Vol. S4-2-1

RUGGED, COMPACT, INTEGRATED ::

GEME

The General Embedded Machine Engine

ADLINK TECHNOLOGY INC.

www.adlinktech.com

Advance Technologies; Automate the World

General Embedded Machine Engine (GEME)

About GEME series

The General Embedded Machine Engine (GEME) is a complete solution for Factory Automation (FA) and Machine Automation (MA) system integrators.

The GEME is a rugged and compact chassis that supports an embedded SBC and power supply unit with optional storage peripherals, such as CompactFlash or a 2.5" HDD. Software compatibility issues can also be avoided through its built-in embedded software.

Although the GEME is highly integrated, it can be further expanded with one PMC and three PC/104 extension modules, allowing the GEME to additionally support motion, vision, DIO, communications, and High Speed Link applications.

With both hardware and software integrated in a single package, the GEME is optimized for performance and will deliver the best reliability to our customers.

Selection Guide

Base Unit

Model Name	Description
GEME-1000	GX1-300 General Embedded Machine Engine
GEME-2000	Celeron-650 General Embedded Machine Engine
GEME-V2000	Celeron-650 General Embedded Machine Engine with Video Capture
GEME-3000	Pentium III-800 General Embedded Machine Engine
GEME-V3000	Pentium III-800 General Embedded Machine Engine with Video Capture

Extension Module

Function	Bus	Model Name	Description
Motion	PC104	MPC-8164	4-Axis Stepping & Servo Motion Control Module
	PC104	MPC-8372	12-Axis SSCNET Servo Motion Control Module
Vision	PMC	PMC-RTV21/G	4-CH Video Capture Board for NTSC/PAL Cameras
Comm.	PMC	PMC-3534/G	4-Port RS-232 Serial Communications Module
	PMC	PMC-3544/G	4-Port RS-422/RS-485 Serial Communications Module
	PMC	PMC-8611	32-Bit/33MHz Fast Ethernet Interface Module
	PMC	PMC-7841/G	2-Port CAN Bus Communications Module
HSL	PMC	PMC-7852/G	High Speed Link Master Controller Interface Module
DIO	PC104	MPC-7632	32-CH Digital I/O Module
	PC104	MPC-7664	64-CH Digital I/O Module

Note: Each GEME supports one PMC module, and up to three PC104 modules.

Operation Systems

O.S.	Benefits	Application Development Tools	ADLINK Provides:
Windows CE.NET	Real-time, low memory requirements, complex system development	Visual Studio.Net, eVC++	• H/W drivers, libraries for Windows CE • Windows CE SDK for developers • Windows CE OS customization service
Windows XP Embedded	Multimedia, Windows XP compatibility, WIN32 programming environment	Visual Studio, Visual Studio.Net	• H/W drivers, libraries for Windows XP Embedded • Windows XP Embedded OS customization service
Linux (call for availability)	Cost effective, slim Linux kernel	GNU C or other Linux programming tools	• H/W drivers, libraries for Linux kernel 2.4.18 or later (call for availability)

GEME...
The General Embedded Machine Engine

Ready for Motion, Vision, DIO, Communications, and High Speed Link Applications
Supports WinCE / Windows XP Embedded / Linux

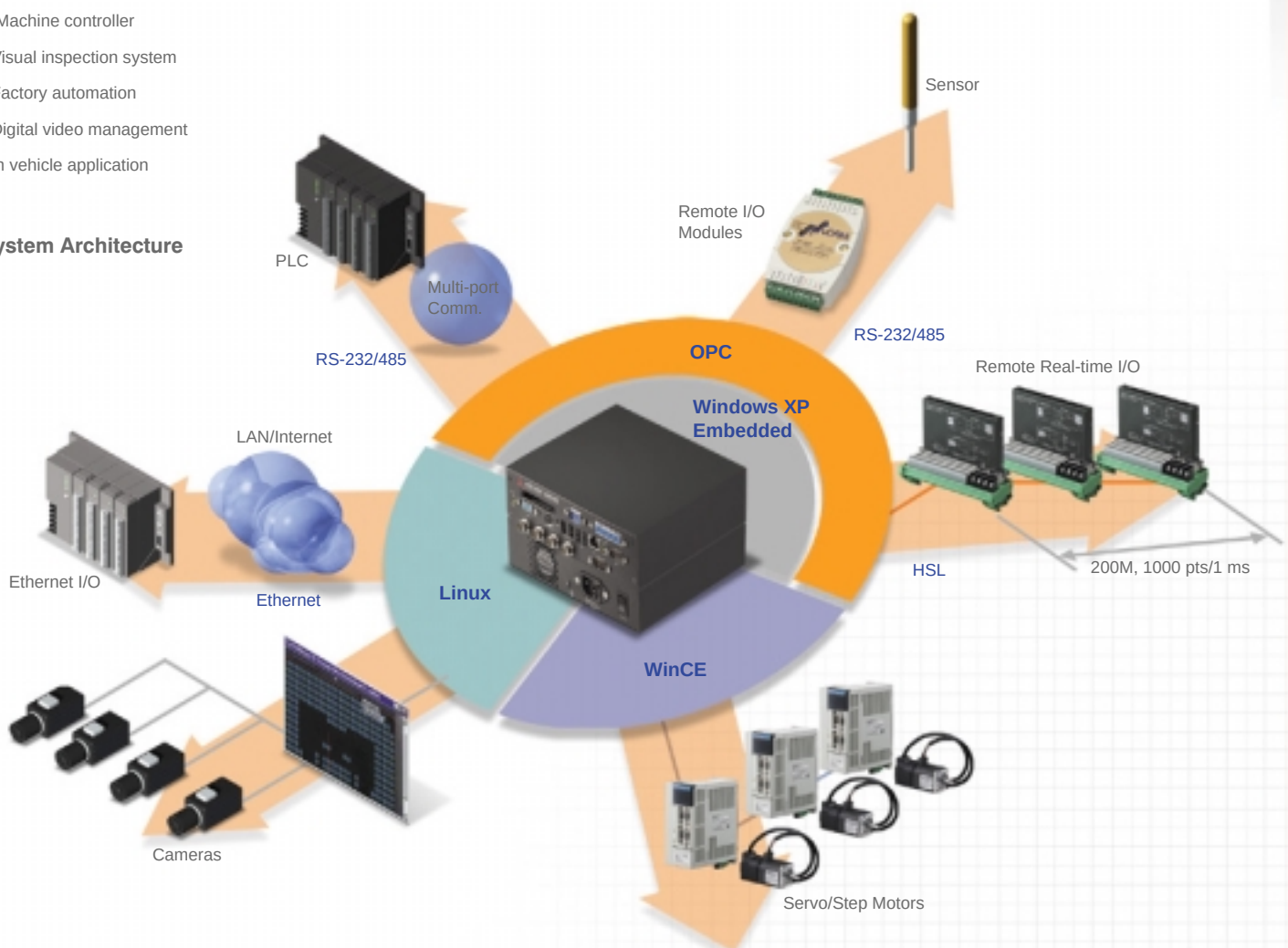
Features

- Low power consumption, fanless CPU applied for embedded applications
- Versatile functionalities: motion, vision, DIO, communications, High Speed Link
- Expandable enclosure design for one PMC and up to three PC104 modules
- Compact and rugged system design with wall-mounting kit
- OS support: Windows CE, Windows XP Embedded, and Linux
- Support of IEC61131-3 PLC programming system
  (support of IL, ST, Ladder, FBD,SFC, and CFC languages, coming soon)

Target Applications

- Machine controller
- Visual inspection system
- Factory automation
- Digital video management
- In vehicle application

System Architecture



Embedded Machine Controller

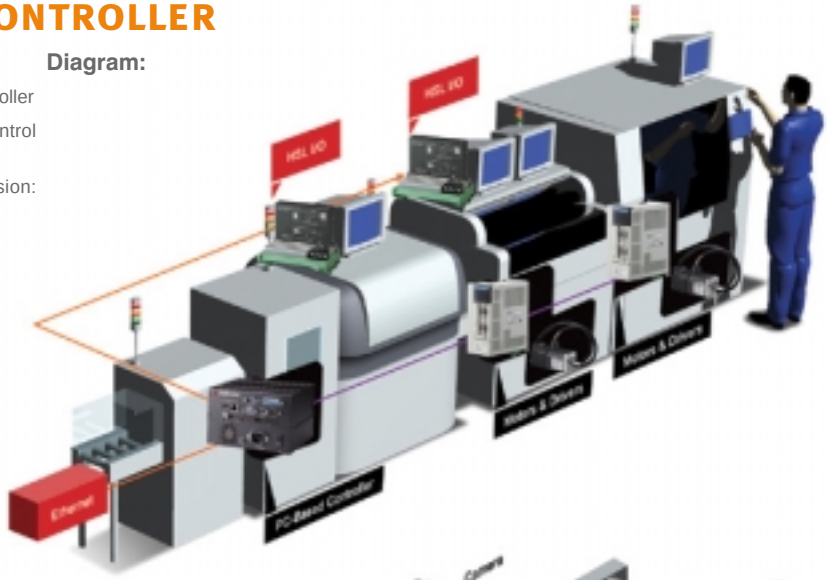
Features:

- All-in-one compact & easy front access machine controller
- Up to 36 axes SSCNET or 16 axes pulse motion control capability
- Rich module lineup and excellent in system expansion: communication, servo, I/O
- Soft PLC
- Anti-vibration mechanism design

Applicable Scope:

- Printing machines
- Semiconductor manufacturing machines
- Various molding machines

Diagram:



Machine Vision

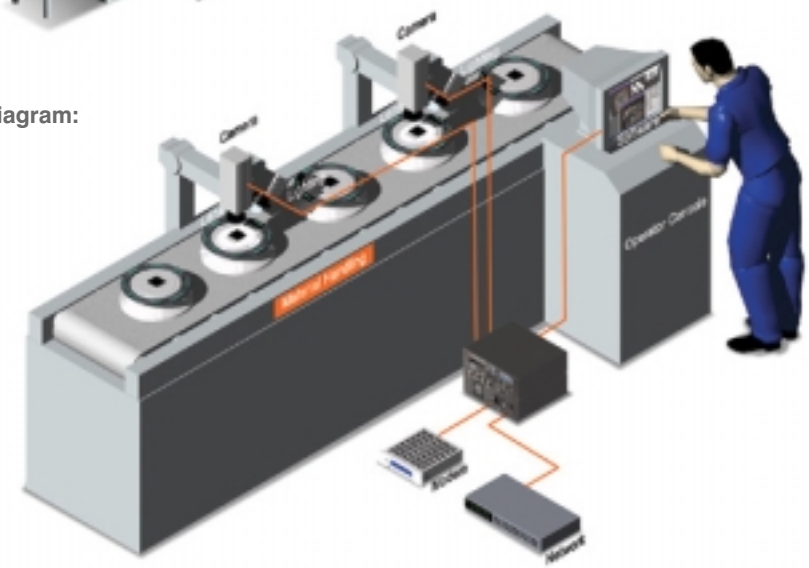
Features:

- Integrated video capture, processing and display platform
- Support of 4-CH video capture for NTSC/PAL cameras, up to 30 frames per second
- On-board TTL I/O lines & software trigger supported

Applicable Scope:

- Product assembly verification
- Electronic parts inspection
- Biological identification

Diagram:



Industrial Communication/ Remote Control Server

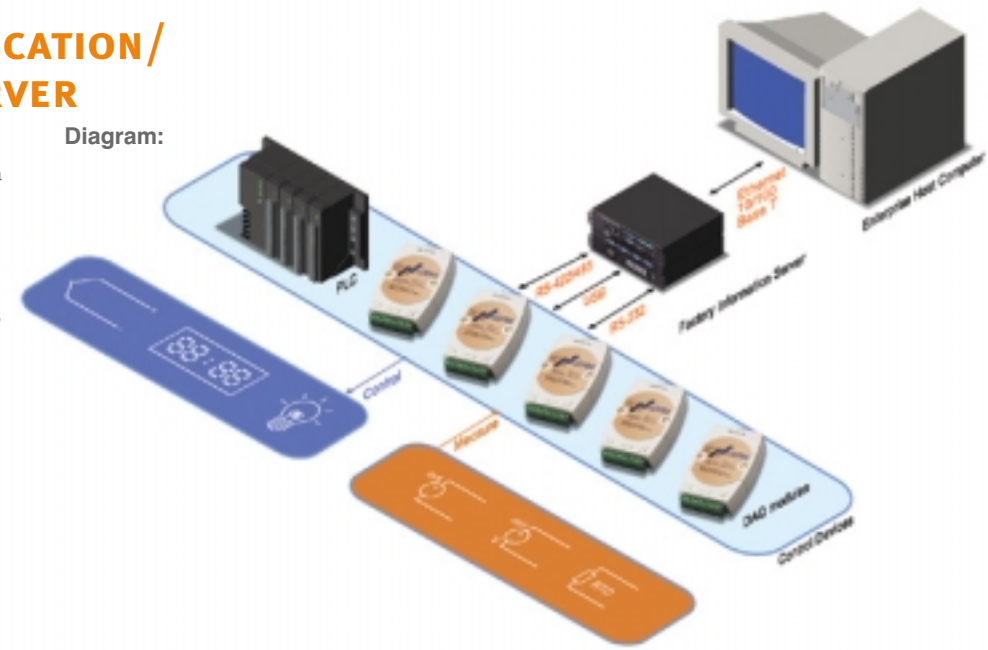
Features:

- 2 to 6 RS-232/422/485 COM ports to aggregate data from remote DAQ modules or PLCs
- Support of LAN, USB, and IEEE1394

Applicable Scope:

- Remote control server for factory management, building, and parking control systems

Diagram:



In Vehicle application

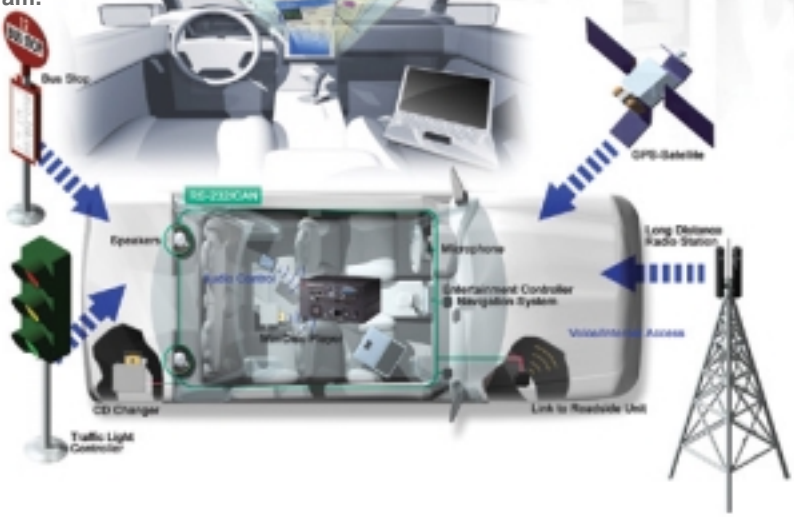
Features:

- Rich COM support: CAN bus, RS-232/422/485, USB & IEEE 1394: to integrate various devices for Telematics
- Low power, fanless CPU design
- Support of WinCE.NET, embedded XP, Linux
- Support of DC power supply

Applicable Scope:

- In vehicle Telematics platform

Diagram:



Digital Video Management

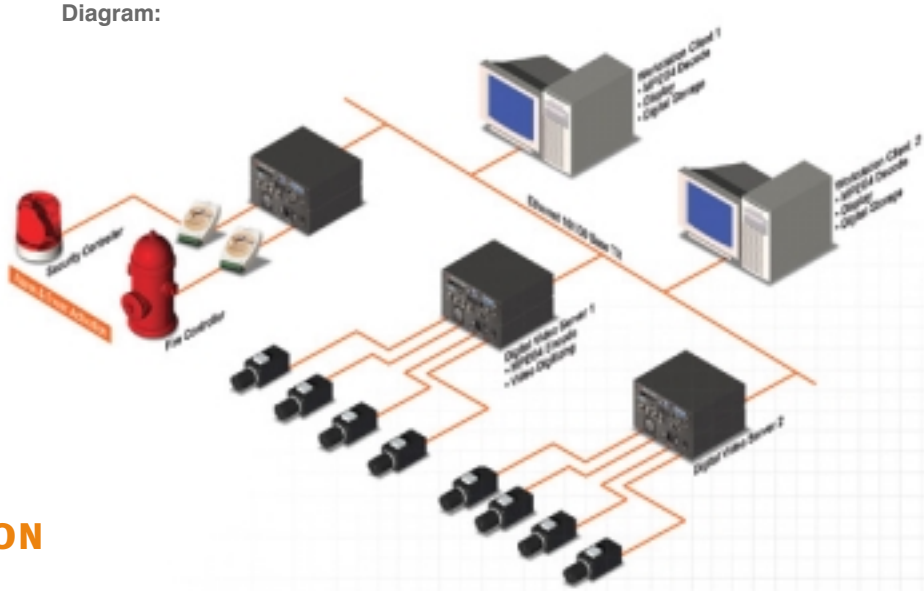
Features:

- Advanced MPEG4 video compression technology
  - > Encode real-time CIF full color image in 32KB
  - > Motion Detection & Recording
  - > Decode & Image expansion
  - > Real-time image transmission over TCP/IP
- Support four standard NTSC/PAL CCD cameras input
- Excellent in function extension for access controls: communication, I/O

Applicable Scope:

- Remote surveillance home/building automation
- Remote traffic monitoring
- Remote parking lot management

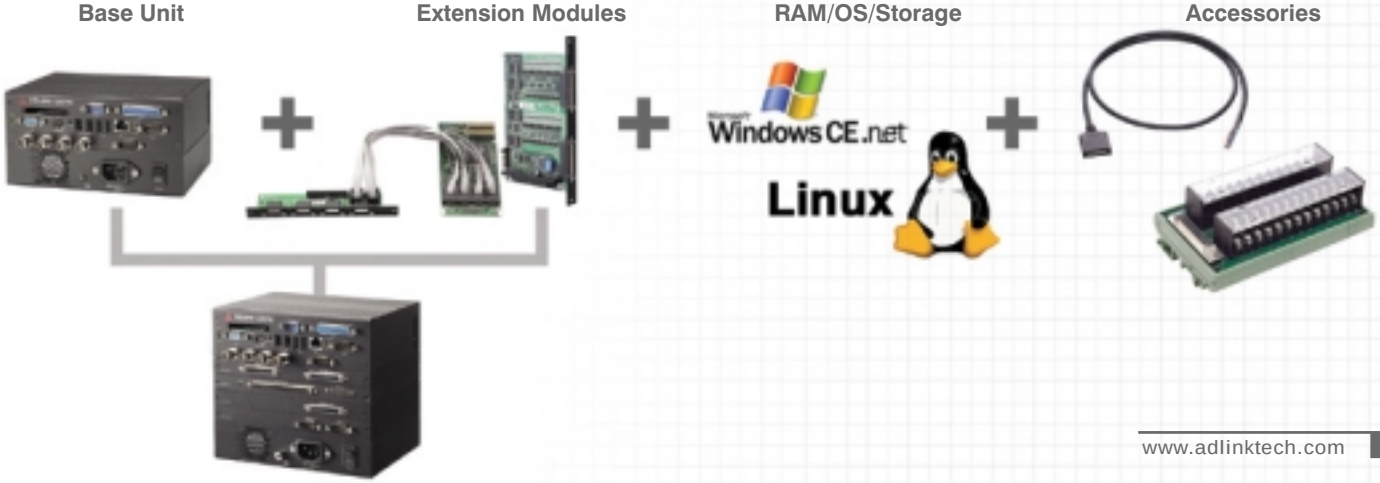
Diagram:



Customizable Based on Your Applications

Select the desired GEME platform and peripheral devices for the system (including base unit, extension modules, RAM, storage and accessories, etc.)

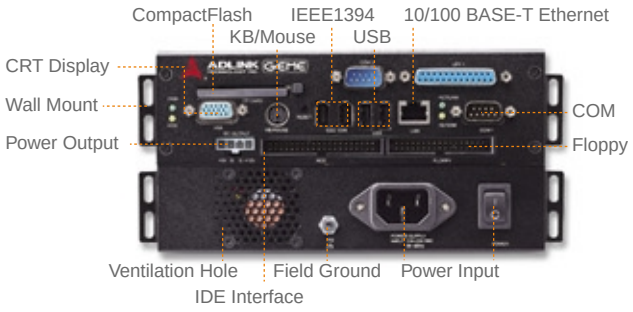
Base Unit | **Extension Modules** | **RAM/OS/Storage** | **Accessories**



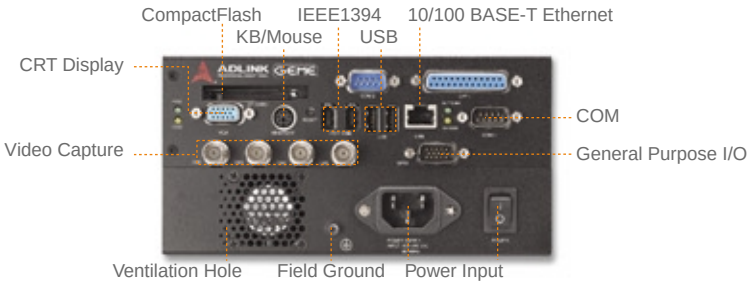
GEME-2000/3000 Series

Ultra Low Voltage Celeron 650/Pentium III 800 General Embedded Machine Engine

GEME-2000/3000 Series



GEME-V2000/V3000 Series



EBC-P300V

Specifications

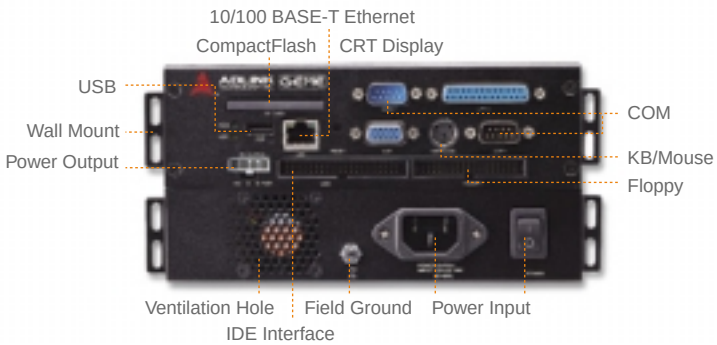
GEME	Model Number	GEME-2000	GEME-V2000	GEME-3000	GEME-V3000
SBC	Model Number	EBC-C200	EBC-C200V	EBC-P300	EBC-P300V
	CPU	Ultra Low Voltage Celeron 650MHz		Low Voltage Pentium III 800MHz	
	Cache	256 KB on-die Advanced Transfer Cache (ATC)		512 KB on-die Advanced Transfer Cache (ATC)	
	System Memory	One 144-pin SODIMM sockets, Accepts up to 256 MB un-buffered SDRAM			
	Chipset	Intel 815E AGP chipset			
		82815E Graphics and Memory Controller Hub (GMCH)			
		82801BA I/O Controller Hub 2 (ICH2)			
	VGA	On-board VGA controller built-in AGP (3D hyper pipelined architecture)			
		Up to 1600 x 1200 in 8-bit color at 85 Hz refresh rate			
		Video memory sharing from main memory with Intel Dynamic Video Memory Technology (DVMT)			
		Memory size is controlled by device driver from 1 MB up to 11 MB			
	BIOS	Award BIOS, support PnP			
	Video Capture	None	Conexant Fusion878A Video decoder processor 4-CH NTSC/PAL input	None	Conexant Fusion878A Video decoder processor 4-CH NTSC/PAL input

GEME	Model Number	GEME-2000	GEME-V2000	GEME-3000	GEME-V3000
SBC	Model Number	EBC-C200	EBC-C200V	EBC-P300	EBC-P300V
	USB	Two USB ports, USB 1.1 compliant			
	IEEE 1394	Texas Instruments TSB43AB23 1394a-2000 OHCI PHY/link-layer controller			
		Three IEEE-1394 ports ((two external, one internal)			
	Ethernet	Intel 82562EM 10BaseT/100BaseTx			
	Enhanced IDE	Bus Master IDE controller, EIDE interfaces for up to two devices, support PIO Mode 3/4 or Ultra DMA/100 IDE devices, including Hard Disk Drive, ATAPI CD-ROM, LS120, and ZIP drives. 40-pin connector on front panel for external drive (available on GEME-2000/3000)			
	CompactFlash	50 pin socket for CompactFlash Type I/II			
	Super I/O Chipset	Winbond W83627HF			
	PCI to ISA Bridge	Integrated Technology IT8888F PCI to ISA Bridge			
	Hardware Monitoring	Build-in Winbond W83627HF, monitoring CPU temperature, voltage and battery, +3.3V, +5V, +12V voltage			
	COM Port	COM1/COM2: 16550 UART compatible ports with RS-232 interface			
	Parallel Port	One high-speed parallel port, SPP/EPP/ECP mode			
	Keyboard/Mouse	Combined PS/2 type mini-DIN connectors			
	Floppy Interface	Supports two floppy drives (360KB, 720KB, 1.2MB, 1.44MB, 2.88MB), 34-pin header on-board. Front panel 34-pin connector available for external drive on GEME-1000/2000.			
	PMC Interface	On-board 32-bit 33Mhz PMC socket for functionally expansion			
	PC104 Interface	16-bit, PC/104 interface for functionally expansion			
	AGP Module Interface	None	AGP 1.5V interface reserved on internal MiniPCI connector	None	AGP 1.5V interface reserved on internal MiniPCI connector
	Watchdog Timer	Time-out timing select 0-255 seconds or 0-255 minutes			
	Dimensions	129mm x 167.5mm			
System	Power Supply	Universal input AC 100 VAC to 220 VAC, Max. output : +5V 11.5A, +12V 3A, -12V 0.5A			
		DC input: 10VDC to 30VDC, Max. input current: 13A at 10VDC, Max. output: +5V 10A, +12V 1.5A, -12V 0.3A			
	Operating Temp.	-10˚- 55˚C	-10˚- 50˚C	-10˚- 55˚C	-10˚- 50˚C
	Humidity	0%-90%			
	Dimensions	183 x 144 x 110 mm [16.84 mm(H) for each extension kit]			
	Power Consumption	With 256 MB SDRAM +5V 4.5A, +12V 300mA		With 256MB SDRAM +5V 6.5A, +12V 300mA	
		Test conditions: (1) CPU 100% loading (2) No HDD, CD ROM, extension module			
	Power Output	+5V Max. 1A, +12V Max. 1A	None	+5V Max. 1A, +12V Max. 1A	None
	Storage	Internal: One 44-pin IDE Disk on Chip(DOC) interface External: One 40-pin IDE One 34-pin FDD	Internal: One 44-pin IDE External : None	Internal: One 44-pin IDE Disk on Chip(DOC) interface External : One 40-pin IDE One 34-pin FDD	Internal: One 44-pin IDE External : None
	GPIO (TTL)	None	One digital input One digital output One programmable trigger output	None	One digital input One digital output One programmable trigger output
	Operation System	Windows CE, Windows XP Embedded, Linux			
	Random Vibration	Operating: 5-100Hz, 0.00142 g2/Hz; 100-500Hz, -6dB/Octave; 0.5Grms, 3axes, 30 minutes/axis Non-operating: 5-100Hz , 0.02g2/Hz; 100-500Hz , -6dB/Octave; 1.88Grms, 3 axes, 1hr/axis (IEC 68-2-64)			

GEME-1000 Series

GX1-300 General Embedded Machine Engine

GEME-1000 Series



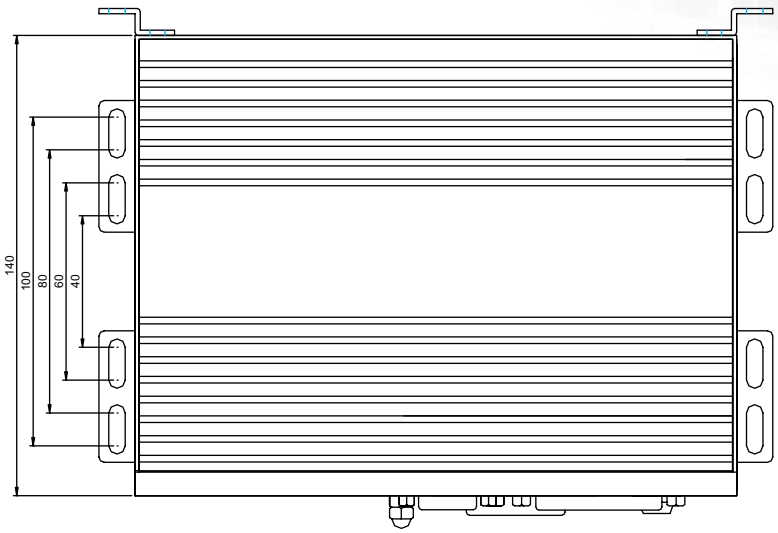
EBC-G300

GEME	Model Number	GEME-1000
SBC	Model Number	EBC-G300
	CPU	NS GeodeGX1 300MHz
	System Memory	One 144-pin SODIMM sockets, Accepts up to 128 MB un-buffered SDRAM
	Chipset	NS GeodeGX1 + CS5530A
	VGA	VGA Controller Built-in 2D Accelerator
		Up to 1280 x 1024 in 8-bit color at 85Hz refresh rate
		Video memory sharing from main memory
		Memory size is controlled by device driver from 1MB up to 4MB
	BIOS	Award BIOS, supports PnP
	USB	One USB ports, USB 1.0 compliant
	Ethernet	Realtek RTL8139C chipset, 10BaseT/100BaseTx
	Enhanced IDE	Bus Master IDE controller, one EIDE interfaces for up to two devices, supports PIO Mode 3/4 or Ultra DMA/33 IDE devices, including Hard Disk Drive, ATAPI CD-ROM, LS120, and ZIP drives.
	CompactFlash	50 pin socket for CompactFlash Type I
	Super I/O Chipset	Winbond W83977F-A
	PCI to ISA Bridge	Build in NS CS5530A
	Hardware Monitoring	Build-in Winbond W83781D, monitors CPU temperature, voltage (+3.3V, +5V, +12V) and battery
	COM Port	COM1/COM2: 16550 UART compatible ports with RS-232 interface
	Parallel Port	One high-speed parallel port, SPP/EPP/ECP mode
	Keyboard/Mouse	Combed PS/2 type mini-DIN connectors
	Floppy Interface	Supports two floppy drives (360KB, 720KB, 1.2MB, 1.44MB, 2.88MB)
	PMC Interface	On-board one 32-bit 33MHz PMC module socket for functionally expansion
	PC104 Interface	16-bit ,PC/104 interface for functionally expansion
	Watchdog Timer	Program I/O port 3F0H and 3F1H to configure watchdog timer .Time-out timing select 0-7635 seconds/minutes
	Dimensions	122 mm x 167.5 mm

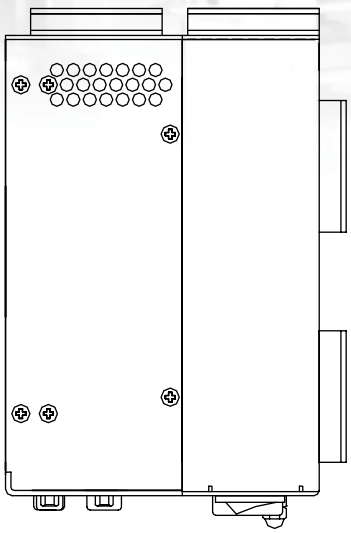
GEME	Model Number	GEME-1000
System	Power Supply	Universal input AC 100 VAC to 220 VAC, Max. output : +5V 11.5A, +12V 3A, -12V 0.5A
		DC input: 10VDC to 30VDC
		Max. input current: 13A at 10VDC
		Max. output: +5V 10A, +12V 1.5A, -12V 0.3A
	Operating Temp.	-10˚-55˚C
	Humidity	0%-90%
	Dimensions	183 x 144 x 110mm [16.84 mm(H) for each extension kit]
	Power Consumption	With 128MB SDRAM +5V 2A, +12V 300mA
		Test conditions: (1) CPU 100% loading (2) No HDD, CD ROM, extension module
	Power Output	+5V Max. 1A, +12V Max. 1A
	Storage	Internal: One 44-pin IDE, Disk on Chip (DOC) interface
		External: One 40-pin IDE, One 34-pin FDD
	Operation System	Windows CE, Windows XP Embedded, Linux

Dimensions of GEME Series

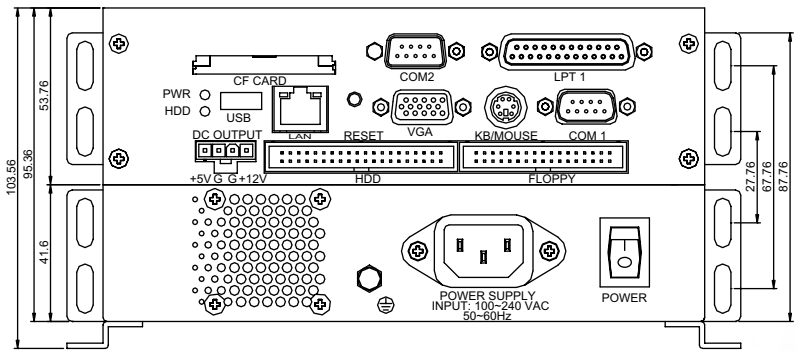
GEME-1000 series



Top View



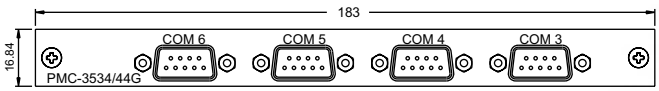
SideView



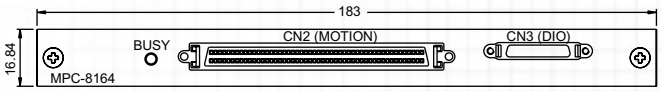
Front View

Dimensions of Extension Board

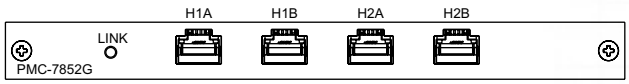
PMC-3534/44G



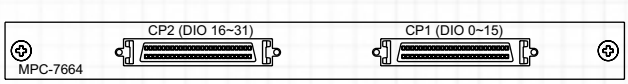
MPC-8164



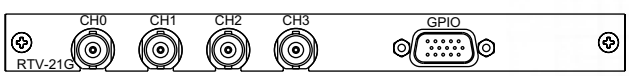
PMC-7852G



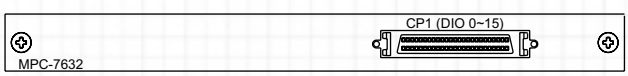
MPC-7664



PMC-RTV21G



MPC-7632



PMC-3534/G, PMC-3544/G

PMC 4-port Serial Communication Modules

Specifications

Model Number	PMC-3534/G	PMC-3544/G
Port Capability	RS-232	RS-422/RS-485
Form Factor	Single size PMC, 74.0 x 149.0 (mm, WxD)	
PCI Bus	32-bit/33MHz	
V(I/O)	3.3V or 5V Universal V(I/O)	
Serial Communication Controller	16C554	
Connector	Mini D-Sub 25 Pin x 2	
Max. System Throughput	115.2k x 4	
Point of Access in GEME System	PMC-3534/3544: side access PMC-3534G/3544G: front access (four DB9 male connectors)	
OS Driver Supporting	DOS, Windows 9x/ME/NT/2K/XP, Win CE, Linux (kernel 2.4)	

Ordering Information

PMC-3534	PMC 4-Port RS-232 Serial Comm. Module
PMC-3534G	PMC 4-Port RS-232 Serial Comm. Module with Panel for GEME
PMC-3544	PMC 4-Port RS-422/RS-485 Serial Comm. Module
PMC-3544G	PMC 4-Port RS-422/RS-485 Serial Comm. Module with Panel for GEME

PMC-RTV21/G

4-CH Video Capture Board for Standard Cameras

Specifications

Bus Interface	32-bit, 33MHz PMC bus
Acquisition Speed	Up to 30 frame per second
Channels Input	Up to 4 channels composite video input
Camera Support	Color: PAL/NTSC Monochrome: CCIR/EIA
GPIO	On-board TTL I/O lines
Trigger	Software trigger supported
Utility	ViewCreator
Point of Access in GEME System	PMC-RTV-21: side access PMC-RTV-21G: front access
OS Driver Supporting	DOS, Windows 9x/NT/2k/XP
Suggested Platform	GEME-2000/3000 cPCI-6770F CPU board

Ordering Information

PMC-RTV21	PMC 4-CH Video Frame Grabber
PMC-RTV21G	PMC 4-CH Video Frame Grabber with Panel for GEME call for availability
PMC-7852/G	PMC High Speed Link Master Controller Interface Cards

PMC-7852/G

PMC High Speed Link Master Controller Interface Cards

Specifications

Form Factor	Single size PMC, 74.0 x 149.0 (mm, WxD)
PCI Bus	32-bit/33MHz
V(I/O)	3.3V or 5V Universal V(I/O)
Transfer Speed	6Mbps (default) up to 12Mbps
Max. Communication Distance	200 meters for each port under 6Mbps
Max. Controllable Points	2016 input and 2016 outputs
Transfer Mode	Half/Full Duplex
I/O Scan Time	About 1ms for scanning 1000 points (6Mbps)
Connector	RJ-45 phone jack connector
Timer Interrupt	Yes
Point of Access in GEME System	PMC-7852: side access PMC-7852G: front access(4 RJ-45 connectors)
OS Driver Supporting	DOS, Windows 9x/ME/NT/2K/XP, Win CE, Linux (kernel 2.4)

Ordering Information

PMC-7852	High Speed Link Master Controller Interface Card (Compatible with GEME-1000 only)
PMC-7852G	High Speed Link Master Controller Interface Card with Panel for GEME

PMC-7841/G

PMC 2-CH CAN Bus Communication Modules

Specifications

Form Factor	Single size PMC, 74.0 x 149.0 (mm, WxD)
PCI Bus	32-bit/33MHz
V(I/O)	3.3V or 5V Universal V(I/O)
CAN Specification	CAN 2.0 parts A and B
Transfer Speed	Up to 1Mbps programmable transfer rate
Isolation Protection	2500Vrms isolation protection
Point of Access in GEME System	PMC-7841: side access PMC-7841G: front access (2 DB9 male connectors)
OS Driver Support	DOS, Windows 98/NT/2K/XP

Ordering Information

PMC-7841	PMC 2-CH CAN Bus Communication Module
PMC-7841G	PMC 2-CH CAN Bus Communication Module with Panel for GEME

MPC-8164

4-Axis Stepping & Servo Motion Control Card

Specifications

Motion Processor	20MHz Motion ASIC
Bus	PCI-104
Dimensions	152 x 104.5 (mm, WxD)
Control Type	Semi-Closed Loop Pulse Type
Pulse Output	4 axes, 28-bit, 6.55MHz, differential (3.5V)
Encoder Input	4 channels, 28-bit, 4MHz, up down counter (Opto-isolated)
Dedicated I/O	ORG/EL/SVON/ERC/ALM/INP/RDY (opto-isolated)
User I/O	8 DI opto-isolated, 8 DO open collector
Motion Speed Profiles	S shape, T shape, constant speed
Multi-Axis Capability	2-4 linear, 2 axes circular interpolation, sync. mode
Home Return	13 basic modes, auto searching modes
Special Motion Modes	Multi axes contour following with continuous speed
Counter Compare	4 bi-directional comparators, 4 compare sources
Camera Trigger	2 channels, by comparing counters
Counter Latch	2 channels, high speed 10MHz
Continuous Trigger	4k FIFO trigger points buffer
Interrupt	16 Programmable Interrupt sources
OS Driver Support	DOS, Linux (kernel 2.2), Embedded NT/XP, WinCE
Software Package	Free Motion Library / MotionCreator Utility

Ordering Information

MPC-8164 4-Axis Stepping & Servo Motion Control Card with Panel for GEME

Accessories (Optional)

DIN-100M15 Terminal Board with 100-Pin SCSI-II Cable/1.5M for Motion Port (for General Purpose)

DIN-814M Terminal Board with 100-Pin SCSI-II Cable/1M for Motion Port (for Mitsubishi Servo Driver)

CB-MLPT/S1M Mini LPT to Single Open Cable/1M for User I/O Port

MPC-8372

12-Axis SSCNET Servo Motion Control Card

Specifications

Motion Processor	100MHz TI TMS320C6711 DSP
Motion Control Protocol	SSCNET II defined by Mitsubishi Electric Co.
Wiring Distance	Up to 30 meters / Serial type
Bus	PCI-104
Dimensions	152 x 104.5 (mm, WxD)
Control Type	SSCNET open/closed loop type, analog output closed loop type
Number of Axes	12 axes
Encoder Input	2-CH/32-bit/4MHz/up down counter (opto-isolated)
Dedicated I/O	ORG/EL/EMG (opto-isolated) / two 16-bit DA (+/-10V) / two 12-bit AD (+/-10V)
User I/O	2 DO open collector, 6 TTL output
Motion Speed Profiles	S shape, T shape, constant speed
Multi-axis capability	2-6 linear, 2 axes circular interpolation, Sync. Mode
Home Return	2 basic modes
Special Motion Modes	Multi axes contour following with continuous speed
Interrupt	23 programmable interrupt sources
OS Driver Support	DOS, Linux (kernel 2.2), Embedded NT/XP, WinCE
Software Package	Free Motion Library, MotionCreator Utility

Ordering Information

MPC-8372 12-Axis SSCNET Servo Motion Control Card with Panel for GEME

Accessories (Optional)

DIN-68S/2 Terminal Board & SCSI-VHDCI Cable/1.8M for Dedicated I/O Port

MPC-7664/7632

Isolated 64/32-CH DI/DO Cards

Specifications

Model Number	MPC-7664	MPC-7632
Number of Channels	32 in/32 out	16 in/16 out
External Interrupt Channel	1	
Bus	PC-104	
Dimension	152 x 104.5 (mm, WxD)	
Input Voltage	DC 12V-24V (±10%)	
Input Current	5-15mA/bit (Max)	
Input Turn-On Time (off on)	3.5us (Typ)	
Input Turn-Off Time (on off)	50us (Typ)	
Voltage between Two Terminals	DC 30V (Max)	
Output Current	80mA (Max)	
Output Voltage Drop	1.0V (Max)	
Output Turn-On Time (off on)	2.8us (Typ)	
Output Turn-Off Time (on off)	400us (Typ)	
Current Consumption	400mA @ +5V (±5%)	
Isolation Voltage	2.5k Vrms (Min)	
Operating Temperature	0ºC-50ºC	
Operating Humidity	35%-85%	
OS Driver Supporting	DOS, Windows 95/98/NT/2K/XP, Linux (kernel 2.2), Embedded NT/XP	
Software Package	Free function library	

Ordering Information

MPC-7664 Isolated 64-CH DI/DO Card with Panel for GEME

MPC-7632 Isolated 32-CH DI/DO Card with Panel for GEME

Accessories (Optional)

DIN-50S Terminal Board & 50-Pin SCSI-II Cable/1M

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