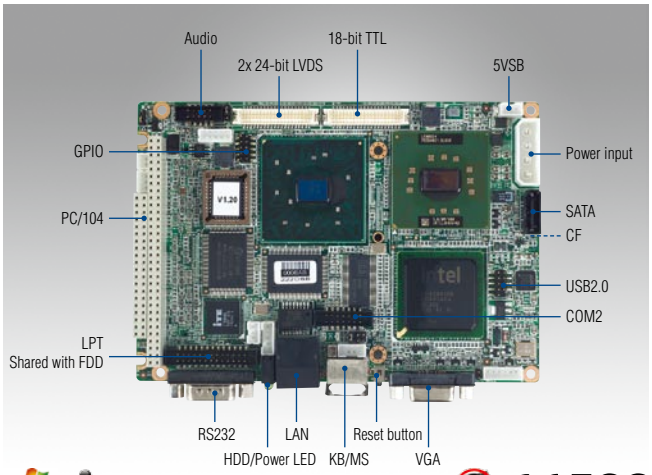
PCM-9388

Intel® Celeron® M Processor ULV 3.5" SBC, CRT, LCD, LAN , USB, PC/104



Features

- Supports Intel® Celeron® M processor
- Supports 18-bit TTL/36-bit LVDS (48-bit LVDS optional)/ CRT Dual independent display by CRT + LVDS/CRT + TTL
- Fanless support with low profile heatsink
- Full LCD support for 18-bit TTL/2-chanel LVDS supports up to 48-bit (Optional)
- Supports embedded software APIs and utilities

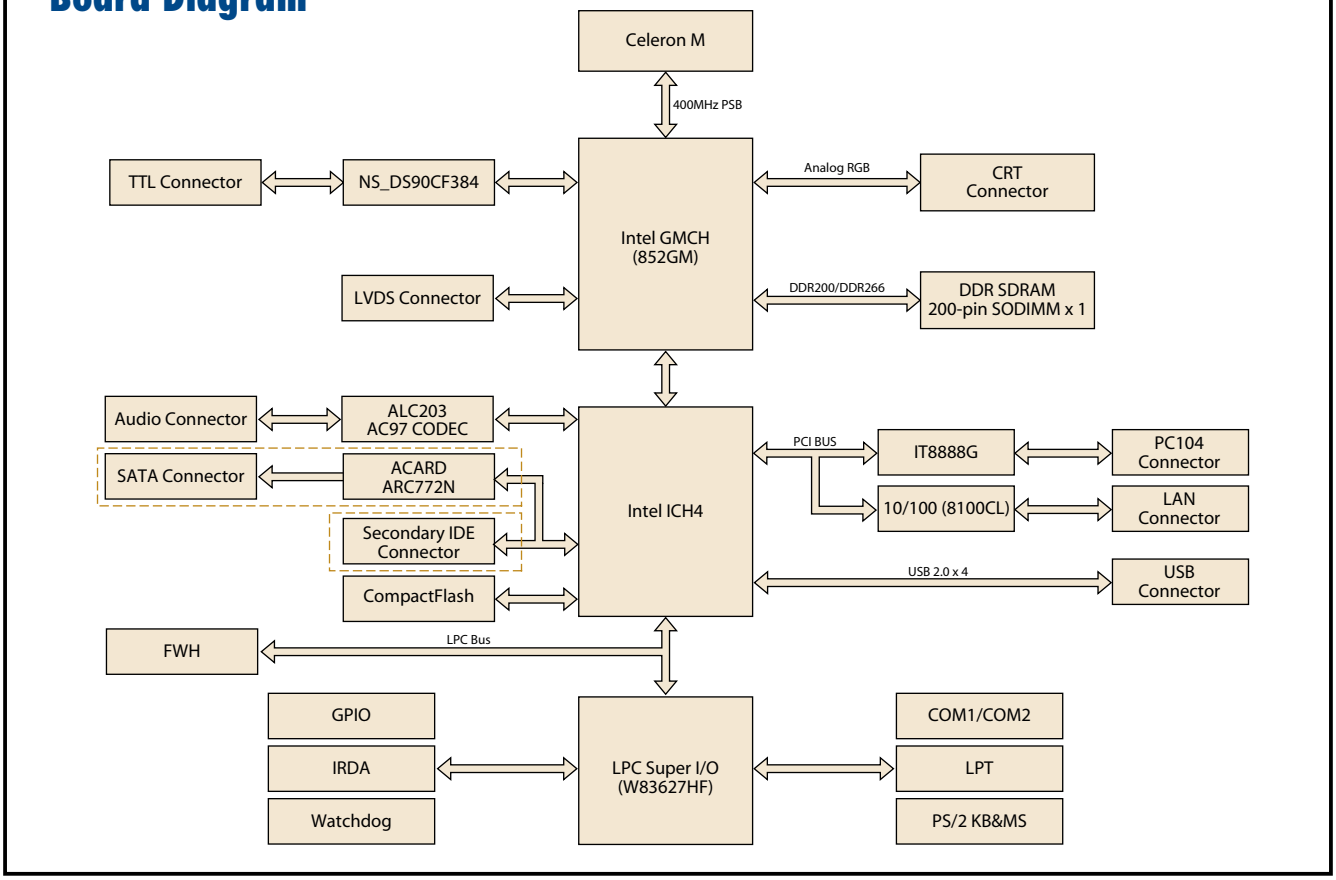
Software APIs: GPIO, H/W Monitor, Watchdog, Backlight On/Off, SMBus, CPU Speed, System Throttling

Utilities: BIOS flash, Monitoring

Specifications

Processor System	CPU	Intel Celeron M 600 MHz and 1.0 GHz on board type
	Front Side Bus	400 MHz
	Frequency	600 MHz and 1.0 GHz
	L2 Cache	512 KB on 600 MHz, 0L2 on 1.0 GHz
	System Chipset	Intel 852GM + ICH4
	BIOS	Award 4 Mb Flash ROM BIOS
Memory	Technology	DDR266 MHz SO-DIMM supports
	Max. Capacity	1 GB
	Socket	1 x 200-pin SODIMM
Display	Chipset	Intel 852 GM
	VRAM	Supports 64 MB frame buffer share system memory
	Graphics Engine	Mobile Intel 852 GM integrated 3D/2D engine
	LVDS	1 x 36-bit LVDS (48-bit optional)
	VGA	CRT: up to 1600 x 1200 @ 32 bpp (85 Hz)
	TTL LCD	1 x 18-bit TTL
	Dual Display	CRT + TTL, CRT + LVDS
Ethernet	Speed	10/100 Mbps
	Controller	Realtek RTL 8100CL
	Connector	RJ-45 on LAN
Audio	Chipset	Realtek ALC203 AC97, Line-in, Line-out, Mic-in
WatchDog Timer		Output System reset Programmable 1 ~ 255 sec
Storage	CompactFlash	1
	SATA	1 (only for PCM-9388S)
	IDE	1 (only for PCM-9388F)
	Floppy	1 (share with LPT)
Rear I/O	Serial	1 (COM1 supports RS-232)
	Ethernet	1 (10/100 Mbps)
	KB/Mouse	1
	VGA	1
	Reset Button	1
Internal I/O	USB	2 x USB 2.0
	Serial	1 x COM COM2 supports RS-232/422/485
	IDE	1 UDMA 33 (only for PCM-9388F)
	Parallel(LPT)	1 (share with FDD)
	FDD	1 (share with LPT)
	SMBUS	Supported
	GPIO	8-bit GPIO
	IrDA	115 kbps
Expansion	PC/104 Slot	PC/104 Expansion(8/16-Bit ISA)
Power	Power Type	AT/ATX
	Power Supply Voltage	5V + 5%, 12V + 5% (LCD)
	Power Consumption (Typical)	Typical: 1.56 A @ 5 V, 0.16 A @ 12 V (Celeron M 600/DDR 256 MB)
	Power Consumption (Max, test in HCT)	MAX: 2.11 A @ 5 V, 0.17 A @ 12 V (Celeron M 600/DDR 256 MB)
	Power Management	APM, ACPI S1, S5
	Battery	3 V / 210 Mah
Environment	Operational	0 ~ 60° C (32 ~ 140° F)
	Non-Operational	Operating: 0 ~ 60° C (32 ~ 140° F) (Operating humidity: 40° C @ 85% RH non-condensing) Non-Operating: -40° C ~ 85° C and 60° C @ 95% RH non-condensing
Physical Characteristics	Dimensions (L x W)	146 x 102 mm (5.7" x 4")
	Weight	0.85 kg (1.87 lb), weight of total package

Board Diagram



Ordering Information

Part No.	CPU	CRT	LVDS	TTL	LAN	IDE/SATA	USB	RS-232	RS-232/442/485	LPT	CF	PC/104	Thermal Solution	Operating Temp.
PCM-9388F-M0A1E	Celeron M 600 MHz (512 KB)	1	1	1	1 FE	1 IDE	2	1	1	1	1	1	Passive	0 ~ 60° C
PCM-9388F-S0A1E	Celeron M 1 GHz (0 KB)	1	1	1	1 FE	1 IDE	2	1	1	1	1	1	Passive	0 ~ 60° C
PCM-9388SF-S0A1E	Celeron M 1 GHz (0 KB)	1	1	1	1 FE	1 SATA	2	1	1	1	1	1	Passive	0 ~ 60° C
PCM-9388Z-512S0A1E	Celeron M 1 GHz (0 KB)	1	1	1	1 FE	1 SATA	2	1	1	1	1	1	Passive	-20 ~ 80° C

Packing List

Part No.	Description	Quantity
	PCM-9388 SBC	
	Startup Manual	
	Utility CD	
1701440504	IDE cable (44p/44p/40p)	x 1
1700060202	KB/MS cable	x 1
1701140201	RS-232/422/485 cable	x 1
1700260250	Parallel Port cable	x 1
1703100152	Audio cable	x 1
1703100121	USB cable (2 ports)	x 1

Optional Accessories

Part No.	Description
1703200201	ATX power cable
1700001531	LTP to FDD cable

Embedded OS

Embedded OS	Part No.	Description
WinCE 6.0	2070007811	CE60 Pro Intel (852/855/915/945) 2 COM V1.2 ENG
Win XPE	2070007789	XPE WES2009 Intel-Mulitprocess 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

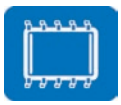
CPU Speed

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.