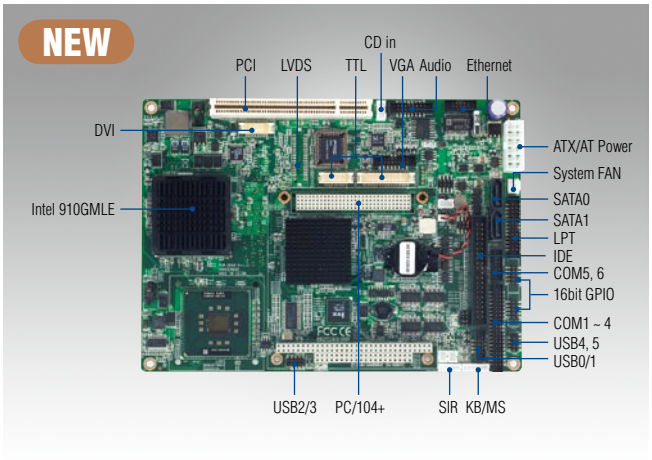
PCM-9588

Intel® Celeron® M Processor EBX SBC with DVI, TTL, CRT, LVDS, LAN, 6 COM, 2 SATA, 6 USB 2.0, PC/104-Plus



Features

- Intel® Celeron® M Processor ultra low power
- 10/100 Mbps Ethernet support, UL60601 Design, GIGA LAN optional
- Display combination: CRT + LVDS / DVI + LVDS/ DVI + CRT/ CRT + TTL
- 6 COM (Supports auto flow control), 2 SATA, 6 USB 2.0, 16-bit GPIO ports
- Supports LCD backlight turn-off, brightness control
- Supports embedded software API and utility

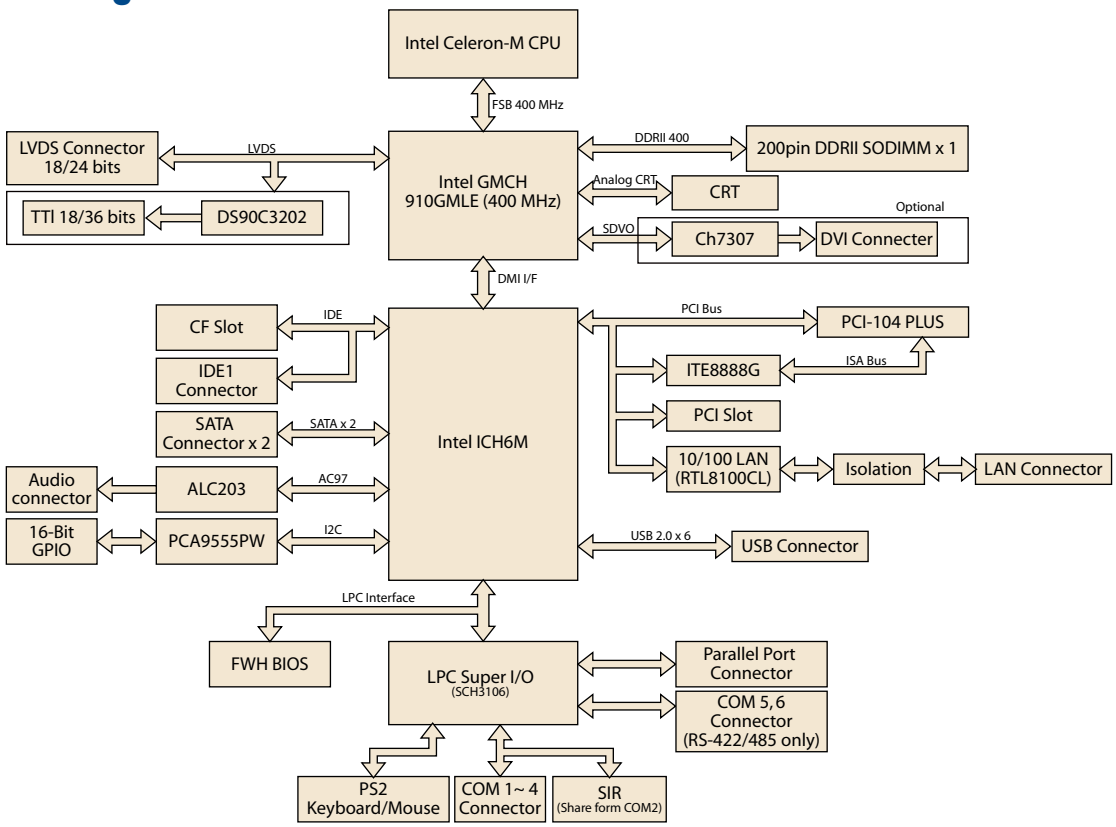
Software APIs: Watchdog, SMBus, H/W Monitor, GPIO, Backlight On/Off, Brightness, CPU Speed, System Throttling

Utilities: BIOS Flash, Monitoring

Specifications

Processor System	CPU	Intel Celeron M Processor 600 MHz	Intel Celeron M Processor 1 GHz
	Front Side Bus	400 MHz	400 MHz
	L2 Cache	512 KB	0 KB
	Chipset	Intel 910GMLE + ICH6M	Intel 910GMLE + ICH6M
	BIOS	Award 4-Mbit	Award 4-Mbit
Memory	Technology	DDR2 400 MHz Downward compatible for DDR2 533/667/800 MHz	
	Max. Capacity	2 GB	
	Socket	1 x 200-pin SODIMM	
Display	Chipset	Intel 910GMLE	
	VRAM	DVMT 3.0 supports up to 128 MB	
	Graphics Engine	Mobile Intel GMA 900 3D/2D engine	
	LVDS	1 x 48-bit LVDS	
	CRT	up to QXGA (2048 x 1536)	
	TTL LCD	18/36-bit TTL (PCM-9588T version)	
	DVI	Yes (PCM-9588F version)	
	Dual Display	CRT+ LVDS / DVI+ LVDS/ DVI+ CRT/ CRT+ TTL	
Ethernet	Speed	10/100 Mbps on LAN (10/100/1000 Mbps is optional)	
	Controller	Realtek RTL8100CL-LF (Optional RTL8110SCL-LF for Giga LAN)	
	Connector	Box header	
Audio	Chipset	AC97, Line-in, Line-out, Mic-in, speaker out (R/L)	
	Amplifier	APA4863KI-TRG (Support 8W 1 W or 4W 2 W Speaker for Speaker-out)	
WatchDog Timer	Output	System reset	
	Interval	Programmable 1 ~ 255 level	
Storage	CompactFlash	Card Type I, Type II	
	SATA	2	
	IDE	1 x EIDE (UDMA 33/66/100)	
	Floppy	1 x FDD (Optional)	
Internal I/O	Serial	4 x RS-232, 2 x RS-232/422/485 (Default RS-422/485, RS-232 by optional request)	
	Ethernet	LAN x 1 (RJ-45 connector through the cable)	
	KB/Mouse	1	
	CRT	1	
	USB	6 x USB 2.0	
	IDE	1 x EIDE (UDMA 33/66/100)	
	Parallel(LPT)	1	
	FDD	Share with LPT (Optional)	
	GPIO	16-bit general purpose input/output	
	IrDA	115 kbps (optional by request) shared from COM2	
Expansion	PC/104-Plus Slot	1	
	MiniPCI Socket	1	
	PCI Slot	1	
Power	Power Type	AT / ATX	
	Power Supply Voltage	ATX: 5 V STB, +5 V ± 5%, ±12 V ± 5%, external 12 V option for LCD Inverter, PCI & PCI-104 Plus AT: 5 V only to boot up, external 12 V option for LCD Inverter, PCI & PC/104 Plus	
	Power Consumption (Typical)	5 V:3.67 A (C-M M 1 G with DDR2 400 1 GB)	
	Power Consumption (Max, test in HCT)	5 V:3.67 A (C-M M 1 G with DDR2 400 1 GB)	
	Power Management	APM, ACPI	
	Battery	Lithium 3 V / 196 Mah	
Environment	Operating	0 ~ 60° C (32 ~ 140° F)	
	Non-Operating	95% @ 60° C Relative Humidity	
Physical Characteristics	Dimensions (L x W)	203 x 146 mm (8" x 5.75") Top side: The highest is PCI slot (15.4 mm), Bottom side: The highest is CF sochet (9.5 mm)	
	Weight	0.85 kg (1.87 lb) (with Heatsink)	

Board Diagram



Ordering Information

Part No.	CPU	L2 Cache	Memory	LVDS	TTL	CRT	DVI	10/100M LAN UL60601	Audio	USB 2.0	SATA	RS-232	RS-232/ 422/485	GPIO	LPT	CF	PC/104+	Thermal Solution	Operating Temp.
PCM-9588T-M0A1E	C-M 600 MHz	512 KB	SODIMM	-	Yes	Yes	-	1	Yes	6	2	4	2	16	1	1	1	Passive	0 ~ 60° C
PCM-9588F-S0A1E	C-M 1.0 GHz	0 KB	SODIMM	48-bit	-	Yes	Yes	1	Yes	6	2	4	2	16	1	1	1	Passive	0 ~ 60° C
PCM-9588L-M0A1E	C-M 600 MHz	512 KB	SODIMM	48-bit	-	Yes	-	1	Yes	6	2	4	2	16	1	1	-	Passive	0 ~ 60° C
PCM-9588Z-1GM0A1E	C-M 600 MHz	512 KB	Bundle 1 GB	-	Yes	Yes	-	1	Yes	6	2	4	2	16	1	1	1	Passive	-20 ~ 80° C
PCM-9588Z2-1GS0A1E	C-M 1GHz	0 KB	Bundle 1 GB	48-bit	-	Yes	Yes	1	Yes	6	2	4	2	16	1	1	1	Passive	-40 ~ 85° C

*PCM-9588 has insolation feature in LAN for UL60601.

Packing List

Part No.	Description	Quantity
	PCM-9588 SBC	1
9689000002	Mini Jumper Pack	1
2006958800	Startup Manual	1
2066958811	Utility CD	1
1700001112	ATX Power Cable	
1700006196	AT Power Cable	

Optional Accessories

Part No.	Description
PCM-10586-9588E	Wiring kit for PCM-9588
1703100260	USB cable (26 cm)
1703100121	USB cable (12 cm)
PCM-110-00A3E	1-slot PCI riser card for 5.25" biscuits
PCM-120-00A3E	2-slot PCI riser card for 5.25" biscuits
PCM-200-00A2E	PCI-104 to PCI bus module

Embedded OS

Embedded OS	Part No.	Description
Win XPE	2070006672	Image XPE FP2007 PCM-9588 V3.01 ENG
	2070008830	XPE WES2009 for PCM-9588 (Multi) V4.0 ENG

Value-Added Software Services

Software API: An interface that defines the ways by which an application program may request services from libraries and/or operating systems. Provides not only the underlying drivers required but also a rich set of user-friendly, intelligent and integrated interfaces, which speeds development, enhances security and offers add-on value for Advantech platforms. It plays the role of catalyst between developer and solution, and makes Advantech embedded platforms easier and simpler to adopt and operate with customer applications.

Software APIs

Control

GPIO

General Purpose Input/Output is a flexible parallel interface that allows a variety of custom connections. It allows users to monitor the level of signal input or set the output status to switch on/off a device. Our API also provides Programmable GPIO, which allows developers to dynamically set the GPIO input or output status.

SMBus

SMBus is the System Management Bus defined by Intel® Corporation in 1995. It is used in personal computers and servers for low-speed system management communications. The SMBus API allows a developer to interface a embedded system environment and transfer serial messages using the SMBus protocols, allowing multiple simultaneous device control.

I²C

I²C is a bi-directional two wire bus that was developed by Philips for use in their televisions in the 1980s. The I²C API allows a developer to interface with an embedded system environment and transfer serial messages using the I²C protocols, allowing multiple simultaneous device control.

Monitor

Watchdog

A watchdog timer (WDT) is a device that performs a specific operation after a certain period of time if something goes wrong and the system does not recover on its own. A watchdog timer can be programmed to perform a warm boot (restarting the system) after a certain number of seconds.

Hardware Monitor

The Hardware Monitor (HWM) API is a system health supervision API that inspects certain condition indexes, such as fan speed, temperature and voltage.

Hardware Control

The Hardware Control API allows developers to set the PWM (Pulse Width Modulation) value to adjust fan speed or other devices; it can also be used to adjust the LCD brightness.

Display

Brightness Control

The Brightness Control API allows a developer to interface with an embedded device to easily control brightness.

Backlight

The Backlight API allows a developer to control the backlight (screen) on/off in an embedded device.

Power Saving

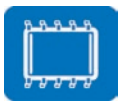
CPU Speed

Make use of Intel SpeedStep technology to reduce power power consumption. The system will automatically adjust the CPU Speed depending on system loading.

System Throttling

Refers to a series of methods for reducing power consumption in computers by lowering the clock frequency. These APIs allow the user to lower the clock from 87.5% to 12.5%.

Software Utilities



BIOS Flash

The BIOS Flash utility allows customers to update the flash ROM BIOS version, or use it to back up current BIOS by copying it from the flash chip to a file on customers' disk. The BIOS Flash utility also provides a command line version and API for fast implementation into customized applications.

Embedded Security ID

The embedded application is the most important property of a system integrator. It contains valuable intellectual property, design knowledge and innovation, but it is easily copied! The Embedded Security ID utility provides reliable security functions for customers to secure their application data within embedded BIOS.

Monitoring

The Monitoring utility allows the customer to monitor system health, including voltage, CPU and system temperature and fan speed. These items are important to a device; if critical errors happen and are not solved immediately, permanent damage may be caused.

eSOS

The eSOS is a small OS stored in BIOS ROM. It will boot up in case of a main OS crash. It will diagnose the hardware status, and then send an e-mail to a designated administrator. The eSOS also provides remote connection: Telnet server and FTP server, allowing the administrator to rescue the system.

Flash Lock

Flash Lock is a mechanism that binds the board and CF card (SQFlash) together. The user can "Lock" SQFlash via the Flash Lock function and "Unlock" it via BIOS while booting. A locked SQFlash cannot be read by any card reader or boot from other platforms without a BIOS with the "Unlock" feature.