener Industriestandard von PICMG. Ein TYCO-Stecker mit einer max. Frequenz bis 6GHz wird als Übergabestecker für den COMExpress-Bus verwendet und ist somit ausreichend für alle heute bekannten LVDS Signale. DIGITAL-LOGIC bietet zudem eine zuverlässige thermische Anbindung und den kleinsten Formfaktor für Embedded Computermodule (COMs).

COMExpress

smartModuleExpress offers the full PC-Functionality. The new, fast, serial buses (PCIe, SATA, PEG) require all a new busconnector-definition like COMExpress. COMExpress is an open Industrial standard from PICMG. The used Tyco type connector with a max. frequency of up to 6GHz for the COMExpress-Bus is sufficient for all known LVDS signals. Furthermore DIGITAL-LOGIC provides as usual a reliable thermal connection and the smallest formfactor for COMs.

System-Design mit smartModulen:

1. **Zu jedem smartModule ist ein Development-Kit erhältlich. Dieses besteht aus Schemas, Dokumentation und einem betriebsbereit aufgebauten Development-Board mit smartModulen.**
2. **Der Kunde wird auf Wunsch vom DIGITAL-LOGIC-DesignIn Center beim Erstellen der Schaltpläne und bei der Systeminbetriebnahme unterstützt.**
3. **Der Kunde ist danach in der Lage, sein Elektronikboard selber zu produzieren und den PC wie ein normales Elektronikbauteil zu bestücken.**

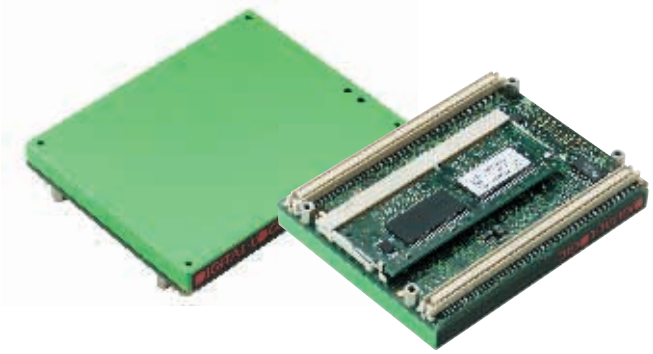
System-Design with smartModules:

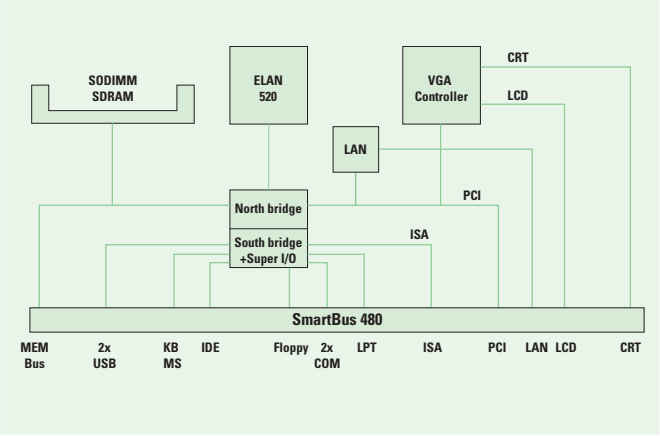
1. For each smartModule a Development-Kit is available, which includes all schematics, documentation, and a complete Development-Board with a ready-to-run smartModule.
2. Design of the application board with the help of the schematics, documentation, and DesignIn Center, if requested.
3. The customer produces the application board himself and mounts the smartModule on his electronic device.

SM520PCN (PC/PCX)
Datasheet

Beschreibung
Mit dem smartModule SM520PC bietet DIGITAL-LOGIC ein auf ELAN520 basierendes PC-Modul nach dem PC/480-Standard. Alle Peripherie-Schnittstellen inkl. USB, VGA und Ethernet (optional) werden über den smartBus480 in die kundenspezifische Umgebung integriert. Dank der geringen Leistungsaufnahme von 6W (typ.) kann auf eine aktive Kühlung verzichtet werden.

Description
With the smartModule SM520PC, based on the ELAN520, DIGITAL-LOGIC offers a PC-module according to the PC/480-standard. All PC-interfaces incl. USB, VGA and Ethernet (optional) can be integrated via the smartBus480 into a custom specific application. Because of the minimal power consumption of 6W (typ.), there is no need for active cooling.





Ordering Information

Article	Part No.	Description
SM520PC	805090	AMD ELAN520 – 133MHz, 0MB RAM, 2MB Flash, VGA (limited availibility), (not RoHS)
SM520PCX	805091	AMD ELAN520 – 133MHz, 0MB RAM, 2MB Flash, LAN, VGA (limited availibility), (not RoHS)
SM520PCN	805092	AMD ELAN520 – 133MHz, 0MB RAM, no VGA, no LAN
SMxxPC-DK	805025	Development-Kit without smartModule

Options	Part No.	Description
SDRAM32M-32Bit	890655	SODIMM SDRAM-Module 32MB
SDRAM64M-32Bit	890654	SODIMM SDRAM-Module 64MB
SDRAM128M-32Bit	890656	SODIMM SDRAM-Module 128MB

smartModule
Overview

Type	smartModule520PCN		
CPU	ELAN520		
BUS System	smartBus480		
PCI Express			
2nd Level Cache	-		
Clock (MHz)	133		
DRAM (MB)	SODIMM 16-128		
Power Management	-		
FSB	-		
Mouse, Keyboard	✓		
Floppy Interface	✓		
HD Interface P-ATA	✓ 1x		
COM1	TTL		
COM2	TTL		
LPT1	✓		
IrDA	external		
USB	2		
LAN (PCX)	optional (PCX)		
Video Controller (PC/PCX)	CT 69000		
Video Datapath (PC/PCX)	PCI		
Video Memory (PC/PCX)	2MB		
LCD Interface (PC/PCX)	24 Bit TFT 3V		
DVI Interface	-		
PCI Express Graphic	-		
Audio	-		
EEPROM Support	✓		
Watchdog	✓		
Power min. Clock	5V/1,2A (typ. 6W)		
Power max. Clock	no APM		
Cooling Type	passive		
Operating Temp.	-25°C to +60°C		
Extended Temp.	-40°C to +85°C		
Size (mm)	66 x 85 x 14		
Weight (gr)	90		
MTBF	> 200'000h		
Special Features	-	-	-
Operating Systems	WIN-CE, WIN98, NT4, Linux, QNX, RTXDOS		
Ordering Guide	smartModule520PCN		
Development-Kit	SMxxPC-DK		

Pb
ab 7/2006

Änderungen vorbehalten / Subject to change!

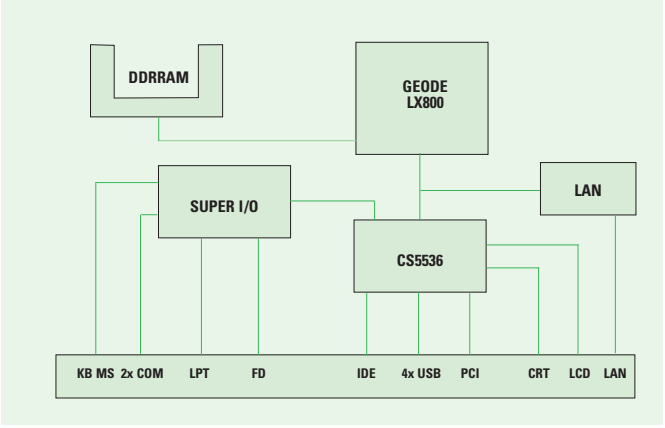
SM800PC (PCX)
Datasheet

Beschreibung

Der neue SM800PC bietet ein sehr gutes Preis-/Leistungsverhältnis bei einer minimalen Verlustleistung von nur 8 Watt. Dieser Computer On Module (COM) ist dank smartBus480 kompatibel zu smartModule-Computern.

Description

The new SM800PC offers a very good price-performance ratio, with a minimal power consumption of only 8 watt. Due to the smartBus480 this computer is compatible with all previous smartModul computers. All functions of a XP computer are integrated.



Ordering Information

Article	Part No.	Description
SM800PC	805210	AMD GEODE LX800 – 500MHz, 0MB RAM, VGA, AC97
SM800PCX	805212	AMD GEODE LX800 – 500MHz, 0MB RAM, VGA, LAN, AC97
SMxxPC-DK	805025	Development-Kit without smartModule

Options	Part No.	Description
DDRAM256M	890670	DDR-SODIMM-Modul 256MB
DDRAM512M	890671	DDR-SODIMM-Modul 512MB
DDRAM1GB	890672	DDR-SODIMM-Modul 1GB

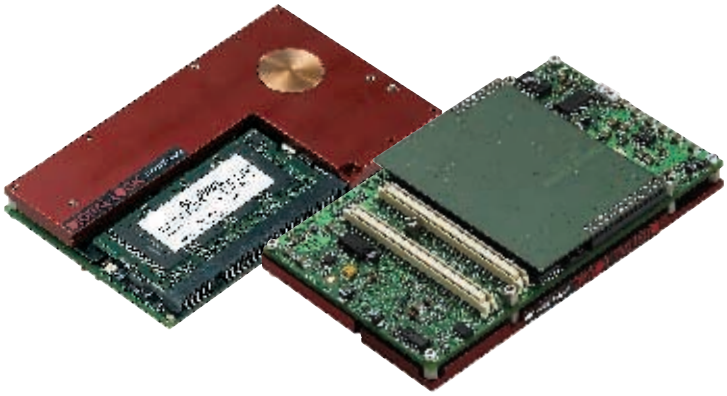
smartModule
Overview

Type	smartModule800PC/PCX		
CPU	AMD GEODE LX800		
BUS System	smartBus480		
PCI Express	-		
2nd Level Cache	128kB		
Clock (MHz)	500		
DRAM (MB)	DDR-SODIMM 128-1024		
Power Management	✓		
FSB	-		
Mouse, Keyboard	✓		
Floppy Interface	✓		
HD Interface P-ATA	✓ 1 x		
COM1	TTL		
COM2	TTL		
LPT1	✓		
IrDA	external		
USB	4x V2.0		
LAN	optional (PCX)		
Video Controller	GEODE, UMA		
Video Datapath	PCI		
Video Memory	16MB		
LCD Interface	24 Bit TFT 3V		
LCD Resolution	240 x 320 x up to 1600 x 1200		
PCI Express Graphic	-		
Audio	AC97-Stereo		
EEPROM Support	✓		
Watchdog	✓		
Power min. Clock	5V/3W (typ.)		
Power max. Clock	5V/8W (typ.)		
Cooling Type	passive		
Operating Temp.	-25°C to +60°C		
Extended Temp.	-40°C to +85°C		
Size (mm)	66 x 85 x 14		
Weight (gr)	90		
MTBF	> 200'000h		
Special Features	-	-	-
Operating Systems	WIN-CE, WIN98, NT4, Linux, QNX, RTXDOS		
Ordering Guide	smartModule800PC/PCX		
Development-Kit	SMxxPC-DK		

Pb
ab 7/2006

Änderungen vorbehalten / Subject to change!

SM855
Datasheet



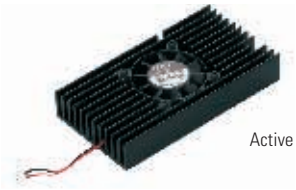
Beschreibung

Mit dem smartModule SM855 hat die smartFamilie ein neues Hochleistungsmitglied erhalten. Der Pentium® M-Prozessor garantiert hohe Leistung (bis zu 3.6GHz Pentium®4-Performance) und alle gängigen Peripherie-Schnittstellen sind verfügbar so z.B. 6x USB 2.0, LAN, Video etc. Der Grafik-Controller ist zu DirectX 9 kompatibel und der Speicher kann mittels SODIMM auf 1024MB ausgebaut werden. Die geringe Leistungsaufnahme und das flache Modulgehäuse vereinfachen das Kühlkonzept.

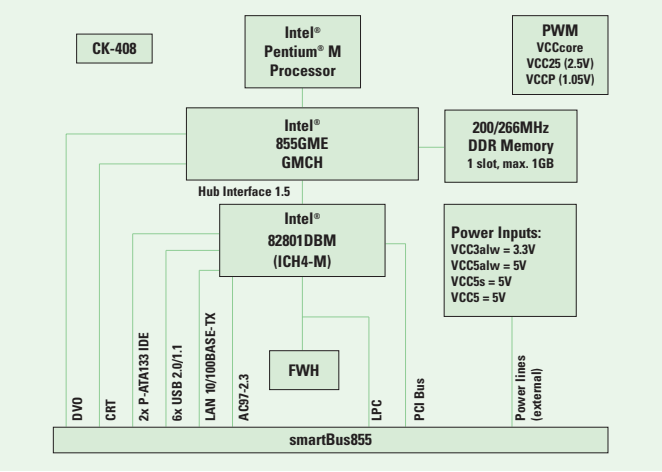
Description

With the smartModule SM855 the smartFamily has a powerful new member. Its Pentium® M processor offers high performance (up to 3.6GHz Pentium®4-performance) and all common peripheral interfaces are available eg. 6x USB 2.0, LAN, Video etc. The graphic controller is compatible to DirectX 9. With SODIMM the memory can be expanded up to 1024MB. Due to the minimal power consumption and flat housing, a reliable cooling concept can easily be implemented.

Passive Cooler



Active Cooler



Ordering Information

Article	Part No.	Description
SM855 – C120	805190	Intel® Processor C120 (0.8GHz), 0MB RAM, VGA, LAN, AC97
SM855 – C373	805163	Intel® Celeron® M-373 (1.0GHz), 0MB RAM, VGA, LAN, AC97
SM855 – P738	805164	Intel® Pentium® M-738 (1.4GHz), 0MB RAM, VGA, LAN, AC97
SM855 – P745	805168	Intel® Pentium® M-745 (1.8GHz), 0MB RAM, VGA, LAN, AC97
SM855 – DK	805027	Development Kit without smartModule

Options	Part No.	Description
DDRAM256M	890670	DDR-SODIMM-Modul 256MB
DDRAM512M	890671	DDR-SODIMM-Modul 512MB
DDRAM1GB	890672	DDR-SODIMM-Modul 1GB
Passive Cooler	805170	SM855 Cooler without fan
Active Cooler	805171	SM855 Cooler with fan

smartModule
Overview



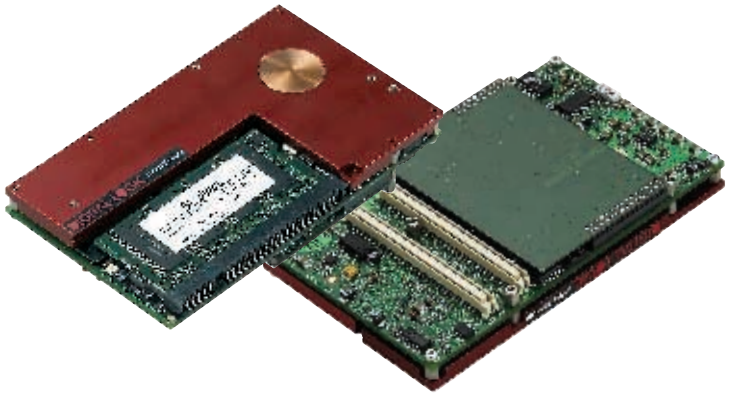

Type	SM855 – C120	SM855 – C373	SM855 – P738	SM855 – P745
CPU	Intel® Processor C120	Intel® Celeron® M ULV 373	Intel® Pentium® M LV 738	Intel® Pentium® M 745
BUS System	smartBus855	smartBus855	smartBus855	smartBus855
PCI Express	-	-	-	-
2nd Level Cache	0kB	512kB	2048kB	2048kB
Clock (GHz)	0.8	1.0	1.4	1.8
DRAM (MB)	DDR-SODIMM 256-1024	DDR-SODIMM 256-1024	DDR-SODIMM 256-1024	DDR-SODIMM 256-1024
Power Management	-	-	Speedstep	Speedstep
FSB	400MHz	400MHz	400MHz	400MHz
Mouse, Keyboard	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)
Floppy Interface	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)
HD Interface P-ATA	2x P-ATA	2x P-ATA	2x P-ATA	2x P-ATA
COM1	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)
COM2	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)
LPT1	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)
IrDA	multiplexed with COM2	multiplexed with COM2	multiplexed with COM2	multiplexed with COM2
USB	6x USB V2.0	6x USB V2.0	6x USB V2.0	6x USB V2.0
LAN	100/10 BASE-T (ext. PHY)	100/10 BASE-T (ext. PHY)	100/10 BASE-T (ext. PHY)	100/10 BASE-T (ext. PHY)
Video Controller	i855GME	i855GME	i855GME	i855GME
Video Datapath	32 Bit	32 Bit	32 Bit	32 Bit
Video Memory	16 – 64MB UMA	16 – 64MB UMA	16 – 64MB UMA	16 – 64MB UMA
LCD Interface*	18/24 Bit LVDS	18/24 Bit LVDS	18/24 Bit LVDS	18/24 Bit LVDS
DVI Interface*	DVO	DVO	DVO	DVO
PCI Express Graphic	-	-	-	-
Audio	AC97, 5.1	AC97, 5.1	AC97, 5.1	AC97, 5.1
EEPROM Support	✓	✓	✓	✓
Watchdog	✓	✓	✓	✓
Power min. Clock	typ. 10W (@ 0.8GHz)	typ. 12W (@ 1.0GHz)	typ. 10W (@ 0.6GHz)	typ. 10W (@0.6GHz)
Power max. Clock	typ. 10W (@ 0.8GHz)	typ. 12W (@ 1.0GHz)	typ. 20W (@ 1.4GHz)	typ. 26W (@ 1.8GHz)
Cooling Type	passive	active/passive	active/passive	active
Operating Temp.	-20°C to +70°C	-20°C to +60°C	-20°C to +60°C	-20°C to +40°C
Extended Temp.	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-20°C to +50°C
Size (mm)	117 x70 x 15	117 x70 x 15	117 x70 x 15	117 x70 x 15
Weight (gr)	110	110	110	110
MTBF	> 300'000h	> 300'000h	> 300'000h	> 200'000h
Special Features	-	-	-	-
Operating Systems	WIN2000, XP, Linux	WIN2000, XP, Linux	WIN2000, XP, Linux	WIN2000, XP, Linux
Ordering Guide	SM855 – C120	SM855 – C373	SM855 – P738	SM855 – P745
Development-Kit	SM855 – DK	SM855 – DK	SM855 – DK	SM855 – DK

* Auflösungen auf Seite 16
* Resolution on page 16

Pb ab 7/2006 | Pb ab 7/2006 | Pb ab 7/2006 | Pb ab 7/2006

Änderungen vorbehalten / Subject to change!

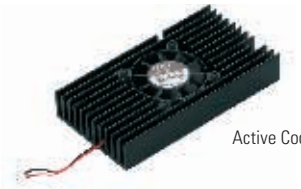
SM915
Datasheet

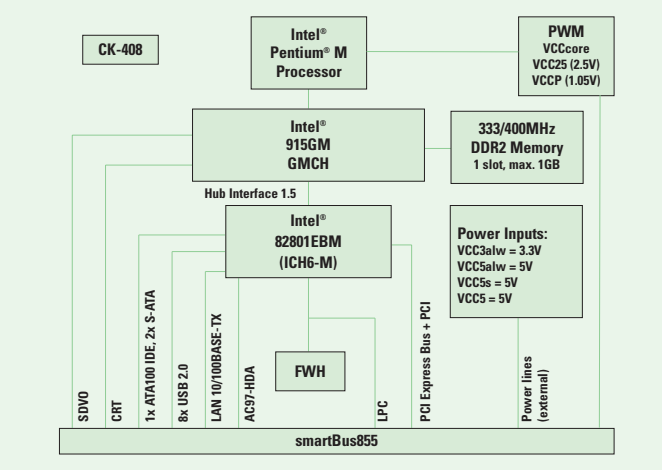


Beschreibung
Das smartModule915 ist ein funktions- und pinkompatibler Upgrade des SM855. Das SM915 stellt eine grössere Videoperformance und serielle Schnittstellen wie S-ATA und PCI-Express zur Verfügung.

Description
The smartModule915 is a function- and pin-compatible upgrade of the SM855. The SM915 offers a higher video performance and serial interfaces such as S-ATA and PCI express.


Passive Cooler


Active Cooler



Ordering Information

Article	Part No.	Description
SM915-P760	805180	Intel® Pentium® M-760 (2.0GHz), PCI-Bus, 0MB-RAM, VGA, LAN, AC97-HDA
SM915-DK	805029	Development Kit without smartModule

Option	Part No.	Description
DDR2RAM256M	890674	DDR2-SODIMM-Modul 256MB
DDR2RAM512M	890675	DDR2-SODIMM-Modul 512MB
DDR2RAM1GB	890676	DDR2-SODIMM-Modul 1GB
Passive Cooler	805370	SMX945 Cooler without fan
Active Cooler	805371	SMX945 Cooler with fan

smartModule
Overview

Type	SM915-P760		
CPU	Intel® Pentium® M 760		
BUS System	smartBus855		
PCI Express	4 lanes x 1		
2nd Level Cache	2048kB		
Clock (GHz)	2.0		
DRAM (MB)	256 – 1024		
Power Management	Speedstep IMVP-VI		
FSB	533MHz		
Mouse, Keyboard	PS/2 (SuperIO on LPC)		
Floppy Interface	✓(SuperIO on LPC)		
HD Interface P-ATA	1x P-ATA, 2x S-ATA		
COM1	✓(SuperIO on LPC)		
COM2	✓(SuperIO on LPC)		
LPT1	✓(SuperIO on LPC)		
IrDA	✓(SuperIO on LPC)		
USB	8x USB V2.0		
LAN	100/10 BASE-T (ext. PHY)		
Video Controller	i915GM		
Video Datapath	64 Bit		
Video Memory	16 – 256MB UMA		
LCD Interface*	2x 18 Bit LVDS		
DVI Interface*	SDVO		
PCI Express Graphic	yes		
Audio	AC97-HDA, 192kHz, 7.1 DTS		
EEPROM Support	✓		
Watchdog	✓		
Power min. Clock	typ. 10W (@ 0.8GHz)		
Power max. Clock	typ. 30W (@ 2.0GHz)		
Cooling Type	active		
Operating Temp.	0°C to +50°C		
Extended Temp.	-40°C to +50°C		
Size (mm)	117 x 70 x15		
Weight (gr)	110		
MTBF	> 200'000h		
Special Features	-	-	-
Operating Systems	DOS, Linux, XP		
Ordering Guide	SM915-P760		
Development-Kit	SM915-DK		

* Auflösungen auf Seite 16
* Resolution on page 16

Pb
ab 7/2006

Änderungen vorbehalten / Subject to change!

SMX945/SMX915
Datasheet

COM Express

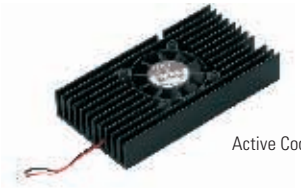
Beschreibung

Das smartModuleExpress 945 ist ein funktions- und form-kompatibler Upgrade des SM855. Der verwendete COMExpress bietet eine Standardisierung und Kompatibilität zu anderen COM-Herstellern. Das SMX945 stellt eine grössere Videoperformance und serielle Schnittstellen wie S-ATA und PCI-Express zur Verfügung.

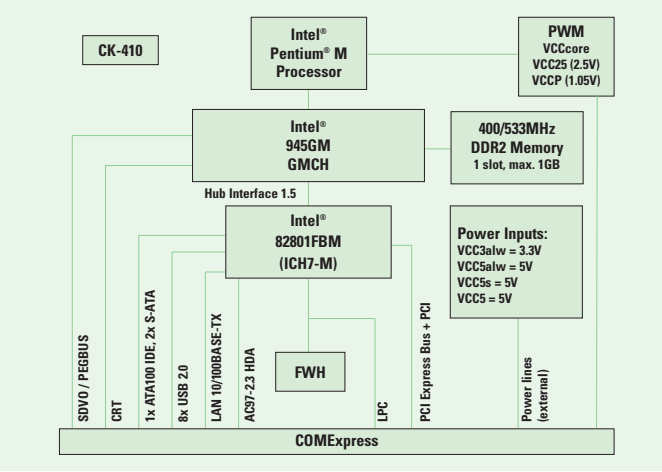
Description

The smartModuleExpress 945 is a function- and formfactor-compatible upgrade of the SM855. The bus is based on the standardized COMExpress definition and allows compatibility to other COM-products based on COMExpress bus.
The SMX945 offers a higher video performance and serial interfaces such as S-ATA and PCI express.

Passive Cooler



Active Cooler



Ordering Information

Article	Part No.	Description
SMX915-P760	805300	Intel® Pentium® M 760 (2.0GHz), 0MB RAM, VGA, LAN, i915GM, AC97-HDA
SMX945-L2400	805350	Intel® Core™ Duo LV (2x 1.6GHz), 0MB RAM, VGA, LAN, i945GM, AC97-HDA
SMX945-C423	805360	Intel® Celeron® M ULV 423 (1x 1.0GHz), 0MB RAM, VGA, LAN, i945GM, AC97-HDA
SM945-DK	805029	Development Kit without smartModule

Option	Part No.	Description
DDR2RAM256M	890674	DDR2-SODIMM-Modul 256MB
DDR2RAM512M	890675	DDR2-SODIMM-Modul 512MB
DDR2RAM1GB	890676	DDR2-SODIMM-Modul 1GB
Passive Cooler	805370	SMX945 Cooler without fan
Active Cooler	805371	SMX945 Cooler with fan

smartModuleExpress
Overview

COM Express

Type	SMX945-L2400	SMX945-C423	SMX915-P760
CPU	Intel® Core™ Duo LV L2400	Intel® Celeron® M ULV 423	Intel® Pentium® M 760
BUS System	COMExpress	COMExpress	COMExpress
PCI Express	16 lanes x 1	16 lanes x 1	16 lanes x 1
2nd Level Cache	2048kB	512kB	2048kB
Clock (GHz)	2x 1.6	1x 1.0	1x 2.0
DRAM (MB)	256 – 1024	256 – 1024	256 – 1024
Power Management	Speedstep IMVP-VI	-	Speedstep IMVP-IV
FSB	667MHz	533MHz	533MHz
Mouse, Keyboard	PS/2 (SuperIO on LPC)	PS/2 (SuperIO on LPC)	PS/2 (SuperIO on LPC)
Floppy Interface	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)
HD Interface	2x S-ATA, 1x P-ATA	2x S-ATA, 1x P-ATA	2x S-ATA, 1x P-ATA
COM1	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)
COM2	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)
LPT1	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)
IrDA	✓(SuperIO on LPC)	✓(SuperIO on LPC)	✓(SuperIO on LPC)
USB	8x USB V2.0	8x USB V2.0	8x USB V2.0
LAN	100/10 BASE-T (ext. PHY)	100/10 BASE-T (ext. PHY)	100/10 BASE-T (ext. PHY)
Video Controller	i945GM	i945GM	i915GM
Video Datapath	64 Bit	64 Bit	64 Bit
Video Memory	16 – 256 MB UMA	16 – 256 MB UMA	16 – 256 MB UMA
LCD Interface*	2x 18 Bit LVDS	2x 18 Bit LVDS	2x 18 Bit LVDS
DVI Interface*	SDVO	SDVO	SDVO
PCI Express Graphic	yes	yes	yes
Audio	AC97-HDA, 192kHz, 7.1 DTS	AC97-HDA, 192kHz, 7.1 DTS	AC97-HDA, 192kHz, 7.1 DTS
EEPROM Support	✓	✓	✓
Watchdog	✓	✓	✓
Power min. Clock	typ. 10W (@ 0.8GHz)	typ. 10W (@ 0.8GHz)	typ. 10W (@ 0.8GHz)
Power max. Clock	typ. 20W (@ 1.6GHz)	typ. 12W (@ 1.0GHz)	typ. 30W (@ 2.0GHz)
Cooling Type	active	active	active
Operating Temp.	0°C to +50°C	0°C to +50°C	0°C to +50°C
Extended Temp.	-40°C to +50°C	-40°C to +70°C	-40°C to +50°C
Size (mm)	117 x 70 x 15	117 x 70 x 15	117 x 70 x 15
Weight (gr)	110	110	110
MTBF	> 200'000h	> 200'000h	> 200'000h
Special Features	-	-	-
Operating Systems	DOS, Linux, XP	DOS, Linux, XP	DOS, Linux, XP
Ordering Guide	SMX945-L2400	SMX945-C423	SMX915-P760
Development-Kit	SMX945-DK	SMX945-DK	SMX915-DK

* Auflösungen auf Seite 16
* Resolution on page 16

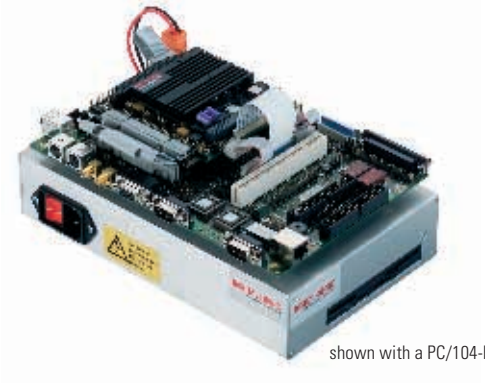
Pb ab 7/2006

Pb ab 7/2006

Pb ab 7/2006

Änderungen vorbehalten / Subject to change!

Development-Kit



shown with a PC/104-board*

Beschreibung

Das SMxxPC-DK ist ein leistungsfähiges Development-Kit (DK) zur Evaluierung der kompletten smartModule- und PC/104-Produktfamilie. Bestehend aus einem Trägerboard mit allen Peripherieschnittstellen, einem Metallgehäuse mit Stromversorgung und 3,5-Zoll-Floppy-Disk, bildet das Entwicklungskit eine hervorragende Basis, um die von den smartModule- und PC/104-Computern angebotenen Leistungsmerkmale zu testen.

Das Gerät wird in einem Koffer geliefert und besteht aus einem Basisboard, montiert auf einem Aluminiumgehäuse mit Diskettenlaufwerk und 220V/110V-Stromversorgung. Mitgeliefert werden Blockschemas, ein Handbuch, Treiber sowie ein Kabel-Kit.

SMxxPC-DK

Datasheet

shown with a smartModule*

Description

The SMxxPC-DK is a high-performance development kit (DK) for evaluating the entire smartModule and PC/104 product family. Consisting of a carrier board with all the peripheral interfaces and a metal case with a power supply and a 3.5-inch floppy disk drive. This development kit provides an outstanding basis for testing the features offered by the smartModule and PC/104-computer.

The equipment is supplied in a suit-case and consists of a baseboard mounted to an aluminium case with floppy diskdrive and 220V/110V power supply. The schematics of the baseboard are provided together with the manual, drivers, tools and cable-kit.

Technical Data

Dimensions	Length: 245mm; Width: 150mm; Heigth: 90mm	
Interfaces	Floppy:	26 pin, FFC
	IDE:	44 pin for HD, CD, DVD
	CompactFlash	Socket Typ I (optional)
	Video:	DSub Connector 15 pin
	TV-Input:	3 channels, SMA-connectors
	LCD:	36 Bit 3V interface
	Serial:	COM1 & COM2: DSub 9 pin
	Parallel:	LPT1: DSub 25 pin
	Keyboard/Mouse:	2 x PS/2 Connector
	USB:	Dual USB Connector
	LAN:	RJ-45 LAN Connector
	PCI Bus:	Standard PCI V2.1 Connector
	PC/104-*Plus*:	PCI Interface PC/104-*Plus*
	ISA Bus:	PC/104
	IrDA:	Infrared port
	Power Supply:	220/110VAC
	Diagnostic LED:	2 x 7 Seg. POD

Ordering Information

Article	Part No.	Description
SMxxPC-DK	805025	Development-Kit*
HD in DK	890007	2,5" harddisk drive 20GB, integrated in Evaluation-Kit

*Nicht inbegriffen: PC/104-Board oder smartModule
Not included: PC/104-Board or smartModule

The Company

Embedded Computer Modules ECM

Embedded Computer Boards ECB

Customized Embedded Computers CEC

Technical Information

MICROSPACE PC/104

Vielfältige Einsatzbereiche

..... Steuerungstechnik, mobile Telefon-/Internetsysteme, Embedded Webserver, Telefonsysteme, Auto- und Flugzeugnavigationssysteme, Zutrittssysteme, Verkaufsautomaten, Infoterminals, medizinische Analysegeräte, Prozessüberwachungen, mobile Datenterminals usw.....

Vending machines

Navigation

MICROSPACE PC/104

Für den Bau zuverlässiger Embedded PCs bietet DIGITAL-LOGIC eine umfassende Auswahl an MICROSPACE PC/104-Modulen. Findet der Kunde nicht das gewünschte Rechnermodul im Standardangebot, entwickelt und produziert DIGITAL-LOGIC individuelle Rechnersysteme. Um Kunden den Einstieg in die PC/104-Welt zu erleichtern, sind zu allen CPU-Modulen komplette Kabelsätze lieferbar.

Makro-Komponente

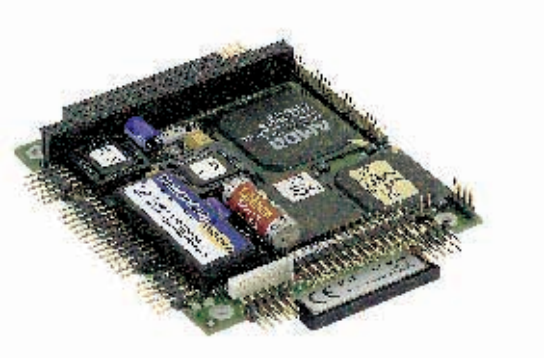
Als Alternative zum Standalone PC/104-Board können die PC/104-Boards direkt in die Applikationselektronik integriert werden, quasi als Makro-Komponente. Alle DIGITAL-LOGIC PC/104-Rechner sind in der «stackthrough»-Version lieferbar. Dies ermöglicht eine direkte Integration in die Anwenderelektronik und eliminiert gleichzeitig die Verkabelungskosten. Die Signalverbindungen sind robust und äusserst zuverlässig.

MICROSPACE PC/104

Choose from the extensive line of MICROSPACE PC/104 modules as PC-building blocks for reliable embedded computers. The range of different boards is very large. If a suitable computer board does not exist, DIGITAL-LOGIC is also able to develop and produce specific boards. DIGITAL-LOGIC supplies complete cable-kits for all CPU modules, thus providing easy entry into the PC/104 world.

Macro Components

Cable-costs for connecting the PC/104 stack with application specific electronics are becoming increasingly important. Therefore the PC/104 module can be directly integrated into the application-electronics as a macro-module. Since all DIGITAL-LOGIC PC/104 modules are available as stack-through solutions no cables are used and the signal connections are highly reliable.



Typical Applications
.... control technology, mobile telephone/Internet systems, embedded webservers, telephone systems, car and aircraft navigation systems, electronic access systems, vending machines, information terminals, medical analysis equipment, industrial technical controls, mobile data terminals etc.....

Kundenspezifisch bestückte PC/104-Produkte

Ab 100 Stück pro Lieferung können PC/104-Rechner von DIGITAL-LOGIC kundenspezifisch bestückt und damit individuelle Kundenwünsche abgedeckt werden.
Z. B. Austausch eines Steckertyps, Wechsel des I/O-Steckverbinders von der Vorder- auf die Rückseite, spezielle Platzierungen, kundenspezifische Unterstützung von Flachbildschirmen usw. sind möglich.

PC/104-Bus-Definition siehe Internet-Seite www.digitallogic.com.

Semi-Custom Products

From 100 pieces per lot, DIGITAL-LOGIC products can be custom-assembled to fit customers' exact needs. Any reasonable request will be considered, such as replacing connector types, moving I/O connectors from the front to the back of the board, specific settings and custom flat panel support can also be provided.

Please check website www.digitallogic.com for a detailed description of the PC/104 bus.

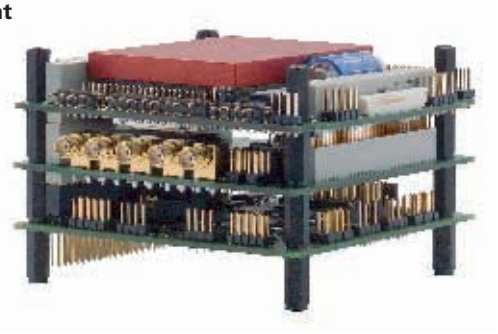
Standalone Stack PC/104

PC/104-Formfaktor-Module enthalten alle Funktionen eines Embedded Computers.

Beispiel: Netzwerksystem

MSMT3SEG	**CPU mit Video und LAN**
MSMG104+	**Framegrabber**
MSMX104	**4-COM**

Dieser Module-Stack beansprucht nur wenig Platz und kann mit Befestigungsbolzen direkt in die Anwendung integriert werden.



Standalone Module-Stacks

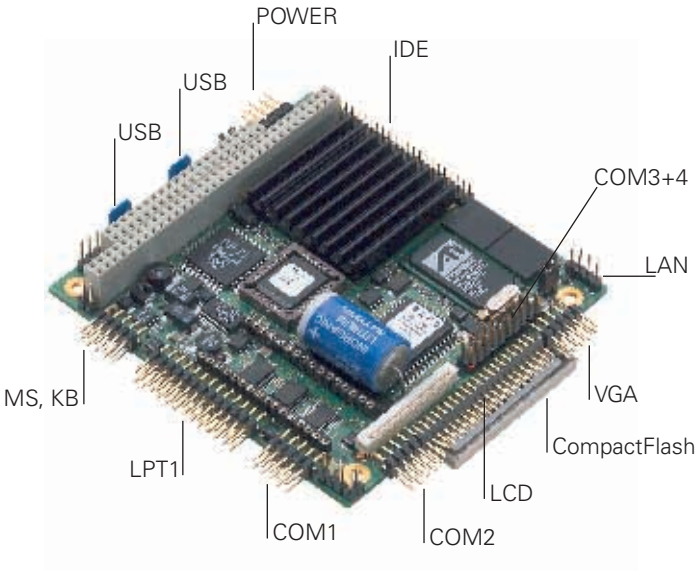
All functions of the embedded computers are featured on PC/104 form factor modules.

Example: Network system

MSMT3SEG	CPU with Video and LAN
MSMG104+	Framegrabber
MSMX104	4-COM

Such a module-stack takes up little space and can be bolted directly inside the application.

MSM586SEN/SEG/SL
Datasheet



Beschreibung

Der MICROSPACE MSM586SL/SEN/SEG verfügt über alle üblichen Schnittstellen eines Standard-PCs sowie über viele Zusatzfunktionen wie 4 x COMs, DiskOnChip-Sockel, programmierbarer Watchdog, LAN und Compact-Flash-Halter. Einige der seriellen Interfaces sind optional als RS422/485 oder TTL lieferbar. Der nur beim MSM586SL fest aufgelötete Hauptspeicher macht das Rechnermodul unempfindlich gegen Vibrationen und Stösse. Ein richtiger «Alleskönner» in Embedded Anwendungen.

Description

The MICROSPACE PC/104 MSM586SL/SEN/SEG has all the usual interfaces provided by a standard PC and many additional features such as 4xCOMs, DiskOnChip-socket, programmable Watchdog, LAN and Compact-Flash socket. Some of the serial interfaces are optionally available as RS422/485 or TTL. The soldered SDRAM of the MSM586SL makes this computer module insensitive to vibrations and shocks. Its unique functional diversity makes this computer board a real «all-rounder» in embedded applications.

Ordering Information

Article	Part No.	Description
MSM586SN	801340	AMD ELAN520–133MHz, 0MB SDRAM, no Video, no CF, no LAN
MSM586SV	801342	AMD ELAN520–133MHz, 0MB SDRAM, Video, no CF, no LAN
MSM586SEN	801350	AMD ELAN520–133MHz, 0MB SDRAM, no Video, LAN
MSM586SEG	801370	AMD ELAN520–133MHz, 0MB SDRAM, Video (VGA), LAN
MSM586SL-32	801344	AMD ELAN520–133MHz, soldered 32MB SDRAM, no Video, no LAN, no CF
MSM586SL-64	801345	AMD ELAN520–133MHz, soldered 64MB SDRAM, no Video, no LAN, no CF
SMxxPC-DK	805025	Development-Kit without PC/104-CPU

Accessories	Part No.	Description
MSM-CK	802605	PC/104-Cable-Kit
MSFLOPPY	891001	3.5" Micro-Floppydrive (26 pin)
MSFDCK	802600	Microfloppy cable (26 pin)

Option	Part No.	Description
SDRAM32M-32Bit	890655	SODIMM SDRAM-Module 32MB
SDRAM64M-32Bit	890654	SODIMM SDRAM-Module 64MB
SDRAM128M-32Bit	890656	SODIMM SDRAM-Module 128MB
Option: -R1	807331	Option COM1 as RS485/422 Halfduplex
Option: -R2	807332	Option COM2 as RS485/422 Halfduplex
Option: -R3	807333	Option COM3 as RS485/422 Halfduplex
Option: -R4	807334	Option COM4 as RS485/422 Halfduplex

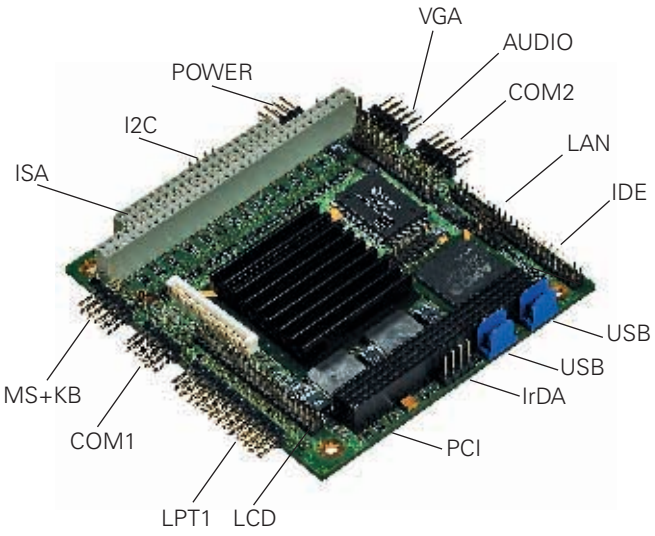
MICROSPACE PC/104 ELAN520

Overview

Type	MSM586SL	MSM586SEN	MSM586SEG
CPU	ELAN520	ELAN520	ELAN520
Bus-System	ISA/PCI	ISA/PCI	ISA/PCI
Expansion Interface	ISA	ISA	ISA
2nd Level Cache	-	-	-
Performance (MHz)	133	133	133
DRAM Min-Max (MB)	soldered 32/64MB	SODIMM 32-128MB SDRAM	SODIMM 32-128MB SDRAM
DiskOnChip Socket	✓	✓	✓
CompactFlash Socket	-	✓	✓
Mouse, Keyboard	✓	✓	✓
BootDrive	FD, HD, DOC	FD, HD, DOC	FD, HD, DOC
Floppy Interface	✓	✓	✓
IDE Interface P-ATA	✓ LB	✓ LB	✓ LB
COM1	RS232C / 485 / 422 / TTL	RS232C / 485 / 422 / TTL	RS232C / 485 / 422 / TTL
COM2	RS232C / 485 / 422 / TTL	RS232C / 485 / 422 / TTL	RS232C / 485 / 422 / TTL
COM3	RS232C / 485 / 422 / TTL	RS232C / 485 / 422 / TTL	RS232C / 485 / 422 / TTL
COM4	RS232C / 485 / 422 / TTL	RS232C / 485 / 422 / TTL	RS232C / 485 / 422 / TTL
LPT1	✓	✓	✓
IrDA	external	external	external
USB (V1.1)	-	(option)	2 x
LAN	-	100/10BASE-T	100/10BASE-T
Audio	-	-	-
Video Controller	-	-	ATI M1
Video Datapath	-	-	PCI
Video Memory	-	-	8MB
LCD Interface	-	-	24 Bit TFT 3V
LCD Resolution	-	-	1280 x 1024 x 256
Video Input	-	-	-
EEPROM Support	✓	✓	✓
Watchdog	✓	✓	✓
Power Normal	5V/700mA (typ.@32MB)	5V/700mA (typ.@32MB)	5V/1400mA (typ.@32MB)
Power Suspend	-	-	-
Cooling Type	passive	passive	passive
Operating Temp.	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C
Extended Temp.	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Weight (gr)	80	80	100
MTBF	> 200'000h	> 200'000h	> 200'000h
Ordering Guide			
with 32 MB DRAM	MSM586SL-32	-	-
with 64 MB DRAM	MSM586SL-64	-	-
without DRAM	-	MSM586SEN	MSM586SEG
Status	for new designs	for new designs	for new designs
	Pb ab 7/2006	Pb ab 7/2006	Pb ab 7/2006

Änderungen vorbehalten / Subject to change!

MSM800SEV
Datasheet



Beschreibung

Der MICROSPACE MSM800SEV bietet alle Funktionen eines XP-/LINUX-Rechners, mit einem sehr gutem Preis-/ Leistungsverhältnis. Der MSM800SEV kann über ISA (PC/104) und PCI (PC/104-*Plus*)-BUS erweitert werden. Die geringe Verlustleistung erlaubt, trotz 500MHz Performance, eine passive Kühlung.

Description

The MICROSPACE MSM800SEV offers all functions of a XP-/LINUX -computer with a very good price-performance ratio. The MSM800SEV can be extended over an ISA (PC/104)- and PCI (PC/104-*Plus*)-BUS. The minimal power loss allows a passive cooling, despite 500MHz performance

Ordering Information

Article	Part No.	Description
MSM800SEV	802100	AMD GEODE LX800, 500MHz, 0MB DDRAM, Video, Audio, LAN, no CF, no PC/104-*Plus* connector assembled

Accessories	Part No.	Description
MSM-CK	802605	PC/104-Cable-Kit
MSFLOPPY	891001	3.5" Micro-Floppydrive (26 pin)
MSFDCK	802600	Microfloppy cable (26 pin)
MSM855-LANCON	803020	LAN Cable with Connectorprint and RTC-Battery

Option	Part No.	Description
Option: -L+	807006	PC/104-*Plus*, conncetor long
Option: -P+	807005	PC/104-*Plus*, connector short
Option: -CF	807008	CompactFlashSocket (without Opt. -L)
DDRAM256M	890670	SODIMM DDRAM-Modul 256MB
DDRAM512M	890671	SODIMM DDRAM-Modul 512MB
DDRAM1GB	890672	SODIMM DDRAM-Modul 1GB

MICROSPACE PC/104 GEODE LX800

Overview

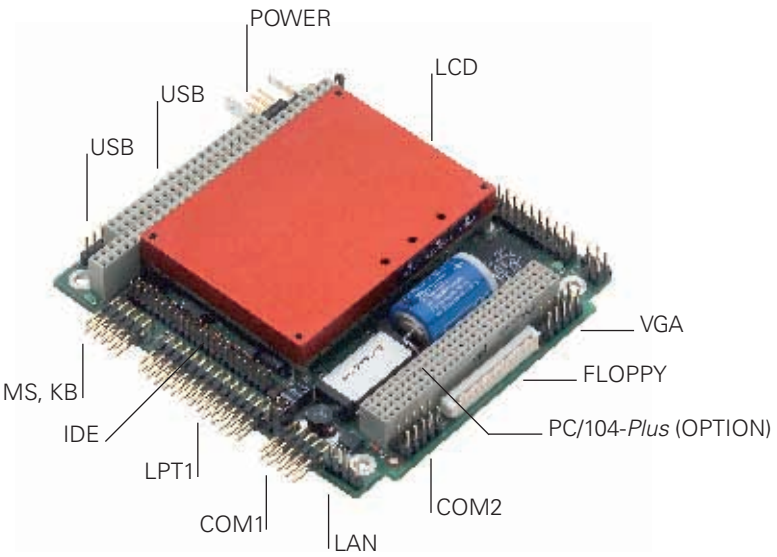
Type	MSM800SEV		
CPU	AMD GEODE LX800		
Bus-System	PCI/ISA		
Expansion Interface	PCI/ISA		
2nd Level Cache	128kB		
Performance (MHz)	500		
DRAM Min-Max (MB)	128-1024		
DiskOnChip Socket	-		
CompactFlash Socket	option		
Mouse, Keyboard	✓		
BootDrive	FD, HD		
Floppy Interface	✓		
IDE Interface P-ATA	✓, 1x		
COM1	RS232C		
COM2	RS232C		
COM3	-		
COM4	-		
LPT1	✓		
IrDA	external		
USB V2.0	2x		
LAN	10/100 BASE-T		
Audio	AC 97 (Stereo)		
Video Controller	Geode		
Video Datapath	32 Bit		
Video Memory	UMA, 16MB		
LCD Interface	18 / 24 Bit		
LCD Resolution	240 x 320 up to 1600 x 1200		
Video Input	-		
EEPROM Support	✓		
Watchdog	✓		
Power Normal	5V/8W (typ.@256MB)		
Power Suspend	3W		
Cooling Type	passive		
Operating Temp.	-25°C to +70°C		
Extended Temp.	-40°C to +85°C		
Weight (gr)	80		
MTBF	> 200'000h		
Ordering Guide	MSM800SEV		
Status	for new designs		

Pb
ab 7/2006

Änderungen vorbehalten / Subject to change!

MSMT3SEN/SEG/XEN/XEG
Datasheet

MICROSPACE PC/104-*Plus*



Beschreibung

Der MICROSPACE PC/104 MSMT3SEx/XEx verfügt über alle üblichen Schnittstellen eines Standard-PCs. Durch den Einsatz eines smartCoreT3 CPU-Moduls beträgt die Performance 650MHz. Der Videocontroller ATI-M1 mit 8MB integriertem Video-RAM macht den Rechner DVD-abspieltauglich. Der MSMT3 ist erhältlich mit gelöteten RAM (XEN/XEG) sowie mit SODIMM-Halter (SEN/SEG).

Description

The MICROSPACE PC/104 MSMT3SEx/XEx has all the usual interfaces provided by a standard PC. The smartCoreT3 CPU module allows a performance of 650MHz. The ATI-M1 Video Controller with 8MB integrated Video RAM makes the computer capable of playing DVD's. The MSMT3 is available either with soldered RAM (XEN/XEG) or with SODIMM-Socket (SEN/SEG).

Ordering Information

Article	Part No.	Description
MSMT3SEN	801872	PC/104-*Plus* without smartCoreT3, 0MB SODIMM, no Video, LAN, COM 1/2, no PC/104-*Plus* connector assembled
MSMT3SEG	801870	PC/104-*Plus* without smartCoreT3, 0MB SODIMM, Video, LAN, COM 1/2/3/4, no PC/104-*Plus* connector assembled
MSMT3XEN-64	801972	PC/104-*Plus* without smartCoreT3, 64MB soldered SDRAM, COM 1/2, no Video, LAN, no PC/104-*Plus* connector assembled
MSMT3XEG-64	801895	PC/104-*Plus* without smartCoreT3, 64MB soldered SDRAM, COM 1/2, Video, LAN, no PC/104-*Plus* connector assembled
smartCoreT3-650	805145	650MHz, Intel® Celeron® Tualatin
SMxxPC-DK	805025	Development-Kit without PC/104-CPU

Article	Part No.	Description
MSM-CK	802605	PC/104-Cable-Kit
MSFLOPPY	891001	3.5" Micro-Floppydrive (26 pin)
MSFDCK	802600	Microfloppy cable (26 pin)
MSLAN-CK	802604	Ethernet Cable

Option	Part No.	Description
SDRAM32M	890645	SODIMM SDRAM-Module 32MB
SDRAM64M	890644	SODIMM SDRAM-Module 64MB
SDRAM128M	890646	SODIMM SDRAM-Module 128MB
SDRAM256M	890647	SODIMM SDRAM-Module 256MB
Option -L+	807006	PC/104-*Plus*, connector long
Option -P+	807005	PC/104-*Plus*, connector short
Option -CF	807008	CompactFlashSocket (without Option -L)

MICROSPACE PC/104-*Plus* Pentium®

Overview

Type	MSMT3SEN	MSMT3SEG	MSMT3XEN	MSMT3XEG
CPU	smartCoreT3	smartCoreT3	smartCoreT3	smartCoreT3
Bus-System	PCI	PCI	PCI	PCI
Expansion Interface	PCI/ISA	PCI/ISA	PCI/ISA	PCI/ISA
2nd Level Cache	256kB	256kB	256kB	256kB
Performance (MHz)	650	650	650	650
DRAM Min-Max (MB)	SODIMM 32-256MB SDRAM	SODIMM 32-256MB SDRAM	soldered 32/64MB SDRAM	soldered 32/64MB SDRAM
DiskOnChip Socket	-	-	-	-
CompactFlash Socket	optional	optional	optional	optional
Mouse, Keyboard	✓	✓	✓	✓
BootDrive	FD, HD, CD, USB, LAN	FD, HD, CD, USB, LAN	FD, HD, CD, USB, LAN	FD, HD, CD, USB, LAN
Floppy Interface	✓	✓	✓	✓
IDE Interface P-ATA	✓, 1x	✓, 1x	✓, 1x	✓, 1x
COM1	RS232C	RS232C	RS232C	RS232C
COM2	RS232C	RS232C	RS232C	RS232C
COM3	-	RS232C / RS485	-	-
COM4	-	RS232C / RS485	-	-
LPT1	✓	✓	✓	✓
IrDA	external	external	external	external
USB V1.1	2	2	2	2
LAN	100/10BASE-T	100/10BASE-T	100/10BASE-T	100/10BASE-T
Audio	-	-	-	-
Video Controller	-	ATI M1	-	ATI M1
Video Datapath	-	PCI	-	PCI
Video Memory	-	8 MB	-	8 MB
LCD Interface	-	24 Bit TFT 3V	-	24 Bit TFT 3V
LCD Resolution	-	1280 x 1024 x 256	-	1280 x 1024 x 256
Video Input	-	-	-	-
EEPROM Support	-	✓	✓	✓
Watchdog	✓	✓	✓	✓
Power Normal	5V/9W (32MB) (typ.@650MHz)	5V/10W (32MB) (typ.@650MHz)	5V/9W (32MB) (typ.@650MHz)	5V/10W (32MB) (typ.@650MHz)
Power Suspend	5V/2W(32MB) (typ.)	5V/2W(32MB) (typ.)	5V/2W(32MB) (typ.)	5V/2W(32MB) (typ.)
Cooling Type	active	active	active	active
Operating Temp.	-25°C to +50°C	-25°C to +50°C	-25°C to +50°C	-25°C to +50°C
Extended Temp. with 650MHz	-40°C to +50°C	-40°C to +50°C	-40°C to +50°C	-40°C to +50°C
Weight (gr)	170	170	170	170
MTBF	> 200'000h	> 200'000h	> 200'000h	> 200'000h
Ordering Guide	MSMT3SEN	MSMT3SEG	MSMT3XEN	MSMT3XEG
Status	for new designs	for new designs	for new designs	for new designs
	Pb ab 7/2006	Pb ab 7/2006	Pb ab 7/2006	Pb ab 7/2006

Änderungen vorbehalten / Subject to change!

MICROSPACE PC/104-*Plus*

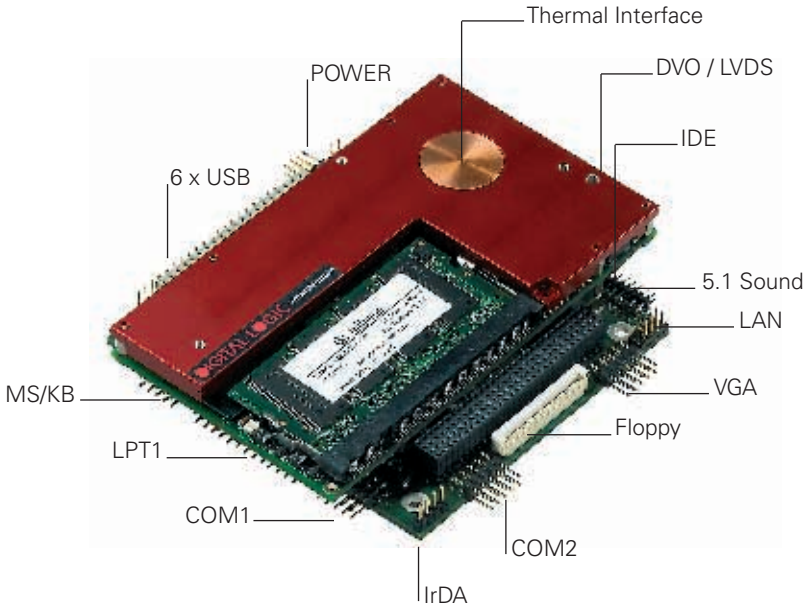
MSM855
Datasheet

Beschreibung

Mit den MSM855 hat die MICROSPACE-PC/104-*Plus*-Serie neue Hochleistungsmitglieder erhalten. Der Pentium® M Prozessor garantiert hohe Leistung (bis zu 3.6GHz Pentium® 4-Performance) und alle gängigen Peripherie-Schnittstellen sind verfügbar, wie z. B. 6x USB 2.0, LAN, Video etc. Der Grafik-Controller ist zu DirectX 9 kompatibel und der Speicher kann mittels SODIMM auf 1024MB ausgebaut werden.

Description

With MSM855 the MICROSPACE-PC/104-*Plus* series has powerful new members. Its Pentium® M processor offers high performance (up to 3.6GHz Pentium® 4 performance) and all common peripheral interfaces are available eg. 6x USB 2.0, LAN, Video etc.
The graphic controller is compatible to DirectX 9. With SODIMM the memory can be expanded up to 1024MB.



Ordering Information

Article	Part No.	Description
MSM855	803010	PC/104-*Plus* board without SM855, 0MB RAM, no PC/104-*Plus* connector, incl. 803020 MSM855-LANCON
SM855-C120	805190	Intel® Processor C120 (0.8GHz), 0MB RAM, VGA, LAN, AC97
SM855-C373	805163	Intel® Celeron® M-373 (1.0GHz), 0MB RAM, VGA, LAN, AC97
SM855-P738	805164	Intel® Pentium® M-738 (1.4GHz), 0MB RAM, VGA, LAN, AC97
SM855-P745	805168	Intel® Pentium® M-745 (1.8GHz), 0MB RAM, VGA, LAN, AC97

Accessories	Part No.	Description
MSM855-CKCON	803030	Cable-Kit and Connectorprint
MSFLOPPY	891001	3.5" Micro-Floppydrive (26 pin)
MSFDCK	802600	Microfloppy cable (26 pin)
MSM855-LANCON	803020	LAN Cable with Connectorprint and RTC-Battery
MSM855-DVICON	803040	Converter from DVO to DVI + LVDS (18 Bit) + TV-Out

Option	Part No.	Description
Option -L+	807006	PC/104-*Plus*, connector long
Option -CF	807008	CompactFlashSocket (without Option -L)
DDRAM256M	890670	DDR-SODIMM Modul 256MB
DDRAM512M	890671	DDR-SODIMM Modul 512MB
DDRAM1GB	890672	DDR-SODIMM-Modul 1GB
Passive Cooler	805170	SM855 Cooler without fan
Active Cooler	805171	SM855 Cooler with fan


MSM855-LANCON

MSM855-DVICON

MICROSPACE PC/104-*Plus* Pentium®

Overview

Type	**MSM855**		
CPU	SM855-xxxx		
Bus-System	PCI		
Expansion Interface	PCI/ISA		
2nd Level Cache	0 – 2048kB		
Clock (GHz)	0.6 –1.8		
DRAM Min-Max (MB)	DDR-SODIMM 256-1024MB		
Power Management	Speedstep (only Pentium® Mxxx)		
DiskOnChip Socket	-		
CompactFlash Socket	optional		
Mouse, Keyboard	✓		
BootDrive	FD, HD, CD, USB V2.0, LAN		
Floppy Interface	1x		
IDE Interface	1x P-ATA		
COM1	V24 / RS232C		
COM2	V24 / RS232C		
COM3	-		
COM4	-		
LPT1	✓		
IrDA	multiplexed with COM2		
USB V2.0	6x		
LAN	100/10BASE-T		
Audio	AC97, 5.1 Sound		
Video Controller	i855GME		
Video Datapath	32 Bit		
Video Memory	16 – 256MB		
TV Output	optional		
TV Resolution	-		
CRT Video*	analog XVGA		
LCD Interface*	DVO / LVDS		
LCD Resolution	1600 x 1200		
Video Input	-		
EEPROM Support	✓		
Watchdog	✓		
Power min. Clock	typ. 5V / 12W (@0.8GHz)		
Power max. Clock	typ. 5V / 25W (@1.4GHz)		
Cooling Type	passive/active		
Operating Temp.	-25°C to +60°C		
Extend. Temp. with 800MHz	-40°C to +70°C		
Extend. Temp. with 1100MHz	-		
Extend. Temp. with 1400MHz	-40°C to +70°C		
Extend. Temp. with 2000MHz	-		
Weight (gr)	250		
MTBF	> 200'000h		
Ordering Guide	MSM855 + SM855		
Status	for new designs		

* Auflösungen auf Seite 16
* Resolution on page 16

Pb
ab 7/2006

Änderungen vorbehalten / Subject to change!

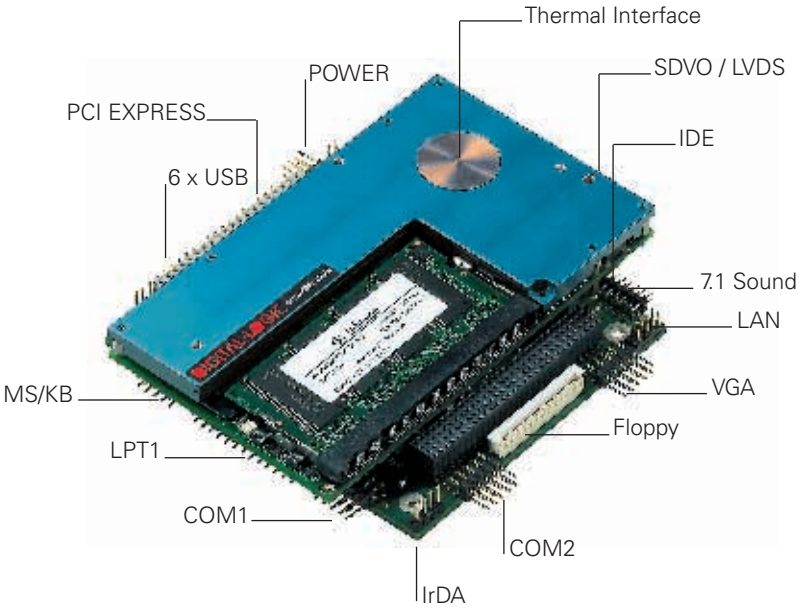
MICROSPACE PC/104-*Plus* Express

MSM945CX/MSM915CX
Datasheet

COM Express

Beschreibung
Der MSM945CX MICROSPACE PC/104-*Plus* ist ein funktionskompatibler Upgrade zum MSM855. Die CPU-Leistung und vor allem die Grafikleistung sind erhöht. Es können zusätzliche S-ATA-Drives angeschlossen werden.

Description
The MSM945CX MICROSPACE PC/104-Plus is a function compatible upgrade of the MSM855. The CPU- and especially the graphic performance are increased. Additional S-ATA drives can be connected.



Ordering Information

Article	Part No.	Description
MSM915CX	803100	PC/104-*Plus* board without SMX915, 0MB RAM, COMExpress, COM1/2, LPT, 6xUSB V2.0, IDE, VGA, Sound, LAN, SATA
MSM945CX	803200	PC/104-*Plus* board without SMX945, 0MB RAM, COMExpress, COM1/2, LPT, 6xUSB V2.0, IDE, VGA, Sound, LAN, SATA
SMX945-L2400	805350	Intel® Core™ Duo-L2400, 0MB RAM, VGA, LAN
SMX945-C423	805360	Intel® Celeron® M 423, 0MB RAM, VGA, LAN
SMX915-P760	805300	Intel® Pentium® M 760, 0MB RAM, VGA, LAN

Accessories	Part No.	Description
MSM-CK	802605	PC/104-Cable-Kit
MSFLOPPY	891001	3.5" Micro-Floppydrive (26 pin)
MSFDCK	802600	Microfloppy cable (26 pin)
MSM945-LANCON	803220	LAN Cable with Connectorprint and RTC-Battery
MSM945-DVICON	803240	Converter from SDVO to DVI + LVDS (18 Bit) + TV-Out

Option	Part No.	Description
Option -L+	807006	PC/104-*Plus*, connector long
Option -P+	807005	PC/104-*Plus*, connector short
Option-CF	807008	CompactFlashSocket (without Opt. –L)
DDR2RAM256M	890674	SODIMM DDR2RAM-Modul 256MB
DDR2RAM512M	890675	SODIMM DDR2RAM-Modul 512MB
DDR2RAM1GB	890676	SODIMM DDR2RAM-Modul 1GB
Passive Cooler	805370	SMX945 Cooler without fan
Active Cooler	805371	SMX945 Cooler with fan


MSM945-LANCON

MICROSPACE PC/104-*Plus* Express Pentium®

Overview

Type	MSM945CX	MSM945CX	MSM915CX
CPU	SMX945-L2400	SMX945-C423	SMX915-P760
BUS System	PCI, ePCI	PCI, ePCI	PCI, ePCI
Expansion Interface	PCI	PCI	PCI
2nd Level Cache	2048kB	1024kB	2048kB
Performance P4 / Clock (GHz)	2x 1.6	1x 1.0	1x 2.0
DRAM (MB)	256 – 1024	256 – 1024	256 – 1024
Power Management	Speedstep	-	Speedstep
CompactFlash	optional	optional	optional
Mouse, Keyboard	2 x PS/2	2 x PS/2	2 x PS/2
Boot Drive	FD, HD, CD, USB, LAN	FD, HD, CD, USB, LAN	FD, HD, CD, USB, LAN
Floppy Interface	26pin	26pin	26pin
IDE Interface	1xP-ATA / 2xS-ATA	1xP-ATA / 2xS-ATA	1xP-ATA / 2xS-ATA
COM1	RS232	RS232	RS232
COM2	RS232	RS232	RS232
COM3	-	-	-
COM4	-	-	-
LPT1	1x	1x	1x
IrDA	1x	1x	1x
USB (V2.0)	6x	6x	6x
LAN	100/10BASE-T	100/10BASE-T	100/10BASE-T
Video Controller	i945GM	i945GM	i915GM
Video Datapath	64 Bit	64 Bit	64 Bit
Video Memory	16 – 256MB	16 – 256MB	16 – 256MB
LCD Interface	2 x 18 Bit	2 x 18 Bit	2 x 18 Bit
LCD Resolution*	1600 x 1200	1600 x 1200	1600 x 1200
TV Out*	HDTV, NTSC, PAL	HDTV, NTSC, PAL	HDTV, NTSC, PAL
TV Out Resolution	1024 x 768	1024 x 768	1024 x 768
Audio	AC97-HDA, 196kHz, 7.1 DTS	AC97-HDA, 196kHz, 7.1 DTS	AC97-HDA, 196kHz, 7.1 DTS
EEPROM Support	✓	✓	✓
Watchdog	✓	✓	✓
Power min. Clock	typ. 10W (@0.8GHz)	typ. 15W (@1.0GHz)	typ. 10W (@0.8GHz)
Power max. Clock	typ. 30W (@1.6GHz)	typ. 15W (@1.0GHz)	typ. 34W (@2.0GHz)
Cooling Type	active	active	active
Operating Temp.	0°C to +50°C	0°C to +50°C	0°C to +50°C
Extended Temp.	-40°C to +50°C	-40°C to +70°C	-40°C to +50°C
Weight (gr)	200	200	200
MTBF	> 200'000h	> 200'000h	> 200'000h
Embedded DOS	✓	✓	✓
Ordering Guide	MSM945CX + SMX945-xxxx	MSM945CX + SMX945-xxxx	MSM915CX + SMX915-xxxx
Status	for new designs	for new designs	for new designs

* Auflösungen auf Seite 16
* Resolution on page 16

Pb ab 7/2006

Pb ab 7/2006

Pb ab 7/2006

Änderungen vorbehalten / Subject to change!

Overview





Part.-No.	806008	806018	806129	806003	806011
Type	**MSME104B**	**MSME104R**	**MSMVGA**	**MSMJ104D**	**MSMX104**
Function	Ethernet LAN	Ethernet LAN	VIDEO/LCD	PCCard	4 x COM
Controller	SMC 91C96	SMC 91C96	C&T 65545	VADEM 469	4 x 16C550
Connector	10BASE-2 / -T	10BASE-2 / -T	CRT, LCD	2 x type II, 1 x type III	4 x RS232 / 422 / 485
Bus	ISA	ISA	ISA	ISA	ISA
Onboard Flash	32kB BIOS	32kB BIOS	32kB BIOS	32kB BIOS	-
Remarks	-	-	-	-	-
Power Normal	5V/450mA (typ.)	5V/450mA (typ.)	5V/260mA (typ.)	5V/180m (typ.)	5V/250mA (typ.)
Power Suspend	5V/450mA (typ.)	5V/450mA (typ.)	5V/200mA (typ.)	5V/180m (typ.)	5V/250mA (typ.)
Operating Temp.	-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 Temp.	-	-	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Weight (gr)	80	80	80	150	140
MTBF	> 100'000h	> 100'000h	> 100'000h	> 100'000h	> 100'000h
Ordering Guide	MSME104-1&2-B	MSME104R	MSMVGA	MSMJ104D	MSMX104
Status	for new designs	for new designs	for new designs	for new designs	for new designs





Part.-No.	806020	806021	806034	806032	806031
Type	**MSMF104**	**MSMF104-S**	**MSMCAN**	**MSMPS104**	**MSMBAT104**
Function	Flashdisk	SRAM-Disk	CAN Controller	Power Supply	Battery UPS
Controller	2 x DiskOnChip	-	i82C527	2-Phase PWM	SBS Gas Gauge
Connector	-	-	CAN	-	Power
Bus	ISA	ISA	ISA	ISA, Power	I2C
Remarks	max. 2 x 144MB	0,5 - 2MB SRAM	-	Output1: 5V/15A	Varta HRY-AAA
Remarks	-	-	-	Output2: 12V/2A	-
Power Normal	5V/100mA (typ.)	5V/100mA (typ.)	5V/250mA (typ.)	8V-30VDC	up to 720 mAh
Power Suspend	5V/100mA (typ.)	5V/100mA (typ.)	5V/250mA (typ.)	8V-30VDC	9.6V nominal
Operating Temp.	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-10°C to +50°C discharging
Extended Temp.	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +70°C	0°C to +50°C charging
Weight (gr)	100	80	50	60	120
MTBF	> 100'000h	> 100'000h	> 100'000h	>100'000h	1000 cycles
Ordering Guide	MSMF104-2D	MSMF104-S05	MSMCAN	MSMPS104	MSMBAT104
Status	for new designs	for new designs	for new designs	for new designs	for new designs

Pb ab 7/2006 | Pb ab 7/2006 | Pb ab 7/2006 | Pb ab 7/2006 | Pb ab 7/2006

Änderungen vorbehalten / Subject to change!

MICROSPACE PC/104-*Plus* Peripherals (PCI)

Overview




Part.-No.	801601	801600	801630	801610	
Type	**MSMS104+**	**MSME104+**	**MSMJ104+**	**MSMG104+**	
Function	SCSI PC/104-*Plus*	LAN PC/104-*Plus*	PCCard/PC/104-*Plus*	Framegrabber PC/104-*Plus*	
Controller	AIC-7860	i82551	TI1520	BT878A	
Connector	SCSI	100/10BASE-T	PCCard	3 x Coax	
Bus	PCI	PCI	PCI	PCI	
Onboard Flash	32kB BIOS	32kB BIOS	-	-	
Remarks	-	-	-	-	
Power Supply	3.3/5V	3.3/5V	3.3V	3.3V	
PCI-Bus Voltage	3.3/5V	3.3/5V	3.3/5V	3.3/5V	
Operating Temp.	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	
Extended Temp.	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-	
Weight (gr)	80	90	90	80	
MTBF	> 100'000h	> 100'000h	> 100'000h	> 100'000h	
Ordering Guide	MSMS104+	MSME104+	MSMJ104+	MSMG104+	
Status	for new designs	for new designs	for new designs	for new designs	

Pb ab 7/2006 | Pb ab 7/2006 | Pb ab 7/2006





Part.-No.	801650	801640	801660	801625	801627
Type	**MSMW104+**	**MSMI104+**	**MSMX104+**	**MSMVA104+**	**MSMVB104+**
Function	FireWire PC/104-*Plus*	ISDN PC/104-*Plus*	8 x COM	XVGA PC/104-*Plus*	XVGA PC/104-*Plus*
Controller	Texas, IEEE 1394	Cologne	EXAR	ATI M7-CSP 32MB	ATI M1 4MB
Connector	2 x FireWire	RJ-45	4 x RS232, 4 x RS485	2 x CRT, LVDS, DVI, TV-Out/In	CRT
Bus	PCI	PCI	PCI	PCI	PCI
Onboard Flash	-	-	-	64kB BIOS	64kB BIOS
Remarks	-	-	-	-	-
Power Supply	3.3V	3.3V	3.3V	3.3V	3.3V
PCI-Bus Voltage	3.3/5V	3.3/5V	3.3/5V	3.3/5V	3.3/5V
Operating Temp.	-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 Temp.	-	-	-	-	-
Weight (gr)	80	80	80	80	80
MTBF	> 100'000h	> 100'000h	> 100'000h	> 100'000h	> 100'000h
Ordering Guide	MSMW104+	MSMI104+	MSMX104+	MSMVA104+	MSMVB104+
Status	for new designs	for new designs	for new designs	for new designs	for new designs

Pb ab 7/2006 | Pb ab 7/2006 | Pb ab 7/2006 | Pb ab 7/2006 | Pb ab 7/2006

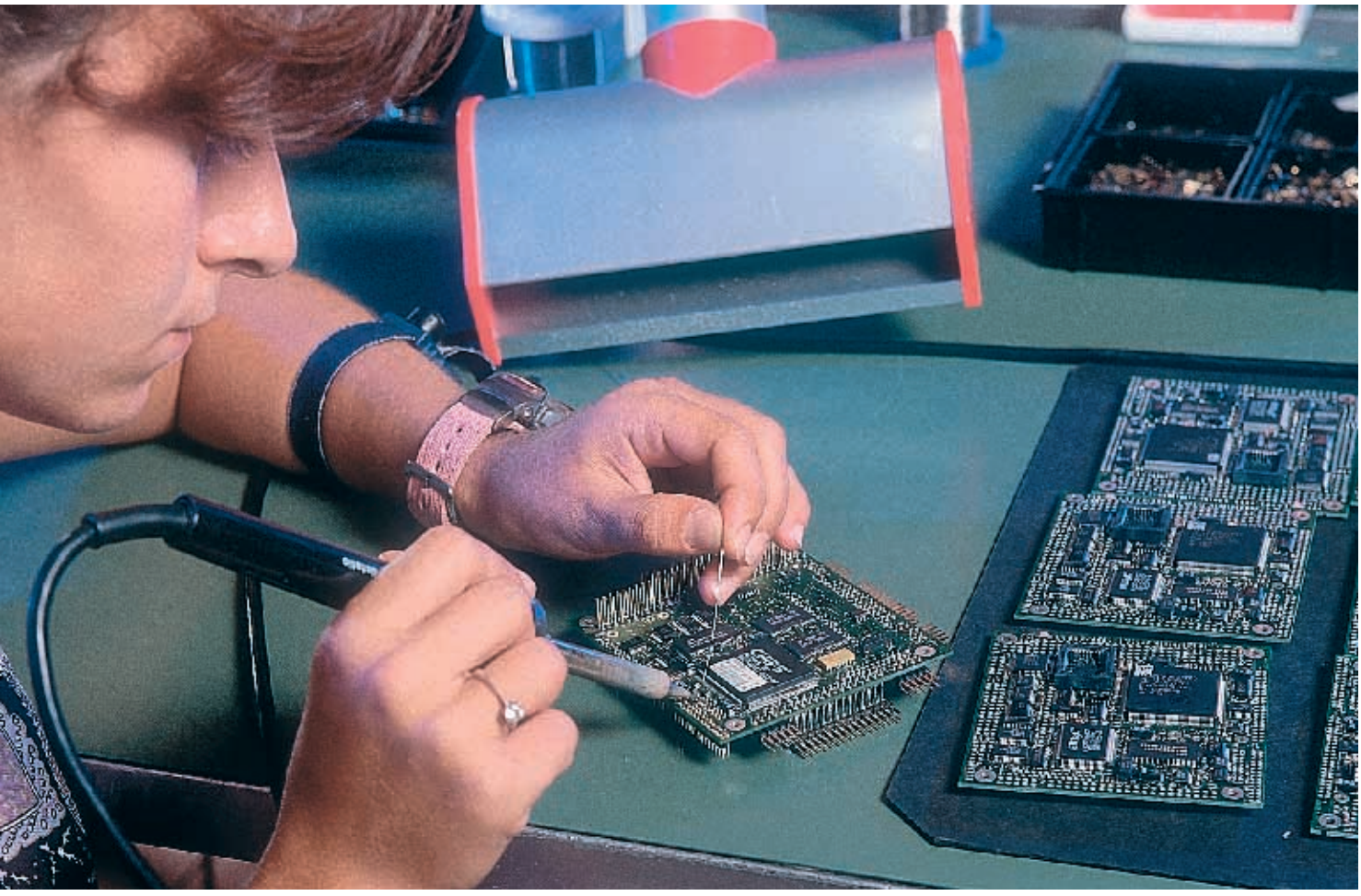
Änderungen vorbehalten / Subject to change!

MICROSPACE PC/104-*Plus* Peripherals (PCI)

Overview

Part.-No.	801670	801690	801615	801645	
Type	**MSMSF104+**	**MSMGE104+**	**MSMP104+**	**MSMC104+**	
Function	2 Channel StarFabric	1G-LAN PC/104-*Plus*	Mini PCI Adapter	CAN Interface	
Controller	SF2010	i82541	-	µC	
Connector	4xRJ45	1000BASE-T	Mini PCI-Module	2x CAN	
Bus	PCI	PCI	PCI	PCI	
Onboard Flash	-	32kB BIOS	-	-	
Remarks	-	-	-	VECTOR-CAN	
Power Supply	3.3V	3.3V	3.3V	3.3V	
PCI Bus Voltage	3.3V/5V	3.3V/5V	3.3V	3.3V	
Operating Temp.	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	
Extended Temp.	-	-40°C to +85°C	-	-	
Weight (gr)	80	90	80	80	
MTBF	> 100'000h	> 100'000h	> 100'000h	> 100'000h	
Ordering Guide	MSMSF104+	MSMGE104+	MSMP104+	MSMC104+	
Status	for new designs	for new designs	for new designs	for new designs	
		Pb ab 7/2006	Pb ab 7/2006	Pb ab 7/2006	

Änderungen vorbehalten / Subject to change!

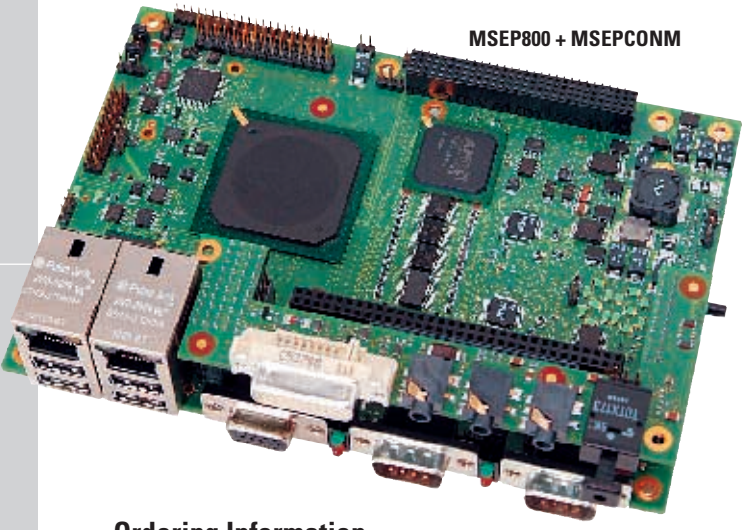


MICROSPACE EPIC COMPUTER

MSEP800/855
Datasheet

Beschreibung
Der MICROSPACE MSEP800/855 basiert auf dem neuen Industrie Formfactor EPIC und bietet alle PC- sowie industriellen Funktionen, wie 24Bit Digital I/O, 12/24VDC-Speisung, verschiedene Massenspeicher (Harddisk oder Flashdisk), DUAL-LAN, LVDS-LCD und galvanisch isolierte RS422 Schnittstellen.

Description
The MICROSPACE MSEP800/855 is based on the new industrial formfactor EPIC and offers all PC- and supplemental industrial functions, such as 24Bit digital to I/O, 12/24VDC-widerangesupply, different mass storages (harddisk or flashdisk), DUAL-LAN, LVDS-LCD and opto isolated RS422 interfaces.



MSEP800 + MSEPCONM

MSEP855

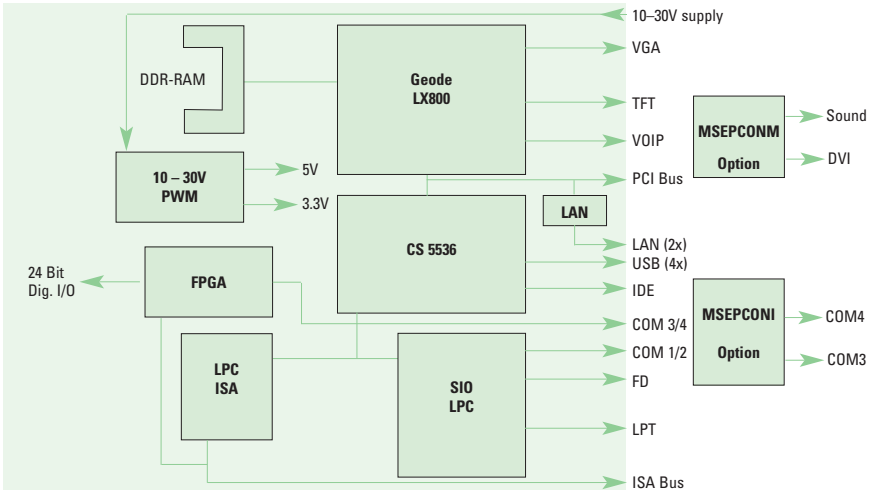
Ordering Information

Article	Part No.	Description
MSEP800	804050	Geode LX800, 500MHz, 0MB RAM, COM1, COM2, 2x LAN Port, 4x USB, 1x IDE, FD, LPT1, VGA
MSEP855	804000	without smartModule855, 0MB RAM, COM1, COM2, 2x LAN Port, 4x USB 2x IDE, FD, LPT1, VGA, LVDS
SM855-C120	805190	Intel® Processor C120 (800MHz), 0MB RAM, VGA, LAN, AC97
SM855-C373	805163	Intel® Celeron® M-373 (1.0GHz), 0MB RAM, VGA, LAN, AC97
SM855-P738	805164	Intel® Pentium® M-738 (1.4GHz), 0MB RAM, VGA, LAN, AC97
SM855-P745	805168	Intel® Pentium® M-745(1.8GHz), 0MB RAM, VGA, LAN, AC97

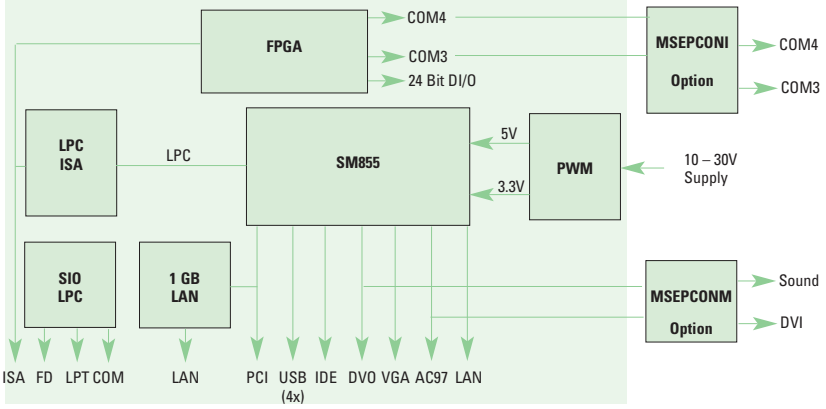
cessories	Part No.	Description
MSEPCONI	804012	COM3, COM4, LPT connector
MSEPCONM	804010	DVI, 3x Sound connector
MSEPPWR	804014	Filtered power board, LVDS connector

Option	Part No.	Description
DDRAM256M	890670	DDR-SODIMM-Modul 256MB
DDRAM512M	890671	DDR-SODIMM-Modul 512MB
DDRAM1GB	890672	DDR-SODIMM-Modul 1GB
Passive Cooler	805170	SM855 Cooler without fan
Active Cooler	805171	SM855 Cooler with fan

MSEP800



MSEP855



MICROSPACE MSEP800/855

Overview

Type	MSEP800	MSEP855
CPU	GEODE LX800	SM855-xxxx
Bus System	PCI	PCI
Expansion Interface	ISA, PCI	ISA, PCI
2nd Level Cache	128kB	0 – 2048kB
Performance (MHz)	500	600 – 1800
DRAM Min-Max (MB)	128 – 1024	256 – 1024
CompactFlash Socket	1x type II	1x type II
Mouse, Keyboard	optional	optional
BootDrive	FD, HD, CF, CD	FD, HD, CF, CD, LAN
Floppy Interface	✓	✓
IDE Interface P-ATA	1	2
IDE Interface S-ATA	0	0
COM1	RS232	RS232
COM2	RS232	RS232
COM3 (804012)	opt. RS232 / RS422 isolated	opt. RS232 / RS422 isolated
COM4 (804012)	opt. RS232 / RS485	opt. RS232 / RS485
LPT1 (804012)	✓	✓
IrDA	-	-
USB V2.0	4x	4x
LAN Port A	100/10 BASE-T	100/10 BASE-T
LAN Port B	1Gbit BASE-T	1Gbit BASE-T
Audio	AC97	AC97
Audio Input	optional	optional (804010)
Audio Output	optional	optional (804010)
Video Controller	GEODE	incl. 855GME
Video Datapath	PCI	64 Bit
Video Memory	8 –16MB UMA	64MB
LCD Interface	18 / 24 Bit digital	18 Bit LVDS
LCD Resolution	240 x 320 up to 1600 x 1200	1600 x 1200*
DVI Interface	optional	optional (804010)
TV Out	-	-
Special functions	none	none
Digital I/O	24 Bit	24 Bit
EEPROM Support	✓	✓
Watchdog	✓	✓
Power Normal	10V – 30V 10W (typ.)	10 – 30V 18W (typ.@800MHz)
Power Suspend	3W (typ.)	8W (typ.)
Cooling Type	passive	passive/active
Operating Temp.	0°C to +50°C	0°C to +50°C
Extended Temp.	-	-
Expansion BUS	PC/104-*Plus*	PC/104-*Plus*
Size (mm)	165x115x36	165x115x36
Weight (gr)	280	350
MTBF	> 200'000h	> 200'000h
Ordering Guide	MSEP800	MSEP855 + SM855-xxxx
Status	for new designs	for new designs

* Auflösungen auf Seite 16
* Resolution on page 16

Änderungen vorbehalten / Subject to change!

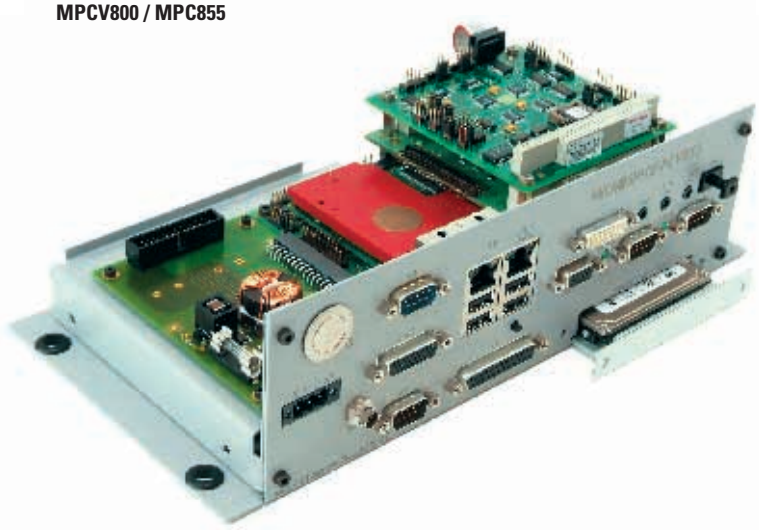
Beschreibung

Der MICROSPACE COMPUTER MPCV800/855 basiert auf dem MSEP800/855 EPIC-Computer, eingebaut in ein sehr robustes Stahlblechgehäuse. Zur Funktionserweiterung können bis zu 2 PC/104-*Plus* Peripherieboards eingebaut werden. 3 Steckerausschnitte sind zur Erweiterung in der Frontplatte vorgesehen. Die Harddisk/Flashdisk kann von der Frontplatte aus, ohne öffnen des Gehäuses, ausgewechselt werden. Es ist eine passive Kühlung eingebaut (kein Lüfter).

Description

The MICROSPACE COMPUTER MPCV800/855 is based on the MSEP800/855 EPIC computer, which is fitted into a very solid steel case.
The MPCV800/855 can be extended by up to 2 PC/104-*Plus* boards. The front panel also contains 3 cut-outs for extensions. The harddisk/flashdisk is accessible from the front panel without opening the case. The computer is passively cooled, without fan.

MPCV800 / MPC855



Geöffnetes MPCV855 mit 2 PC/104-*Plus* Erweiterungen
MPCV855 with 2x PC/104-*Plus* Extensionsboards

Ordering Information

Article	Part No.	Description
MPCV800	815100	Geode LX800, 256MB RAM, 40GB HD, 2x LAN, 4x USB, COM1, COM2
MPCV800 I	815110	MPCV800 with COM3, COM4, LPT
MPCV800M	815120	MPCV800 with DVI, Audio, SPDiF
MPCV855	815000	Intel® Processor C120, 800MHz, 256MB RAM, 40GB HD, 2x LAN, 4x USB, COM1, COM2
MPCV855 I	815010	MPCV855 with COM3, COM4, LPT
MPCV855M	815020	MPCV855 with DVI, AUDIO, SPDIF

Accessories	Part No.	Description
MPCV-AC	815070	MPCV 110/220VAC, Supply, 90W

Option	Part No.	Description
MPCV-Flash	815050	MPCV-Downgrade HD40G to CompactFlashdisk
MPCV-512M	815060	MPCV-Upgrade 256MB to 512MB DDRAM
MPCV-1GB	815062	MPCV-Upgrade 256MB to 1GB DDRAM
MPCV-WLAN	815080	MPCV-Option WLAN incl. antenna

MICROSPACE®-PCV
Overview

Part No.	815100	815000	815110	815010	815120	815020
Type	**MPCV800**	**MPCV855**	**MPCV800 I**	**MPCV855 I**	**MPCV800M**	**MPCV855M**
CPU	GEODE	Intel® Processor	GEODE	Intel® Processor	GEODE	Intel® Processor
2nd Level Cache	128kB	-	128kB	-	128kB	-
Clock (MHz)	500	800	500	800	500	800
Chipset	LX800	i855GME	LX800	i855GME	LX800	i855GME
Memory	256 MB		256 MB		256 MB	
Harddisk	40GB		40GB		40GB	
Optical drive	-		-		-	
Compact Flash	optional, 815050		optional, 815050		optional, 815050	
Video Memory (MB)	16	64	16	64	16	64
Pictures	1	2	1	2	1	2
1st Video Interface* **	QXGA		QXGA		QXGA	
2nd Video Interface* **	LVDS		LVDS		-	LVDS
3th Video Interface	-		-		DVI***	
Keyboard, Mouse	USB		USB		USB	
CAN Interface	-		-		-	
Parallel Interface	-		LPT		-	
USB V2.0	4 x		4 x		4 x	
Expansion Bus	ISA, PCI		ISA, PCI		ISA, PCI	
PC/104 slots	2		2		2	
TV-Input/Framegrabber	-		-		-	
Special Functions	24 bit Digital I/O		24 bit Digital I/O		24 bit Digital I/O	
LAN Port A	100/10Base-T (RJ45)		100/10Base-T (RJ45)		100/10Base-T (RJ45)	
LAN Port B	1 Gbit BASE-T		1 Gbit BASE-T		1 Gbit BASE-T	
RPL/PXE Intel® LAN-Boot/Wake up *	yes/yes		yes/yes		yes/yes	
Audio Controller	-		-		Stereo	
Line Output	-		-		yes	
Line Input	-		-		yes	
SPDif Output	-		-		yes, 5.1	
Mic Input	-		-		yes	
COM1	RS232C		RS232C		RS232C	
COM2	RS232C		RS232C		RS232C	
COM3	-		RS232 or RS422**		-	
COM4	-		RS232 or RS485		-	
Option (815080)	WLAN		WLAN		WLAN	
Power Input	10V – 30V DC		10V – 30V DC		10V – 30V DC	
Power Supply Adapter (option 815070)	110/220V AC		110/220V AC		110/220V AC	
Consumption	10W	18W	10W	18W	11W	19W
Power Saving	Suspend/Resume, SoftOff		Suspend/Resume, SoftOff		Suspend/Resume, SoftOff	
Conformity	CE, FCC		CE, FCC		CE, FCC	
Protection Class	IP40		IP40		IP40	
Dimensions (WxLxH in mm)	292 x 145 x 81		292 x 145 x 81		292 x 145 x 81	
Weight	3kg		3kg		3kg	
Case, Colour	steel, silver / red		steel, silver / red		steel, silver / red	
Cooling	passive, fanless		passive, fanless		passive, fanless	
Noise	<20dB(A)		<20dB(A)		<20dB(A)	
Operating Temperature Normal (MIL 810)	+5°C to +50°C		+5°C to +50°C		+5°C to +50°C	
Extended Operating Temperature	-		-		-	
Vibration/Shock incl. HD	1 / 10G		1 / 10G		1 / 10G	
MTBF	60'000h		60'000h		60'000h	
Verified Operating Systems	WIN2000, WIN XP, LINUX		WIN2000, WIN XP, LINUX		WIN2000, WIN XP, LINUX	

* only from Standby Mode
** optoisolated 1kV
*** resolutions on page 16

Pb ab 7/2006

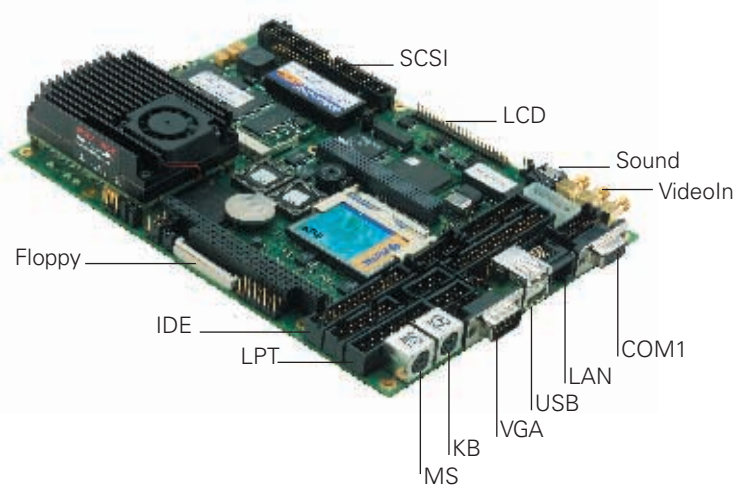
Pb ab 7/2006

Pb ab 7/2006

Änderungen vorbehalten / Subject to change!

MSEBX-T3
Datasheet

MICROSPACE EBX COMPUTER



Beschreibung

Das EBX-kompatible MSEBXT3 von DIGITAL-LOGIC basiert auf dem smartCore mit T3-650MHz und ist die ideale Plattform für integrierte Navigations- oder Multimedia-Systeme. Dieses all-in-one Board verfügt über 100/10BASE-T LAN Anschluss, Soundblaster Audio, CompactFlash Sockel und Video-Input.

Description

The EBX compliant MSEBXT3 from DIGITALLOGIC integrates a smartCore CPU of T3-650MHz. This all-in-one industrial board includes 100/10BASE-T LAN interface, soundblaster audio, CompactFlash socket and a Video-Input. Perfectly made for embedded navigation or multimedia applications.

Ordering Information

Article	Part No.	Description
MSEBX-T3	811033	0MB RAM, without smartCoreT3, VGA, LAN, IDE, 4x COM, LPT, FD, 2x USB
smartCoreT3-650	805145	650MHz, Intel® Celeron® Tualatin

Accessories	Part No.	Description
MSBC-CK	802012	Single Board Computer Cable-Kit
MSFLOPPY	891001	3.5" Micro-Floppydrive (26 pin)
MSFDCK	802600	Microfloppy cable (26 pin)

Option	Part No.	Description
SDRAM32M	890645	SODIMM SDRAM-Module 32MB
SDRAM64M	890644	SODIMM SDRAM-Module 64MB
SDRAM128M	890646	SODIMM SDRAM-Module 128MB
SDRAM256M	890647	SODIMM SDRAM-Module 256MB
Option G	570000	GPS-Receiver Module

MICROSPACE EBX-T3 Computer
Overview

Type	MSEBX-T3		
CPU / Chipset	smartCoreT3 / BX440		
Bus-System	ISA/PCI		
Expansion Interface	ISA/PCI		
2nd Level Cache	256kB		
Performance (MHz)	650		
DRAM Min-Max (MB)	SODIMM SDRAM, 32 – 256		
DiskOnChip Socket	✓		
CompactFlash Socket	✓		
Mini PCI	-		
Mouse, Keyboard	✓		
BootDrive	FD, HD, CD, USB, DiskOnChip		
Floppy Interface	✓		
IDE Interface	✓, 2x P-ATA		
COM1	RS232C		
COM2	RS232C		
COM3	RS232C / 422 / 485		
COM4	RS232C / 422 / 485		
LPT1	✓		
IrDA (uses COM2)	external		
USB	✓, 2 x V1.1		
LAN Port A	100/10BASE-T, Intel® 82551ER		
LAN Port B	-		
SCSI/Firewire	SCSI: AIC 7860		-
Audio	ESS1869		
Video Controller	SXGA 69030		
Video Datapath	PCI		
Video Memory	2MB		
LCD Interface	36 Bit TFT 3V/5V		
LCD Resolution	1280 x 1024 x 256		
TV Out	-		
Special functions	SCSI-Option		
Video Input	✓, 3x		
EEPROM Support	✓		
Watchdog	✓		
Power Normal	5V/12W (typ.@650MHz/32MB)		
Power Suspend	5V/1W (typ.), ATX		
Size (mm)	204 x 140 x 29		
Expansion BUS	PC/104-*Plus*		
Cooling Type	passive / active		
Operating Temp.	-25°C to +50°C		
Extended Temp. with 166MHz	-		
Extended Temp. with 300MHz	-		
Extended Temp. with 600MHz	-		
Extended Temp. with 700MHz	-40°C to +50°C		
Extended Temp. with 1.4GHz	-		
Weight (gr)	350		
MTBF	> 200'000h		
Ordering Guide	MSEBX-T3		

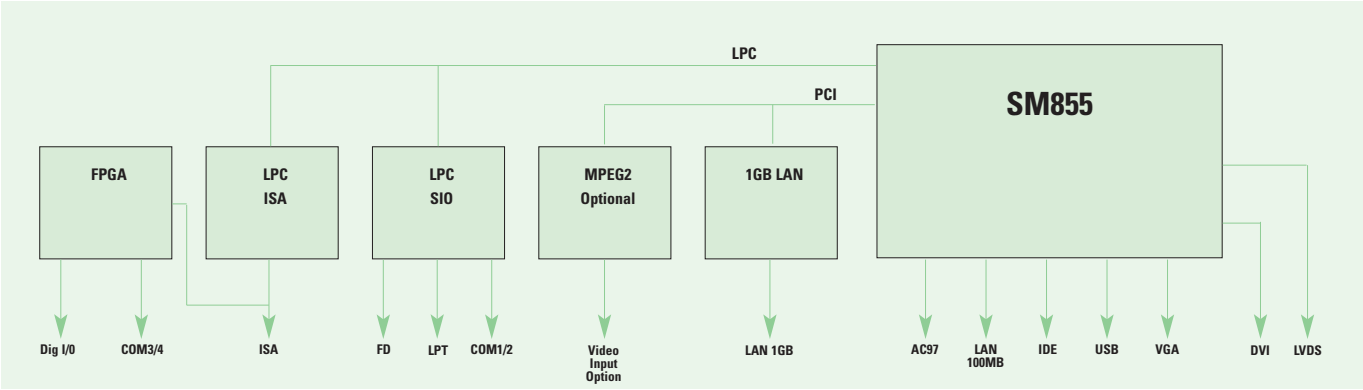
Änderungen vorbehalten / Subject to change!

MICROSPACE EBX COMPUTER

MSEBX855
Datasheet

Beschreibung
Das MSEBX855 verfügt über eine CPU mit einer P4-Leistung bis 3.6GHz. Das Board ist EBX-kompatibel und bietet Anschlüsse für 100/10BASE-T LAN, Firewire, Audio, Video etc. Mittels schnellen DDR-SODIMM kann ein Memory von 256 – 1024MB genutzt werden. Abhängig von der Bestelloption ist das Board mit MPEG2, CompactFlash oder Sound bestückt.

Description
The MSEBX855 has a CPU with up to 3.6GHz P4-performance. It is EBX compatible and offers interfaces for 100/10BASE-T LAN, Firewire, Audio, Video etc. The memory can be expanded with DDR-SODIMM from 256 – 1024MB. Furthermore the board has a CompactFlash holder, sound and a MPEG2 hardware compressor.



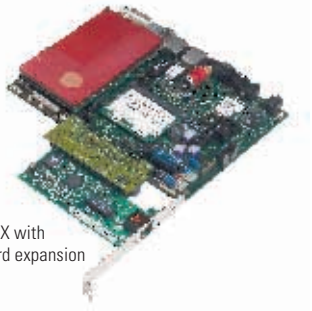
Ordering Information

Article	Part No.	Description
MSEBX855-B	811200	Basic, 0MB RAM, without smartModule
MSEBX855-M	811201	Multimedia, 0MB RAM, without smartModule
MSEBX855-S	811202	Server, 0MB RAM, without smartModule
SM855-C120	805190	Intel® Processor C120 (0.8GHz), 0MB RAM, VGA, LAN, AC97
SM855-C373	805163	Intel® Celeron® M-C373 (1.0GHz), 0MB RAM, VGA, LAN, AC97
SM855-P738	805164	Intel® Pentium® M-738 (1.4GHz), 0MB RAM, VGA, LAN, AC97

Accessories	Part No.	Description
MSBC-CK	802012	Single Board Computer Cable-Kit
MSFLOPPY	891001	3.5" Micro-Floppydrive (26pin)
MSFDCK	802600	Microfloppy cable (26pin)
MSEBX-PCI-CONV	811205	Riserboard with 1x PCI Slot

Option	Part No.	Description
DDRAM256M	890670	DDR-SODIMM-Modul 256MB
DDRAM512M	890671	DDR-SODIMM-Modul 512MB
DDRAM1GB	890672	DDR-SODIMM-Modul 1GB
Passive Cooler	805170	SM855 Cooler without fan
Active Cooler	805171	SM855 Cooler with fan

PCI-Riserboard
Part. No. 811205



MSEBX with
PCI-Riserboard expansion

MICROSPACE EBX Computer
Overview

Type	MSEBX855-B	MSEBX855-M	MSEBX855-S
CPU / Chipset	smartModule855	smartModule855	smartModule855
Bus System	ISA, PCI	ISA, PCI	ISA, PCI
Expansion BUS	PC/104-*Plus*, PC/104 option	PC/104-*Plus*, PC/104 option	PC/104-*Plus*, PC/104 option
2nd Level Cache	0–2048kB	0–2048kB	0–2048kB
Performance (MHz)	800 – 1800	800 – 1800	800 – 1800
DRAM Min-Max (MB)	DDR-SODIMM, 256 – 1024	SODIMM SDRAM, 128 – 1024	SODIMM SDRAM, 128 – 1024
DiskOnChip Socket	-	-	-
CompactFlash Socket	1x type II	1x type II	✓ option (1x type II)
Mini PCI	✓	✓	✓
Mouse, Keyboard	✓	✓	✓
BootDrive	FD, HD, CD, USB, LAN	FD, HD, CD, USB, CF, LAN	FD, HD, CD, USB, S-ATA, LAN
Floppy Interface	✓	✓	✓
P-ATA Interface (IDE)	2x P-ATA133	2x P-ATA133	2x P-ATA133
S-ATA Interface	-	-	2x S-ATA150
COM1	RS232C	RS232C	RS232C
COM2	RS232C	RS232C	RS232C
COM3	RS232C / 422 / 485	-	-
COM4	RS232C / 422 / 485	-	-
LPT1	✓	✓	✓
IrDA (uses COM2)	external	external	external
USB (V2.0)	6 x	6 x	2 x
LAN Port A	100/10BASE-T	100/10BASE-T	100/10BASE-T
LAN Port B	-	-	1GB BASE-T
Audio	AC97, 5.1 Sound	AC97, 5.1 Sound	AC97, Stereo out
Video Controller	i855GME	i855GME	i855GME
Video Datapath	AGP internal	AGP internal	AGP internal
Video Memory	64MB	64MB	64MB
LCD Interface	DVI / LVDS 18 Bit	DVI, LVDS 18 Bit	DVI
LCD Resolution*	1600 x 1200	1600 x 1200	1600 x 1200
TV Out	-	✓	-
Special Functions	24 Digital I/O	24 Digital I/O, MPEG2	24 Digital I/O
Video Input	-	2x CVBS, 3x MPEG2, 1x SVideo	-
EEPROM Support	✓	✓	✓
Watchdog	✓	✓	✓
Power Normal	5V/20W (typ.@1400MHz/256MB)	5V/20W (typ.@1400MHz/256MB)	5V/20W (typ.@1400MHz/256MB)
Power Suspend	5V/3W (typ.), ATX	5V/3W (typ.), ATX	5V/3W (typ.), ATX
Size (mm)	204 x 140 x 29	204 x 140 x 29	204 x 140 x 29
Cooling Type	passive / active	passive / active	passive / active
Operating Temp.	-25°C to +50°C	-25°C to +50°C	-25°C to +50°C
Extended Temp. with 800MHz	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
Extended Temp. with 1.4GHz	-40°C to +50°C	-40°C to +50°C	-40°C to +50°C
Extended Temp. with 1.8GHz	-	-	-
Weight (gr)	350	350	350
MTBF	> 200'000h	> 200'000h	> 200'000h
Ordering Guide	MSEBX855-B	MSEBX855-M	MSEBX855-S
Status	for new designs	for new designs	for new designs

* Auflösungen auf Seite 16
* Resolution on page 16

Änderungen vorbehalten / Subject to change!

Pb ab 7/2006

Pb ab 7/2006

Pb ab 7/2006

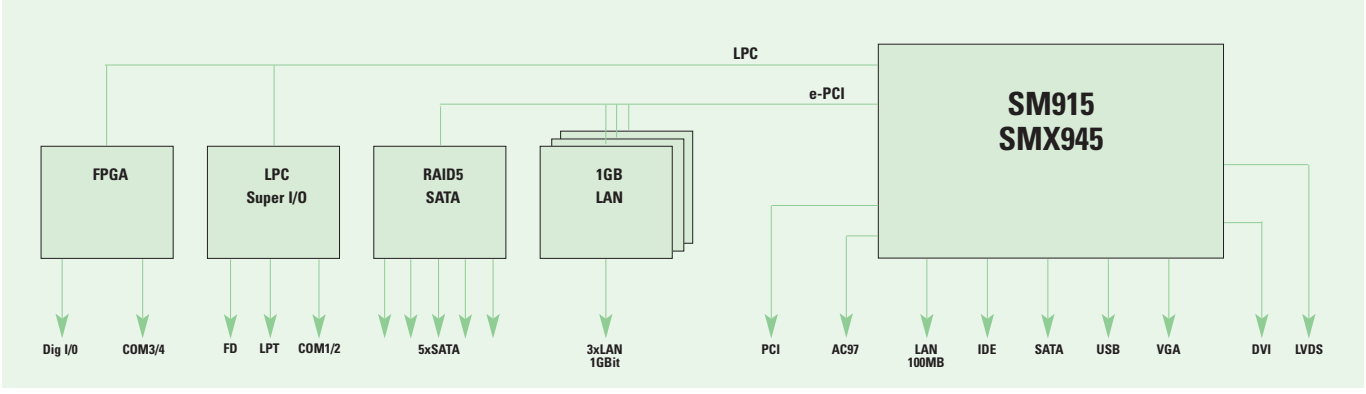
MICROSPACE EBX COMPUTER

MSEBX915, MSEBX945CX
Datasheet

COM Express

Beschreibung
Das MSEBX915/945 weist denselben Funktionsumfang auf wie das MSEBX855, verfügt jedoch über eine höhere Video-Performance sowie serielle BUS-Systeme wie PCI-Express und S-ATA.

Description
The MSEBX915/945 offers the same function as the MSEBX855 with a higher video performance. Additionally it features serial BUS systems such as PCI express and S-ATA.



Ordering Information

Article	Part No.	Description
MSEBX915-B	811300	Basic, 0MB RAM, without smartModule
MSEBX915-M	811301	Multimedia, 0MB RAM, without smartModule
MSEBX915-S	811302	Server, 0MB RAM, without smartModule, RAID5
MSEBX915-CX	811340	Basis EBX915, COMExpress, 0 MB RAM
MSEBX945-CX	811341	Basis EBX945, COMExpress, 0 MB RAM
SM915-P760	805300	Intel® Pentium® M-760 (2.0GHz) 0MB RAM, VGA, LAN, AC97
SMX945-L2400	805350	Intel® Core™ Duo-L2400, 0MB RAM, VGA, LAN
SMX945-C423	805360	Intel® Celeron® M 423, 0MB RAM, VGA, LAN
SMX945-P760	805300	Intel® Pentium® M 760, 0MB RAM, VGA, LAN

Accessories	Part No.	Description
MSBC-CK	802012	Single Board Computer Cable-Kit
MSFLOPPY	891001	3.5" Micro-Floppydrive (26pin)
MSFDCK	802600	Microfloppy cable (26pin)

Option	Part No.	Description
DDRAM256M	890674	SODIMM DDR2AM-Modul 256MB
DDRAM512M	890675	SODIMM DDR2AM-Modul 512MB
DDRAM1GB	890676	SODIMM DDR2AM-Modul 1GB
Passice Cooler	805370	SM945 Cooler without fan
Active Cooler	805371	SM945 Cooler with fan

MICROSPACE EBX Computer

Overview

Type	MSEBX915	MSEBX945CX	
CPU / Chipset	smartModule915	smartModuleExpress945	
Bus System	PCI, PCI Express	PCI, PCI Express	
Expansion BUS	PC/104-*Plus*, PC/104 option	PC/104-*Plus*, PC/104 option	
2nd Level Cache	2048kB	2048kB	
Performance (GHz)	1x 2GHz	2x 1.6GHz	
DRAM Min-Max (MB)	DDR2-SODIMM, 256 – 1024	DDR2-SODIMM, 256 – 1024	
DiskOnChip Socket	-	-	
CompactFlash Socket	✓ option	✓ option	
Mini PCI	✓	✓	
Mouse, Keyboard	✓	✓	
BootDrive	FD, HD, CD, USB, CF, S-ATA, LAN	FD, HD, CD, USB, CF, S-ATA, LAN	
Floppy Interface	✓	✓	
P-ATA Interface (IDE)	1x P-ATA133	1x P-ATA133	
S-ATA Interface	2x S-ATA150	2x S-ATA150	
COM1	RS232C	RS232C	
COM2	RS232C	RS232C	
COM3	RS232C	RS232C	
COM4	RS232C	RS232C	
LPT1	✓	✓	
IrDA (uses COM2)	external	external	
USB (V2.0)	6 x USB	6 x USB	
LAN1 Port A	100/10 BASE-T	100/10 BASE-T	
LAN2 Port B, C, D	3x 1GB BASE-T, ePCI	1x 1GB BASE-T, ePCI	
Audio	AC97, 7.1, HDA	AC97, 7.1, HDA	
Video Controller	i915GM	i945GM	
Video Datapath	PCI express	PCI express	
Video Memory	64 – 256MB	64 – 256MB	
LCD Interface	DVI, LVDS 18 Bit	DVI, LVDS 18 Bit	
LCD Resolution*	1600 x 1200	1600 x 1200	
TV Out	✓	✓	
Special Functions	811302: RAID5, 4x S-ATA	-	
Video Input	-	-	
EEPROM Support	✓	✓	
Watchdog	✓	✓	
Power Normal	5V/35W (typ.@2GHz/256MB)	5V/25W(typ.@1.6GHz/256MB)	
Power Suspend	5V/3W (typ.), ATX	5V/3W (typ.), ATX	
Size (mm)	204 x 140 x 29	204 x 140 x 29	
Cooling Type	passive / active	passive / active	
Operating Temp.	-25°C to +50°C	-25°C to +50°C	
Extended Temp. with 800MHz	-40°C to +70°C	-40°C to +70°C	
Extended Temp. with 1.6GHz	-	-40°C to +50°C	
Extended Temp. with 2.0GHz	-40°C to +50°C	-	
Weight (gr)	350	350	
MTBF	> 200'000h	> 200'000h	
Ordering Guide	MSEBX915 + SM915-P760	MSEBX945CX + SMX945-L2400	
Status	for new designs	for new designs	

* Auflösungen auf Seite 16
* Resolution on page 16

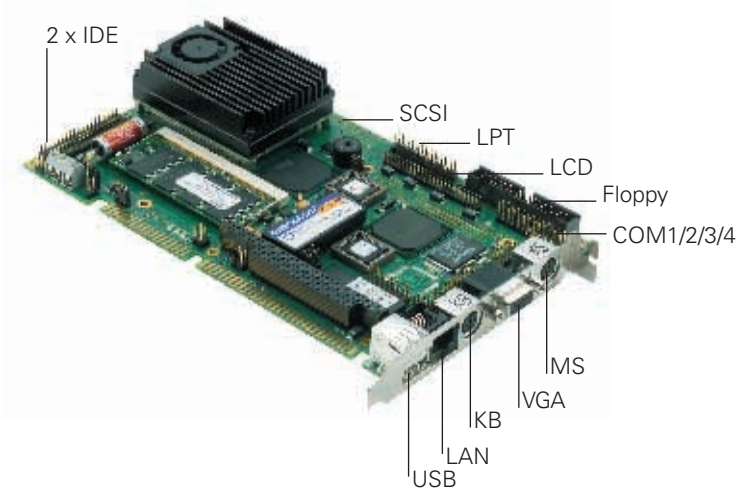
Pb ab 7/2006

Pb ab 7/2006

Änderungen vorbehalten / Subject to change!

PCC855
Datasheet

MICROSPACE SLOT-PC



Beschreibung

Die MICROSPACE Slot-PC PCC855 von DIGITAL-LOGIC basiert auf dem smartCore mit 800MHz bis 1.8GHz. Dieses industrietaugliche Board verfügt über 100/10BASE-T LAN Anschluss, Audio, CompactFlash Sockel und Video Input. Es bietet die ideale Plattform für integrierte Anzeige- und Multimedia-Systeme.

Description

The MICROSPACE Slot-PC PCC855 from DIGITAL-LOGIC integrates the smartCore CPUwith 800MHz up to 1.8GHz. This low-power industrial board includes 100/10BASE-T LAN interface, audio, CompactFlash socket and a Video Input. Perfectly made for embedded MMI or multimedia applications.

Ordering Information

Article	Part No.	Description
PCC855	810600	PICMG Slot CPU Card, without smartModule, 0MB RAM, VGA, LAN, Audio
SM855-C120	805190	Intel®Processor C120 (0.8GHz), 0MB RAM, VGA, LAN, AC97
SM855-C373	805163	Intel® Celeron® M-373 (1.0GHz), 0MB RAM, VGA, LAN, AC97
SM855-P738	805164	Intel® Pentium® M-738 (1.4GHz), 0MB RAM, VGA, LAN, AC97
SM855-P745	805168	Intel® Pentium® M-745 (1.8GHz), 0MB RAM, VGA, LAN, AC97

Option	Part No.	Description
MSBC-CK	802012	Single Board Computer Cable Kit
MSFLOPPY	891001	3.5“ Micro-Floppydrive (26 pin)
MSFDCK	802600	Microfloppy cable (26 pin)

Option	Part No.	Description
DDRAM256M	890670	SODIMM DDRAM-Module 256MB
DDRAM512M	890671	SODIMM DDRAM-Module 512MB
DDRAM1GB	890672	SODIMM DDRAM-Module 1GB

MICROSPACE SLOT-PC

Overview

Type	PCC855		
CPU/Chipset	smartModule855		
Bus System	ISA, PCI		
Expansion BUS	PC/104-*Plus*		
2nd Level Cache	0 – 2048kB		
Performance (MHz)	600– 1800MHz		
DRAM Min-Max (MB)	DDR-SODIMM 256 –1024MB		
CompactFlash Socket	✓		
Mouse, Keyboard	✓		
BootDrive	FD, HD, CD, USB, LAN		
Floppy Interface	✓		
IDE Interface P-ATA	✓, 2x		
IDE Interface S-ATA	-		
COM1	RS232C		
COM2	RS232C		
COM3	-		
COM4	-		
LPT1	✓		
IrDA	external		
USB	4x USB 2.0		
LAN Port A	100/10 BASE-T		
LAN Port B			
Audio	AC97, 5.1		
Video Controller	855GME		
Video Datapath	32 Bit		
Video Memory	64MB		
LCD Interface	18 Bit LVDS, 24Bit DVI		
LCD Resolution*	1600 x 1200		
Special Functions	-		
EEPROM Support	✓		
Watchdog	✓		
Power Normal	5V/20W (typ.@1.4GHz)		
Power Suspend	3W, ATX		
Size (mm)	-		
SLOT BUS	ISA / PCI		
Cooling Type	passive / active		
Operating Temp.	-25°C to +50°C		
Extended Temp. with 800MHz	-40°C to +70°C		
Extended Temp. with 1.4GHz	-		
Extended Temp. with 1.8GHz	-40°C to +50°C		
Weight (gr)	350		
MTBF	> 200'000h		
Ordering Guide	PCC855 + SM855-xxxx		
Status	for new designs		

* Auflösungen auf Seite 16
* Resolution on page 16

Pb
ab 7/2006

Änderungen vorbehalten / Subject to change

Kabelkits

Zu allen DIGITAL-LOGIC-Rechnerboards sind Kabelkits verfügbar. Mit einem Kabelkit ist der Anschluss aller Standardperipheriegeräte möglich.

Cable-Kits

Cable-Kits are available for all DIGITAL-LOGIC products and can be used to connect all standard peripherals.

MSBC-CK
Cable kit to Single Boards Computer
Art.No. 802012

MSM-CK
Cable kit to PC/104 Boards
Art.No. 802605

MSM855-LANCON
Art.No. 803020

MSM855-CKCON
Art.No. 803030

MSM855-DVICON
Art.No. 803040

MICROSPACE Utilities

MICROSPACE Zubehör

Damit die Integration und Inbetriebnahme von PC-Produkten noch einfacher wird, bietet DIGITAL-LOGIC umfangreiches und nützliches Zubehör an. Erhältlich ist unter anderem ein intelligenter Keymatrix-Decoder für den Anschluss an einen AT-Keyboard-Stecker.

Embedded Speicherlösungen

Mit der MSFLASH wird eine Flashdisk als Harddisk emuliert. Dies erleichtert den Betrieb mit Realtime-Betriebssystemen, da kein Flashdisk-Treiber notwendig wird. Lediglich der IDE-Port muss unterstützt werden. Das Gleiche gilt für die Microdrive im CompactFlash-Format Typ II. Diese Disk ist wie eine CompactFlashkarte in die smartModule-486PCX einsteckbar. Die MSSD-FxS0 Speichermodule ermöglichen die kostengünstigste Flashdisk-Variante auf MSM486SV/SN/SL-Boards.

Konverter für elektronische Speicher

Mit dem MSCF ist eine CompactFlash-Karte an einem IDE-Anschluss betreibbar. Ein 44-poliges Verbindungskabel verbindet das Konverterboard MSCF mit dem IDE-Stecker. Mit OPTION-2S lassen sich PCCard-Harddisks an den IDE-Bus anschliessen.

MICROSPACE Utilities

Complementary to the PC-products DIGITAL-LOGIC offers a wide range of utilities which simplify integration and development, for example an intelligent keymatrix-decoder for connection to an AT-keyboard.

Embedded Memory Solutions

The MSFLASH emulates a flashdisk as a harddisk. This facilitates operation with realtime systems, since no flashdisk driver is necessary. Only the IDE-port needs to be supported. The same applies to the microdrive in CompactFlash type II. The disk can be plugged into a smartModule486PCX like a CompactFlash card.
The MSSD-FxS0 memory module provides a cost-effective flashdisk solution on MSM486SV/SN/SL boards.

Converters for Electronic Memories

With an MSCF, a CompactFlash card can be operated on an IDE-connection. A 44-pin connector cable links the MSCF converter board with the IDE-connector. The OPTION-2S connects the PCCard harddisks to the IDE-bus.

Flashdisk Overview

Flashdevice	bootable	8MB	16MB	32MB	64MB	128MB	256MB	512MB	1.6GB	Operating Systems
MSSD	yes	x	-	-	-	-	-	-	-	DOS, QNX
DiskOnChip	yes	-	-	x	x	x	x	-	-	DOS, WIN, CE, QNX, LINUX, VxWorks
CompactFlash	yes	-	-	-	x	x	x	x	x	all OS
PCCard/PCMCIA	no	x	x	x	x	x	x	x	x	DOS, WIN, NT

MICROSPACE Utilities
Overview



Type	MSKEY	MSCF	MSFC
Function	Keymatrix Decoder	CompactFlash Converter to IDE	Microfloppy-Adapter
Controller	PIC	Converter	Converter
Connector	8 x 8 keys	44pin IDE	26pin/34pin
Power Normal	5V/200mA (typ.)	5V	5V
Power Suspend	5V/200mA (typ.)	5V	5V
Operating Temp.	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C
Extended Temp.	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Weight (gr)	12	10	20
MTBF	> 200'000h	> 200'000h	> 200'000h
Ordering Guide	MSKEY 80800	MSCF 801072	MSFC 801071
Status	cont. availability	for new designs	for new designs


Type	MSDVI2LCD	CompactFlash	DiskOnChip
Function	LCD/LVDS conversion	Flashdisk	Flashdisk, ISA
Controller	Sil 161	IDE-ATA	none
Connector	DVI input / 50pin	CF	32pin header
Flash Capacity	-	up to 1GB	8 - 144MB
Power Normal	5V	5V/60mA (typ.)	5V/60mA (typ.)
Power Suspend	-	5V/60mA (typ.)	5V/60mA (typ.)
Operating Temp.	-25°C to +70°C	0°C to +70°C	-25°C to +70°C
Extended Temp.	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Weight (gr)	50	15	7
MTBF	> 100'000h	> 200'000h	> 200'000h
Ordering Guide	MSDVI2LCD	-	MD-2802-D08 840208
		-	MD-2202-D16 840219
		-	-
Status	for new designs	for new designs	for new designs

Änderungen vorbehalten / Subject to change!

The Company

Embedded Computer Modules ECM

Embedded Computer Boards ECB

Customized Embedded Computers CEC

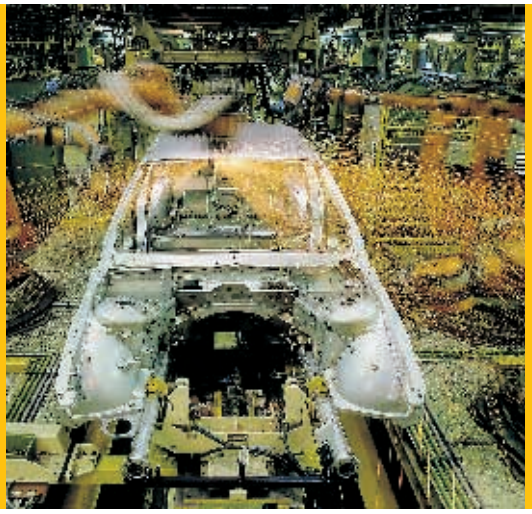
Technical Information

Customized Embedded Computers

Vielfältige Einsatzbereiche

... Geräte der Medizinaltechnik wie Hirnstromanalysegeräte, Industriesteuerungen, Navigationssysteme, Flugrechner für unbemannte Fluggeräte, Informationsterminals, Telefonsysteme, Digital-TV mit integriertem Internet-Browser, Passagierunterhaltung, mobile Datenerfassungsgeräte, robuste militärische und Outdoor-Anwendungen usw. ...

Navigation



Industry

Kundenspezifische Systemlösungen

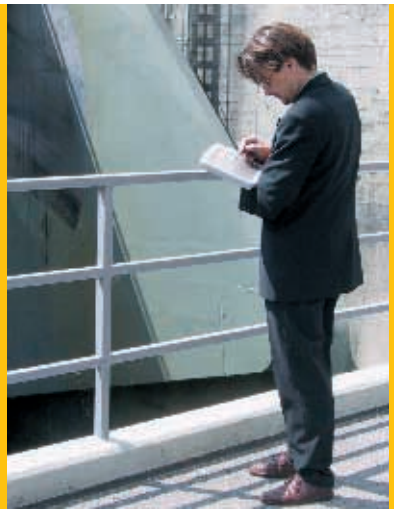
Markterfolge und Konkurrenzfähigkeit werden optimiert, je innovativer ein Produkt ist und je rascher es dem modernsten Stand der Hightech-Entwicklung angepasst wird. Doch nicht jedes Unternehmen will und kann die erforderlichen Integrationsarbeiten selber durchführen. Dann beauftragt es DIGITAL-LOGIC mit der Ausarbeitung seines Projekts. DIGITAL-LOGIC mit seinem kompetenten Team von Ingenieuren im DesignIn-Center sowie in der Entwicklungsabteilung ist hoch spezialisiert für jeden Kunden eine individuelle Systemlösung zu erarbeiten. Schnell, kostengünstig und umfassend verläuft die Entwicklung bis zur Serienproduktion. Kundenspezifische Embedded Computer können sowohl auf integrierten smartModulen wie auf smartCores basieren oder sind als Chiplevel-Integration erhältlich. DIGITAL-LOGIC verfügt über modernste CAD-Anlagen und automatische Router sowie Software-Tools, um den BIOS-Code den Anforderungen anzupassen.

Custom Designs

Timing and costs are, as usual, a critical issue. To be successful with a product, customers need precisely the right embedded computer. OEMs must beat the competition with better, more innovative products or pay the price – in sales-volume, profit margin, customer-loyalty, and even survival. DIGITAL-LOGIC is able to help them to be competitive, in the forefront of innovative technology, and for the best price. Extensive experience allows DIGITAL-LOGIC to develop and manufacture a custom-embedded computer faster and less expensively than an OEM can design it himself from scratch or by modifying something off the shelf.
Not only the design sources, but also the source code of all BIOS, drivers, and some operating systems are in-house, and can be adapted to the customers' needs. DIGITAL-LOGIC employs the latest CAD-systems, automatic routers, and software-tools to adapt the BIOS code to a customer's requirement.

Typical Applications

.... medical technology equipment like brain activity analyzers, industrial control technology, navigation systems, flight calculators for unmanned flight equipment, information terminals, telephone systems, digital TV with integrated Internet browsers, onboard passenger entertainment, mobile data-loggers, extremely rugged military and outdoor applications etc. ...



Mobile Data Systems

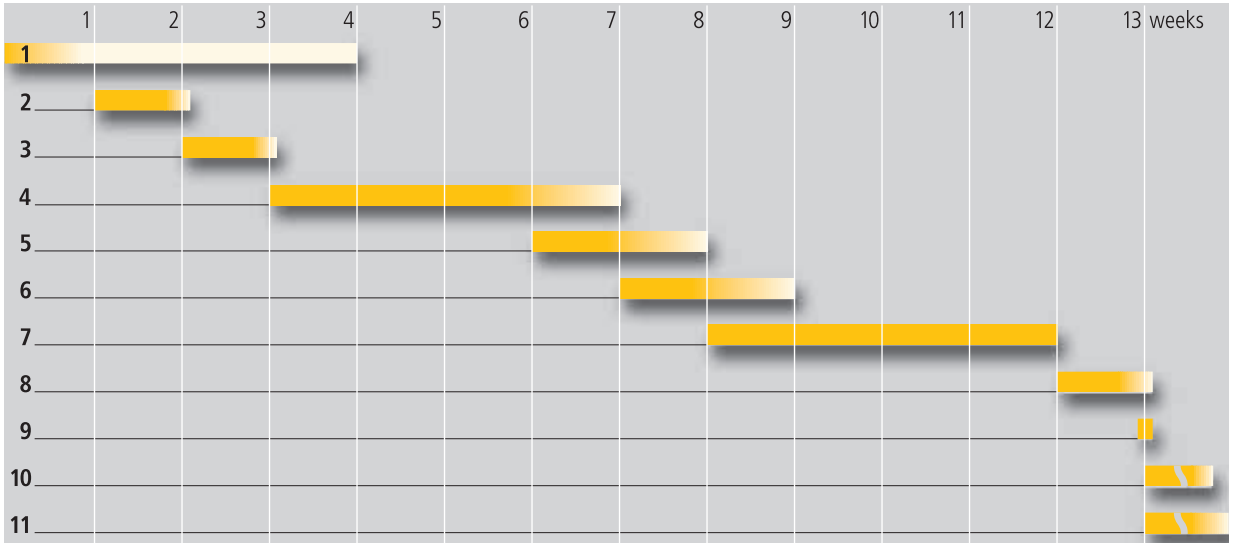
Medical technology

Projektplanung

Für die kundenspezifische Systemlösung sind folgende Vorgehens- und Arbeitsschritte erforderlich:

1. **Pflichtenhefterstellung**
2. **Angebotsausarbeitung und Auftragserteilung**
3. **Projektleiter koordiniert den Terminplan**
4. **Entwicklung, Review und Freigabe des Schaltplanes**
5. **Entwicklung, Review und Freigabe der CAD-Platzierung**
6. **Erstellen und Review des Layouts**
7. **Prototypen produzieren und Inbetriebnahme**
8. **EMV-, Thermo-, Vibrationstests**
9. **Übergabe der Prototypen**
10. **Freigabe, falls notwendig Redesign**
11. **Start der Serienfertigung**

Zeit bis zur Auslieferung des ersten Loses ca. 8 – 12 Wochen, je nach Volumen und Beschaffungssituation für Sonderbauteile und Leiterplatten.



Project Planning

For customized system solutions the following proceeding is necessary:

1. Specification
2. Quotation and placing of order
3. Project manager prepares a schedule
4. Development, review and release of the schematics
5. Development, review and release of the CAD-placing
6. Layout and review
7. Production of prototypes and deployment
8. EMI-, thermal-, vibration-tests
9. Handing over of the prototypes
10. Release and if necessary redesign
11. Start of serial production

Time of delivery for the first lots approx. 8 – 12 weeks, depending on volume and procurement situation of special components and printed circuit boards.

Unsere MICROSPACE®-PC-Familie
Our MICROSPACE®-PC-Family

Möchten Sie mehr erfahren über unsere kleinen, leisen Alleskönner?
Bestellen Sie kostenlos unseren separaten Mobile Computer Systems-Katalog unter
www.digitallogic.com

Would you like to learn more about our small, quiet allrounders? Order our separate Mobile Computer Systems catalog free of charge under
www.digitallogic.com

The Company

Embedded Computer Modules ECM

Embedded Computer Boards ECB

Customized Embedded Computers CEC

Technical Information

Technical Information

RS232C Cables

Serial Adapter Connector: Male 25-Pin DSub
Unlisted pins have no connection.

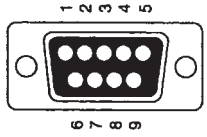
Pin	I/O	Description
1		NC (Shield GND. Other End)
2	>	TX (Transmit Data)
3	<	RX (Receive Data)
4	>	RTS (Request to Send)
5	<	CTS (Clear to Send)
6	<	DSR (Data Set Ready)
7		GND (Signal Ground)
8	<	DCD (Data Carrier Detect)
9	>	+Transmit Current Loop Data
11	>	-Transmit Current Loop Data
18	<	+Receive Current Loop Data
20	>	DTR (Data Terminal Ready)
22	<	RI (Ring Indicator)
25	<	-Receive Current Loop Data

Alternate Adapter Connector: Male 9-Pin DSub

Pin	I/O	Description
1	<	DCD (Data Carrier Detect)
2	<	RX (Receive Data)
3	>	TX (Transmit Data)
4	>	DTR (data Terminal Ready)
5		GND (Signal Ground)
6	<	DSR (Data Set Ready)
7	>	RTS (Request to Send)
8	<	CTS (Clear To Send)
9	<	RI (Ring Indicator)

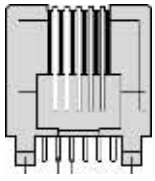
To wire a 25-pin connector to a 9-pin connector:

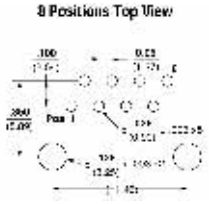
DB-9	DB25	Description
1	8	DCD (Data Carrier Detect)
2	3	RX (Receive Data)
3	2	TX (Transmit Data)
4	20	DTR (Data Terminal Ready)
5	7	GND (Signal Ground)
6	6	DSR (Data Set Ready)
7	4	RTS (Request To Send)
8	5	CTS (Clear To Send)
9	22	RI (Ring Indicator)



male connector view (PC-side)

RJ45



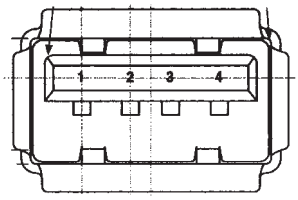


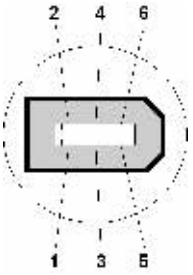
1	TXP
2	TXN
3	RXP
4	GND (75 Ohm)
5	GND (75 Ohm)
6	RXN
7	GND (75 Ohm)
8	GND (75 Ohm)

PS/2 Keyboard and Mouse Cable

Connector: 6-Pin Miniature DIN Female, cable requires male.
Used for laptops and PS/1 & 2 keyboard and mouse.
Keyboard: male
PC side: female

Pin	Name
1	+Keyboard Data
2	Unused
3	Ground
4	+5 Volts
5	Keyboard Clock
6	Unused





USB Connector

PIN-Number	Description	I / 0
1	VBus	
2	D –	<>
3	D +	<>
4	GND	
Shell	Shield	

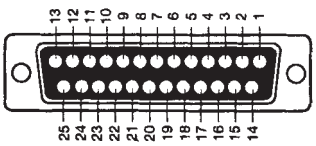
Firewire Connector

PIN-Number	Description	I / 0
1	Power DC	12 V no load when operating with battery or power adapter
2	Ground	Ground return for power and inner cable shield
3	TPB-	Twisted-pair B, differential signals
4	TPB+	Twisted-pair B, differential signals
5	TPA-	Twisted-pair A, differential signals
6	TPA+	Twisted-pair A, differential signals

Parallel Printer Cable

PC (D-25 male) -Prn (Amphenol 57-30360 male)

Description	PC-Pin	Direct.	Prn-Pin
-Strobe	1	<>	1
+Data Bit 0	2	<>	2
+Data Bit 1	3	<>	3
+Data Bit 2	4	<>	4
+Data Bit 3	5	<>	5
+Data Bit 4	6	<>	6
+Data Bit 5	7	<>	7
+Data Bit 6	8	<>	8
+Data Bit 7	9	<>	9
-Acknowledge	10	<	10
+Busy	11	<	11
+Paper End	12	<	12
+Select	13	<	13
Auto Feed	14	>	14
-Error/Fault	15	<	32
-Printer Init	16	>	31
-Select	17	>	36
Ground	18-25		19-30
-Printer Init	16	>	31
-Error/Fault	15	<	32
Ground			33
Not Used			34
+5v through 4.7K			35
-Select	17	<	36



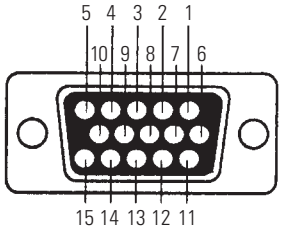
Technical Information

Display Cable

Connector: Female 15-Pin DSub, cable requires male.
Cable coming from CRT: male. PC side: female

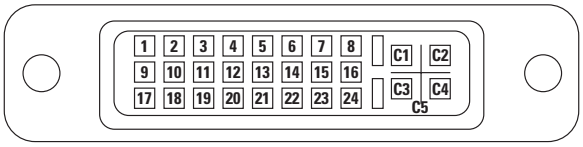
VGA RGB Display:

Pin	I/O	Description	Mono Use	Color Use
1	>	Red		Red
2	>	Green	Mono	Green
3	>	Blue		Blue
4		reserved		
5		Digital Gnd	Self Test	Self Test
6	<	Red return	key	R. return
7	<	Green return	Mono return	G. return
8	<	Blue return		B. return
9		Plug		
10		Digital Gnd	Gnd	Gnd
11		reserved		Gnd
12		reserved		Gnd
13	>	H. Drive	H. Drive	H. Drive
14	>	V. Drive	V. Drive	V. Drive
15		reserved		



female connector view (PC-side)

DVI-I



Pin	Description	Pin	Description	Pin	Description
1	TMDS Data 2-	9	TMDS Data 1-	17	TMDS Data 0-
2	TMDS Data 2+	10	TMDS Data 1+	18	TMDS Data 0+
3	TMDS Data 2/4	11	TMDS Data 1/3 Shield	19	TMDS Data 0/5
4	TMDS Data 4-	12	TMDS Data 3-	20	TMDS Data 5-
5	TMDS Data 4+	13	TMDS Data 3+	21	TMDS Data 5+
6	DDC Clock	14	+5V Power	22	TMDS Clock Shield
7	DDC Data	15	Gnd (+5, Analog V/H Sync)	23	TMDS Clock+
8	Analog Vertical Sync	16	Hot Plug Detect	24	TMDS Clock-C1
C1	Analog Red Video	C2	Analog Green Video	C3	Analog Blue Video
C4	Analog H Sync	C5	Analog Gnd (R, G&B)		

PC/104 Connector

Pin #	J1/P1 Row A	J1/P1 Row B	J2/P2 (1) Row C	J2/P2 (1) Row D
0			0V	0V
1	IOCHK*	0V	SBHE*	MEMCS16*
2	SD7	Reset	LA23	IOCS16*
3	SD6	+5V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	-5V	LA20	IRQ12
6	SD3	DRQ2	LA19	IRQ15
7	SD2	-12V	LA18	IRQ14
8	SD1	SRDY	LA17	DACK0*
9	SD0	+12V	MEMR*	DRQ0
10	IOCHRDY	KEY (2)	MEMW*	DACK5*
11	AEN	MEMW*	SD8	DRQ5
12	SA19	SMEMR*	SD9	DACK6*
13	SA18	IOW*	SD10	DRQ6
14	SA17	IOR*	SD11	DACK7*
15	SA16	DACK3*	SD12	DRQ7
16	SA15	DRQ3	SD13	+5V
17	SA14	DACK1*	SD14	MASTER*
18	SA13	DRQ1	SD15	0V
19	SA12	REFRESH*	KEY (2)	0V
20	SA11	BCLK		
21	SA10	IRQ7		
22	SA9	IRQ6		
23	SA8	IRQ5		
24	SA7	IRQ4		
25	SA6	IRQ3		
26	SA5	DACK2*		
27	SA4	TC		
28	SA3	BALE		
29	SA2	+5V		
30	SA1	OSC		
31	SA0	0V		
32	0V	0V		

Notes:
Pin B4 is IRQ2 for an XT
Pin B4 is IRQ9 for an AT
Which is re-directed as IRQ2.
A System Board Jumper on the original IBM AT provided the option of driving the clock (BCLK) signal from an adapter board device. Most clones do not support this option.
* = active low

PC/104-*Plus* Signals

Pin	ROW-A	ROW-B	ROW-C	ROW-D
1	nc	Reserved	+5	AD00
2	VI/O	AD02	AD01	+5V
3	AD05	GND	AD04	AD03
4	C/BE0*	AD07	GND	AD06
5	GND	AD09	AD08	GND
6	AD11	VI/O	AD10	M66EN
7	AD14	AD13	GND	AD12
8	+3.3V	C/BE1*	AD15	+3.3V
9	SERR*	GND	SB0*	PAR
10	GND	PERR*	+3.3V	SDONE
11	STOP*	+3.3V	LOCK*	GND
12	+3.3V	TRDY*	GND	DEVSEL*
13	FRAME*	GND	IRDY*	+3.3V
14	GND	AD16	+3.3V	C/BE2*
15	AD18	+3.3V	AD17	GND
16	AD21	AD20	GND	AD19
17	+3.3V	AD23	AD22	+3.3V
18	IDSEL0	GND	IDSEL1	IDSEL2
19	AD24	C/BE3*	VI/O	IDSEL3
20	GND	AD26	AD25	GND
21	AD29	+5V	AD28	AD27
22	+5V	AD30	GND	AD31
23	REQ0*	GND	REQ1*	VI/O
24	GND	REQ2*	+5V	GNT0*
25	GNT1*	VI/O	GNT2*	GND
26	+5V	CLK0	GND	CLK1
27	CLK2	+5V	CLK3	GND
28	GND	INTD*	+5V	RST*
29	+12V	INTA*	INTB*	INTC*
30	-12V	Reserved	Reserved	nc

1 The KEY pins are to guarantee proper module installation. Pin-A1 will be removed and the female side plugged for 5.0V I/O signals and Pin-D30 will be modified in the same manner for 3.3V I/O. It is recommended that both KEY pins (A1 and D30) be electrically connected to GND for shielding.

smartBus480 -Connector J1

Pin	Group	Volt	Description	Pin	Group	Volt	Description	Pin	Group	Volt	Description	Pin	Group	Volt	Description
A1	POWER		VCC (5V)	B1	ISA	5 i	IRQ1 used by KBD	A75	DRAM	3 o	MA0	B75	SDRAM	3 o	RAS4 (TX)
A2	ISA	5 o	RESDRV	B2	ISA	5 i	IRQ9	A76	DRAM	3 o	MA1	B76	SDRAM	3 o	RAS5 (TX)
A3	ISA	5 i	SBHE#	B3	ISA	5 i	IRQ3 used by COM2	A77	DRAM	3 o	MA2	B77	DRAM	3 o	MA13
A4	ISA	5 i	MEMCS16#	B4	ISA	5 i	IRQ4 used by COM1	A78	DRAM	3 o	MA3	B78	SDRAM	3 o	SDCLK0
A5	ISA	5 i	IOCS16#	B5	ISA	5 i	IRQ5	A79	DRAM	3 o	MA4	B79	SDRAM	3 o	SDCLK1
A6	ISA	5 o	IOW#	B6	ISA	5 i	IRQ6 used by FLOPPY	A80	DRAM	3 o	MA5	B80	RES	i/o	RES-Function7/24Mhz
A7	ISA	5 o	IOR#	B7	ISA	5 i	IRQ7 used by LPT1	A81	DRAM	3 o	MA 6	B81	POWER		GROUND
A8	ISA	5 o	SYSCLK	B8	ISA	5 i	IRQ10	A82	DRAM	3 o	MA 7	B82	DRAM	3 i/o	nc/MD48
A9	ISA	5 o	TC	B9	ISA	5 i	IRQ11	A83	DRAM	3 o	MA 8	B83	DRAM	3 i/o	nc/MD49
A10	ISA	5 o	ALE	B10	ISA	5 i	IRQ12 (MOUSE)	A84	DRAM	3 o	MA 9	B84	DRAM	3 i/o	nc/MD50
A11	ISA	5 i/o	SD7	B11	ISA	5 i	IRQ14 (IDE)	A85	DRAM	3 o	MA 10	B85	DRAM	3 i/o	nc/MD51
A12	ISA	5 i/o	SD6	B12	ISA	5 i	IRQ15 (IDE)	A86	DRAM	3 o	MA 11	B86	DRAM	3 i/o	nc/MD52
A13	ISA	5 i/o	SD5	B13	CORE	3 i	only factory: BIOS	A87	DRAM	3 o	MA 12	B87	DRAM	3 i/o	nc/MD53
A14	ISA	5 i/o	SD4	B14	CORE	3 o	only factory: BIOS	A88	POWER		GROUND	B88	DRAM	3 i/o	nc/MD54
A15	ISA	5 i/o	SD3	B15	ISA	5 o	SA21	A89	DRAM	3 i/o	MD24	B89	DRAM	3 i/o	nc/MD55
A16	ISA	5 i/o	SD2	B16	ISA	5 o	SA20	A90	DRAM	3 i/o	MD25	B90	POWER		GROUND
A17	ISA	5 i/o	SD1	B17	ISA	5 o	LA19	A91	DRAM	3 i/o	MD26	B91	DRAM	3 i/o	nc/MD56
A18	ISA	5 i/o	SD0	B18	ISA	5 o	LA18	A92	DRAM	3 i/o	MD27	B92	DRAM	3 i/o	nc/MD57
A19	ISA	5 o	IOCHRDY	B19	ISA	5 o	LA17	A93	DRAM	3 i/o	MD28	B93	DRAM	3 i/o	nc/MD58
A20	ISA	5 o	AEN	B20	ISA	5 i/o	SD8	A94	DRAM	3 i/o	MD29	B94	DRAM	3 i/o	nc/MD59
A21	ISA	5 o	SA19	B21	ISA	5 i/o	SD9	A95	DRAM	3 i/o	MD30	B95	DRAM	3 i/o	nc/MD60
A22	ISA	5 o	SA18	B22	ISA	5 i/o	SD10	A96	DRAM	3 i/o	MD31	B96	DRAM	3 i/o	nc/MD61
A23	ISA	5 o	SA17	B23	ISA	5 i/o	SD11	A97	POWER		GROUND	B97	DRAM	3 i/o	nc/MD62
A24	ISA	5 o	SA16	B24	ISA	5 i/o	SD12	A98	DRAM	3 i/o	nc/MD32	B98	DRAM	3 i/o	nc/MD63
A25	ISA	5 o	SA15	B25	ISA	5 i/o	SD13	A99	DRAM	3 i/o	nc/MD33	B99	POWER		GROUND
A26	ISA	5 o	SA14	B26	ISA	5 i/o	SD14	A100	DRAM	3 i/o	nc/MD34	B100	SIDE	5 i/o	IDE-DACK#
A27	ISA	5 o	SA13	B27	ISA	5 i/o	SD15	A101	DRAM	3 i/o	nc/MD35	B101	SIDE	5 i/o	IDE-DRQ
A28	ISA	5 o	SA12	B28	ISA	5 i	DRQ 0	A102	DRAM	3 i/o	nc/MD36	B102	SIDE	5 i/o	IRQ (assigned to IRQ15)
A29	ISA	5 o	SA11	B29	ISA	5 i	DRQ 1	A103	DRAM	3 i/o	nc/MD37	B103	SIDE	5 i/o	IDE-IORDY
A30	ISA	5 o	SA10	B30	ISA	5 i	DRQ 2	A104	DRAM	3 i/o	nc/MD38	B104	SIDE	5 i/o	IDE-AO
A31	ISA	5 o	SA9	B31	ISA	5 i	DRQ 3	A105	DRAM	3 i/o	nc/MD39	B105	SIDE	5 i/o	IDE-A1
A32	ISA	5 o	SA8	B32	ISA	5 i	DRQ 5	A106	POWER		GROUND	B106	SIDE	5 i/o	IDE-A2
A33	ISA	5 o	SA7	B33	ISA	5 i	DRQ 6	A107	DRAM	3 i/o	nc/MD40	B107	SDRAM	3 o	BAO
A34	ISA	5 o	SA6	B34	ISA	5 o	OSC (14.31 MHz)	A108	DRAM	3 i/o	nc/MD41	B108	Core	5 i	WDOG Strobe
A35	ISA	5 o	SA5	B35	ISA	5 o	DMA0#	A109	DRAM	3 i/o	nc/MD42	B109	Core	5 i	WDOG Enable
A36	ISA	5 o	SA4	B36	ISA	5 o	DMA1#	A110	DRAM	3 i/o	nc/MD43	B110	SDRAM	3 o	BA1
A37	ISA	5 o	SA3	B37	ISA	5 o	DMA2#	A111	DRAM	3 i/o	nc/MD44	B111	XBUS	3 o	XDO
A38	ISA	5 o	SA2	B38	ISA	5 o	DMA3#	A112	DRAM	3 i/o	nc/MD45	B112	XBUS	3 o	XD1
A39	ISA	5 o	SA1	B39	ISA	5 o	DMA5#	A113	DRAM	3 i/o	nc/MD46	B113	XBUS	3 o	XD2
A40	ISA	5 o	SA0	B40	ISA	5 o	DMA6#	A114	DRAM	3 i/o	nc/MD47	B114	XBUS	3 o	XD3
A41	SDRAM	3 o	CAS0 / DQMB0	B41	CORE	5 o	Speaker	A115	SDRAM	3 o	RAS0# / (S0 SDRAM)	B115	XBUS	3 o	XD4
A42	SDRAM	3 o	CAS1 / DQMB1	B42	ISA	5 i	ZWS#	A116	SDRAM	3 o	RAS1# / (S1 SDRAM)	B116	XBUS	3 o	XD5
A43	SDRAM	3 o	CAS2 / DQMB2	B43	ISA	5 o	REF#	A117	DRAM	3 o	RAS2# int used	B117	XBUS	3 o	XD6
A44	SDRAM	3 o	CAS3 / DQMB3	B44	ISA	5 o	MEMR#	A118	DRAM	3 o	RAS3# free	B118	XBUS	3 o	XD7
A45	SDRAM	3 o	CAS4 / DQMB4	B45	ISA	5 o	SMEMR#	A119	DRAM	3 o	MWEA#	B119	XBUS	3 o	XD_CS#
A46	SDRAM	3 o	CAS5 / DQMB5	B46	ISA	5 o	MEMW#	A120	DRAM	3 o	MWEB#	B120	res	3 o	VCC (5V)
A47	SDRAM	3 o	CAS6 / DQMB6	B47	ISA	5 o	SMEMW#								
A48	SDRAM	3 o	CAS7 / DQMB7	B48	SIDE	5 i/o	IDE HD 0								
A49	DRAM	3 i/o	MD0	B49	SIDE	5 i/o	IDE HD 1								
A50	DRAM	3 i/o	MD1	B50	SIDE	5 i/o	IDE HD 2								
A51	DRAM	3 i/o	MD2	B51	SIDE	5 i/o	IDE HD 3								
A52	DRAM	3 i/o	MD3	B52	SIDE	5 i/o	IDE HD 4								
A53	DRAM	3 i/o	MD4	B53	SIDE	5 i/o	IDE HD 5								
A54	DRAM	3 i/o	MD5	B54	SIDE	5 i/o	IDE HD 6								
A55	DRAM	3 i/o	MD6	B55	SIDE	5 i/o	IDE HD 7								
A56	DRAM	3 i/o	MD7	B56	SIDE	5 i/o	IDE HD 8								
A57	POWER		GROUND	B57	SIDE	5 i/o	IDE HD 9								
A58	DRAM	3 i/o	MD8	B58	SIDE	5 i/o	IDE HD 10								
A59	DRAM	3 i/o	MD9	B59	SIDE	5 i/o	IDE HD 11								
A60	DRAM	3 i/o	MD10	B60	SIDE	5 i/o	IDE HD 12								
A61	DRAM	3 i/o	MD11	B61	SIDE	5 i/o	IDE HD 13								
A62	DRAM	3 i/o	MD12	B62	SIDE	5 i/o	IDE HD 14								
A63	DRAM	3 i/o	MD13	B63	SIDE	5 i/o	IDE HD 15								
A64	DRAM	3 i/o	MD14	B64	SIDE	5 o	IDE CSO#								
A65	DRAM	3 i/o	MD15	B65	SIDE	5 o	IDE CS1#								
A66	POWER		GROUND	B66	SIDE	5 o	IDE IOR#								
A67	DRAM	3 i/o	MD16	B67	SIDE	5 o	IDE IOW#								
A68	DRAM	3 i/o	MD17	B68	SDRAM	3 o	SDCLK2								
A69	DRAM	3 i/o	MD18	B69	SDRAM	3 o	CKE0								
A70	DRAM	3 i/o	MD19	B70	SDRAM	3 o	CKE1								
A71	DRAM	3 i/o	MD20	B71	SDRAM	3 o	SCASA								
A72	DRAM	3 i/o	MD21	B72	SDRAM	3 o	SCASB								
A73	DRAM	3 i/o	MD22	B73	SDRAM	3 o	SRASA								
A74	DRAM	3 i/o	MD23	B74	SDRAM	3 o	SCASB								

**These signals (LA17 - LA19) correspond with the SA17-SA19.

Remarks

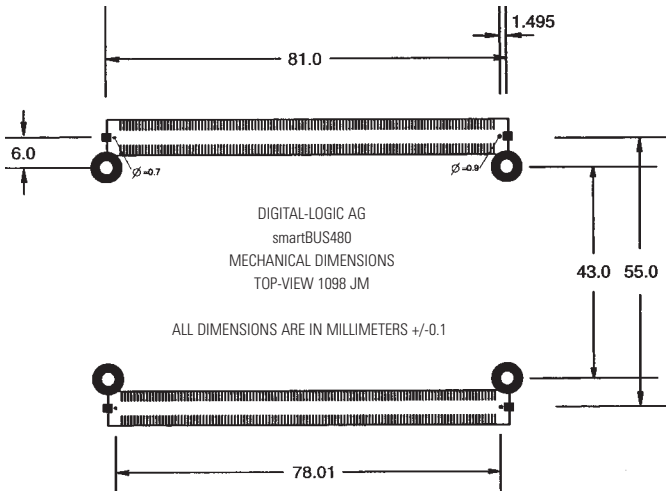
5 o = 5V output 5 i/o = 5V input/output nc = not connected
3 o = 3V output 5 i/o = 5V input/output o.c. = open collector output
= active low signal

res = pin function depending on the CPU, reserved

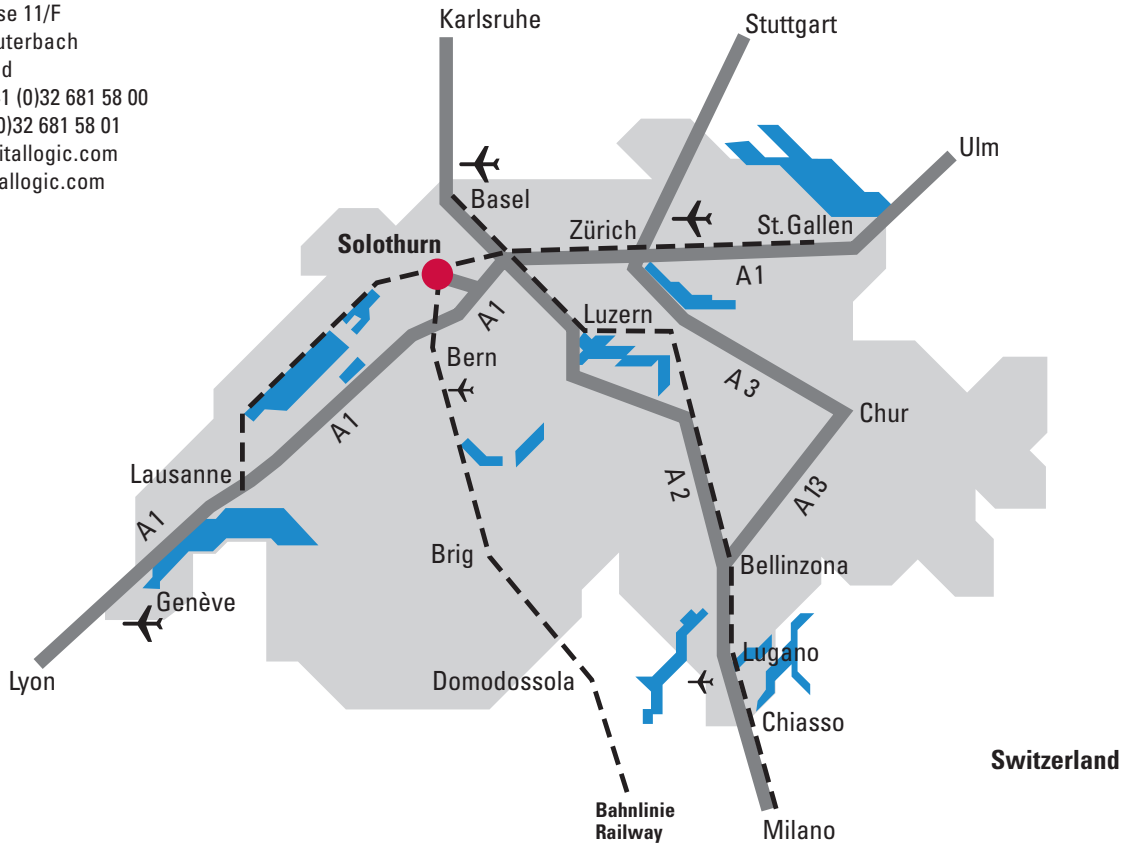
smartBus480 -Connector J2

Pin	Group	Volt	Description	Pin	Group	Volt	Description
A1	PRINTER	5 o	Strobe#	B1	COM1	5 o	DCD1
A2	PRINTER	5 o	Auto#	B2	COM1	5 i	DSR1
A3	PRINTER	5 o	Error#	B3	COM1	5 i	RXD1
A4	PRINTER	5 o	Init#	B4	COM1	5 o	RTS1
A5	PRINTER	5 o	Slctin#	B5	COM1	5 o	TXD1
A6	PRINTER	5 i/o	PRINTER data 0	B6	COM1	5 i	CTS1
A7	PRINTER	5 i/o	PRINTER data 1	B7	COM1	5 o	DTR1
A8	PRINTER	5 i/o	PRINTER data 2	B8	COM1	5 i	RI1
A9	PRINTER	5 i/o	PRINTER data 3	B9	COM2	5 o	DCD2
A10	PRINTER	5 i/o	PRINTER data 4	B10	COM2	5 i	DSR2
A11	PRINTER	5 i/o	PRINTER data 5	B11	COM2	5 i	RXD2
A12	PRINTER	5 i/o	PRINTER data 6	B12	COM2	5 o	RTS2
A13	PRINTER	5 i/o	PRINTER data 7	B13	COM2	5 o	TXD2
A14	PRINTER	5 i	Acknowledge#	B14	COM2	5 i	CTS2
A15	PRINTER	5 i	Busy	B15	COM2	5 o	DTR2
A16	PRINTER	5 i	Paper end#	B16	COM2	5 i	RI2
A17	PRINTER	5 i	Select#	B17	FLOPPY	5 i	Index#
A18	KBD	5 i/o	Keyboard data	B18	FLOPPY	5 o	Drive select 1#
A19	KBD	5 o	Keyboard clock	B19	FLOPPY	5 i	Disk change#
A20	MOUSE	5 o	MOUSE clock	B20	FLOPPY	5 o	Motor on 1
A21	MOUSE	5 i/o	MOUSE data	B21	FLOPPY	5 o	Direction#
A22	POWER		Ground	B22	FLOPPY	5 o	Step impulse#
A23	PIDE	5 i/o	IDE HD 0	B23	FLOPPY	5 o	Write data#
A24	PIDE	5 i/o	IDE HD 1	B24	FLOPPY	5 o	Write gate#
A25	PIDE	5 i/o	IDE HD 2	B25	FLOPPY	5 i	Track zero#
A26	PIDE	5 i/o	IDE HD 3	B26	FLOPPY	5 i	Write protected#
A27	PIDE	5 i/o	IDE HD 4	B27	FLOPPY	5 i	Read data#
A28	PIDE	5 i/o	IDE HD 5	B28	FLOPPY	5 o	Head select#
A29	PIDE	5 i/o	IDE HD 6	B29	FLOPPY	5 o	Drive select 0
A30	PIDE	5 i/o	IDE HD 7	B30	FLOPPY	5 o	Motor on 0
A31	PIDE	5 i/o	IDE HD 8	B31	APM	5 i	PWRBTN#
A32	PIDE	5 i/o	IDE HD 9	B32	PIDE	5 o	IDE RESET#
A33	PIDE	5 i/o	IDE HD 10	B33	APM	5 i	LID#
A34	PIDE	5 i/o	IDE HD 11	B34	USB	5 i	USB-PO+
A35	PIDE	5 i/o	IDE HD 12	B35	USB	5 i	USB-PO-
A36	PIDE	5 i/o	IDE HD 13	B36	PIDE	5 o	IDE-A0
A37	PIDE	5 i/o	IDE HD 14	B37	PIDE	5 o	IDE-A1
A38	PIDE	5 i/o	IDE HD 15	B38	PIDE	5 o	IDE-A2
A39	PIDE	5 o	IDE primary CS0#	B39	PIDE	5 o	IDE-IORDY
A40	PIDE	5 o	IDE primary CS1#	B40	LCD	5 o	LCD D32
A41	PIDE	5 o	IDE-DACK#	B41	IrDA	5 o	IrDA Tx
A42	PIDE	5 o	IDE-DRQ	B42	IrDA	5 i	IrDA Rx
A43	PIDE	5 o	IDE-IRQ (to IRQ14)	B43	LCD	5 o	LCD D33
A44	PIDE	5 o	IDE IOR#	B44	LCD	5 o	LCD D34
A45	PIDE	5 o	IDE IOW#	B45	LCD	5 o	LCD D35
A46	POWER		VCC (5V)	B46	POWER	3 i	Battery 3.0V for RTC
A47	PCI	3 i/o	AD0	B47	PCI	3 i/o	AD16
A48	PCI	3 i/o	AD1	B48	PCI	3 i/o	AD17
A49	PCI	3 i/o	AD2	B49	PCI	3 i/o	AD18
A50	PCI	3 i/o	AD3	B50	PCI	3 i/o	AD19
A51	PCI	3 i/o	AD4	B51	PCI	3 i/o	AD20
A52	PCI	3 i/o	AD5	B52	PCI	3 i/o	AD21
A53	PCI	3 i/o	AD6	B53	PCI	3 i/o	AD22
A54	PCI	3 i/o	AD7	B54	PCI	3 i/o	AD23
A55	PCI	3 i/o	AD8	B55	PCI	3 i/o	AD24
A56	PCI	3 i/o	AD9	B56	PCI	3 i/o	AD25
A57	PCI	3 i/o	AD10	B57	PCI	3 i/o	AD26
A58	PCI	3 i/o	AD11	B58	PCI	3 i/o	AD27
A59	PCI	3 i/o	AD12	B59	PCI	3 i/o	AD28
A60	PCI	3 i/o	AD13	B60	PCI	3 i/o	AD29
A61	PCI	3 i/o	AD14	B61	PCI	3 i/o	AD30
A62	PCI	3 i/o	AD15	B62	PCI	3 i/o	AD31
A63	PCI	3 o	C-BE0#	B63	PCI	3 i	PIRQA#
A64	PCI	3 o	C-BE1#	B64	PCI	3 i	PIRQB#
A65	PCI	3 o	C-BE2#	B65	PCI	3 i	PIRQC#
A66	PCI	3 o	C-BE3#	B66	PCI	3 i	PIRQD#
A67	POWER		VCC (5V)	B67	POWER		VCC (5V)
A68	PCI	3 o	PCI-CLK1	B68	PCI	3 o	PCI-CLK2
A69	PCI	3 i	REQ0#	B69	PCI	3 o	GNT0#
A70	PCI	3 i	REQ1#	B70	PCI	3 o	GNT1#
A71	PCI	3 i	REQ2#	B71	PCI	3 o	GNT2#
A72	PCI	3 i	REQ3#	B72	PCI	3 o	GNT3#
A73	RES	i/o	RES.-Function 5	B73	POWER		VCC (5V)
A74	PCI	3 i	FRAME#	B74	PCI	3 i/o	IRDY#
A75	PCI	3 i/o	TRDY#	B75	PCI	3 i/o	STOP#
A76	PCI	3 i/o	DEVSEL#	B76	PCI	3 i/o	PAR#
A77	PCI	3 i/o	SERR#	B77	PCI	3 i/o	LOCK#
A78	RES	i/o	RES.-Function 4	B78	PCI	3 o	PCI-RESET#
A79	CORE	3 i	Resetinput/POWERgood	B79	ISA	5i	DRQ7
A80	RES	i/o	RES.-Function 6	B80	ISA	5 o	DACK7#
A81	LCD	5 o	LCD D24	B81	USB	5 i/o	USB-P1+
A82	LCD	5 o	LCD D25	B82	USB	5 i/o	USB-P1-
A83	LCD	5 o	LCD D26	B83	USB	5 i/o	USB-OC0
A84	LCD	5 o	LCD D27	B84	USB	5 i/o	USB-OC1
A85	LCD	5 o	LCD D28	B85	ISA	5 o	LA22
A86	LCD	5 o	LCD D29	B86	ISA	5 o	LA23
A87	LCD	5 o	LCD D30	B87	PCI	5 i/o	PERR#
A88	LCD	5 o	LCD D31	B88	RES	i/o	RES.-Function 1
A89	RES	i/o	RES.-Function 2	B89	I2C	3 i/o	SMB-DAT
A90	RES	i/o	RES.-Function 3	B90	I2C	3 o	SMB-CLK
A91	POWER		3.3V	B91	POWER		3.3V
A92	OPTION	i/o	INTERN LAN TX+	B92	ISA	5 i	MASTER#
A93	OPTION	i/o	INTERN LAN TX-	B93	ISA	5 i	IOCHCK
A94	OPTION	i/o	INTERN LAN RX+	B94	CORE	5 i	JTAG-TCK (DASP)
A95	OPTION	i/o	INTERN LAN RX-	B95	CORE	3 i	JTAG-TDI (DIAG)
A96	APM	3 o	SSTAT2	B96	CORE	3 o	JTAG-TDO (SEL)
A97	POWER	5 i	VCC-SUSPEND + 5Volt	B97	CORE	3 i	JTAG-TMS
A98	APM	3 i/o	SUSA- (LAN0)	B98	VGA	3 o	VESA VDDA
A99	APM	3 i/o	SUSB- (LAN1)	B99	VGA	3 o	VESA VDDC
A100	APM	3 i/o	SUSC- (LAN2)	B100	APM	3 o	STAT1
A101	VGA	o	VGA Analog Green	B101	VGA	out	analog ground
A102	VGA	o	VGA Analog Blue	B102	VGA	5 o	VSynch
A103	VGA	o	VGA Analog Red	B103	VGA	5 o	HSynch
A104	LCD	5 o	LCD ENAVEE	B104	LCD	3.3/5 o	LCD ENAVDD
A105	POWER		GROUND	B105	LCD	3.3/5 o	LCD SHCLK
A106	LCD	3.3/5 o	LCD FLM/VS	B106	LCD	3.3/5 o	LCD LP/HS
A107	LCD	3.3/5 o	LCD D12	B107	LCD	3.3/5 o	LCD D0
A108	LCD	3.3/5 o	LCD D13	B108	LCD	3.3/5 o	LCD D1
A109	LCD	3.3/5 o	LCD D14	B109	LCD	3.3/5 o	LCD D2
A110	LCD	3.3/5 o	LCD D15	B110	LCD	3.3/5 o	LCD D3
A111	LCD	3.3/5 o	LCD D16	B111	LCD	3.3/5 o	LCD D4
A112	LCD	3.3/5 o	LCD D17	B112	LCD	3.3/5 o	LCD D5
A113	LCD	3.3/5 o	LCD D18	B113	LCD	3.3/5 o	LCD D6
A114	LCD	3.3/5 o	LCD D19	B114	LCD	3.3/5 o	LCD D7
A115	LCD	3.3/5 o	LCD D20	B115	LCD	3.3/5 o	LCD D8
A116	LCD	3.3/5 o	LCD D21	B116	LCD	3.3/5 o	LCD D9
A117	LCD	3.3/5 o	LCD D22	B117	LCD	3.3/5 o	LCD D10
A118	LCD	3.3/5 o	LCD D23	B118	LCD	3.3/5 o	LCD D11
A119	LCD	3.3/5 o	LCD ENABKL	B119	LCD	3.3/5 o	LCD M
A120	POWER	3.3/5 o	LCD VCC OUTPUT (3.3V)	B120	POWER	2 o	CPU CORE OUTPUT

Connector on customers' PCB: MOLEX 53475-2409



DIGITAL-LOGIC AG
Nordstrasse 11/F
CH-4542 Luterbach
Switzerland
Phone ++41 (0)32 681 58 00
Fax ++41 (0)32 681 58 01
sales@digitallogic.com
www.digitallogic.com



DIGITAL-LOGIC
smart embedded computers

- Ausfahrt Solothurn-Ost, Zuchwil
- erste Abzweigung nach rechts Richtung Zuchwil, Industrie
- bei den beiden Kreiseln je die erste Strasse rechts nehmen Richtung Luterbach, Industrie
- in Luterbach Richtung Industrie, ca. 300m ab Ortseingangsschild links in die Nordstrasse einbiegen

- Take the Solothurn-Ost, Zuchwil exit
- Turn right at the first road, towards Zuchwil, Industrie
- Bear right at each of the two roundabouts keeping towards Luterbach, Industrie
- In Luterbach follow directional signs towards Industrie, ca. 300m after village sign "Luterbach" turn left onto Nordstrasse

Addresses of Group Companies and Distribution Partners

Hauptsitz/Headquarter

Switzerland
DIGITAL-LOGIC AG
Nordstrasse 11/F
CH-4542 Luterbach
Switzerland
Phone +41 (0)32 681 58 00
Fax +41 (0)32 681 58 01
sales@digitallogic.com
www.digitallogic.com

Niederlassungen/Subsidiaries

Germany
DIGITAL-LOGIC GmbH
Marienhütte 37
DE-57080 Siegen
Phone +49 271 238 89 0
Fax +49 271 238 89 30
salesgermany@digitallogic.de
www.digitallogic.de

France
DIGITAL-LOGIC France
4, Allée Saint Fiacre
FR-91620 La Ville du Bois
Phone +33 1698 08129
Fax +33 1698 08298
salesfrance@digitallogic.com
www.digitallogic.com

Exlusice Distribution Partner USA

Advanced Digital-Logic Inc.
4411 Morena Blvd.
Suite 101
US-San Diego, CA 92117-4328
Phone +1 858 490 0597
Fax +1 858 490 0599
sales@adlogic-pc104.com
www.adlogic-pc104.com

Certified Integrator

Germany
BFAD GmbH & Co. KG
Maggistrasse 7
DE- 78224 Singen
Phone +49 77319057600
Fax +49 77319057655
info@bfad.de
www.getembedded.de

Distribution Partners

Australia
Backplane Systems Technology Pty Ltd
P.O. Box 116
AU-Berowra, NSW, 2081
Phone +61 2 9457 6400
Fax +61 2 9457 6411
sales@backplane.com.au
www.backplane.com.au

Austria
Aplica Mess- und Prüftechnik GmbH
Jeneweingasse 11
AT-1210 Wien
Phone +43 1 955 95 11-0
Fax +43 1 955 95 11-30
info@aplica.at
www.aplica.at

Belgium
Telerex N. V.
Bischoppenhoflaan 255
BE-2100 Antwerpen
Phone +32 (0)3 326 40 00
Fax +32 (0)3 326 31 17
info@telerex-europe.com
www.telerex-europe.com

Telerex S. A.
Rue en Bois 63, Bte 3
BE-4040 Herstal
Phone +32 (0)4 240 61 00
Fax +32 (0)4 240 61 01
info@telerex-europe.com
www.telerex-europe.com

China
Henry-Maihai Control Systems Ltd.
11-206, No. A1 Fuxing Road
Shui Ke Yuan
Haidian District
CN-Beijing, 100038
Phone +86 10 6851-9097
Fax +86 10 6851-5578
sales@hmcs.com.cn
www.hmcs.com.cn

Digital-Logic AG Embedded Control Products
Chinese Sales Centre
A2-1208, ChangYuan TianDi Building
No. 18 ShuoZhou Street
Haidian District
CN-Beijing, 100080
Phone +86 10 8260-8100
Fax +86 10 8260-8099
info@digitallogic.com.cn
www.digitallogic.com.cn

Czech. Republic
Quittner & Schimek s.r.o.
Komenského 304
CZ-50901 Nová Paka
Phone +420 493 765 311
Fax +420 493 721 107
qs@qscomp.cz
www.qscomp.cz

Denmark
Data Respons A/S
Horkaer 18, 1
DK-2730 Herlev
Phone +45 44 50 85 00
Fax +45 44 50 85 05
info@datarespons.dk
www.datarespons.dk

Finland
Deal Comp Oy
Laurinmäekuja 3B
FI-00440 Helsinki
Phone +358 9 4788 7700
Fax +358 9 4788 7701
dealcomp@dealcomp.fi
www.dealcomp.fi

Germany
DELTA COMPONENTS GmbH
Auweg 27
DE-79761 Waldshut-Tiengen
Phone +49 7751 839 90
Fax +49 7751 8399-99
info@delta-components.de
www.delta-components.de

India
Futura Automation Pvt. Ltd.
No. 314, 2nd Floor
Vishal Mansion
9th Main, 25th Cross
Banashankari 2nd Stage
IN-Bangalore, 560070
Phone +91 80 2671 8670
Fax +91 80 2671 1774
info@futuraautomation.com
www.futuraautomation.com

Israel
Edco Technologies 1993 Ltd.
6 Hasadna
Industrial Area
IL-44424 Kfar-Saba
Phone +972 9 7677555
Fax +972 9 7677377
sale@edco.co.il
www.edco.co.il

Italy
Zelco Sistemi
Via Monte Rosa 17
IT-20149 Milano
Phone +39 0248 011 211
Fax +39 0248 011 247
zelco@zelco.it
www.zelco.it

T-Pole s.r.l.
Vicolo Oratorio 1
IT-27049 Stradella (PV)
Phone +39 0385 245 427
Fax +39 0385 245 284
info@tpole.it
www.tpole.it

Netherlands
Telerex Nederland B.V.
Konijnenberg 88
NL-4825 BE Breda
Phone +31 (0)76 578 20 00
Fax +31 (0)76 571 14 77
info@telerex-europe.com
www.telerex-europe.com

Norway
Data Respons AS
Sandviksveien 26
Postboks 489
NO-1323 Hovik
Phone +47 67 11 20 00
Fax +47 67 11 20 50
info@datarespons.no
www.datarespons.no

Poland
Quantum TTC Ltd.
Ul. Skwierzynska 21
PL-53-521 Wroclaw
Phone +48 71 362 63 56
Fax +48 71 362 63 57
bil@quantum.com.pl
www.quantum.com.pl

Portugal
QBM-Quality by Measurement
Praça da Corujeira, 282
PT-4300-145 Porto
Phone +351 225 102 720
Fax +351 225 102 721
ventas@qbm.es
www.qbm.es

Russia
ICOS Industrial Computer Systems
Office 200, 8A, Ryazansky prospekt
RU-Moscow, 109428
Phone +74 95 232 02 07
Fax +74 95 232 03 27
mail@icos.ru
www.icos.ru

Slovakia
Q-Products Industrial Computers
Rybničná 36/E
83107 Bratislava
Phone +421 244 646 474
Fax +421 244 646 476
info@qproducts.sk
www.qproducts.sk

South Africa
Centurion Micro Electronics
254 Lochner Road
Raslouw
ZA-0046 Centurion
Phone +27 12 666 9066
Fax +27 12 666 7559
sales@cme.co.za
www.cme.co.za

South Korea
J-TECH, INC.
Room 202, Semyeong BLDG
224-2, Dongchun-1-Dong, Yeonsu-Ku
KR-Incheon, 406-131
Phone +82 32 811 0883
Fax +82 32 811 0884
j_tech@hanmail.net

Spain
QBM-Quality by Measurement
Montnegre 15-17, Entlo 2a
ES-08029 Barcelona
Phone + 34 902 367 064
Fax + 34 933 226 608
ventas@qbm.es
www.qbm.es

Sweden
About Industrial Computers AB
Askims Verkstadsväg 5A
SE-436 34 Askim
Phone +46 31 45 80 40
Fax +46 31 709 05 40
info@about-ic.se
www.about-ic.se

Ukraine
Atlantis Industrial Systems Ltd.
37, Shevchenko St., office 14
UA-49044 Dnepropetrovsk
Ukraine
Phone +38 056 744 04 76
Fax +38 056 770 20 40
office@atlantis.com.ua
www.atlantis.com.ua

United Kingdom
Miles Industrial Electronics Ltd.
The Stable Yard
Holdenby
GB-Northampton NN6 8DJ
England
Phone +44 1604 77 11 22
Fax +44 1604 77 11 81
sales@milesie.co.uk
www.milesie.co.uk

2006-01

DIGITAL-LOGIC
smart embedded computers

DIGITAL-LOGIC AG
Nordstrasse 11/F
CH-4542 Luterbach, Switzerland
Phone ++41 (0)32 681 58 00
Fax ++41 (0)32 681 58 01
www.digitallogic.com
sales@digitallogic.com