》 User's Guide 《

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Document Revision History

Revision	Date	By	Comment
A	Dec 3 2019	Zhouzj	

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ICBANQ Technical Support and Services

If you have questions about installing or using your ICBANQ Product, then please notice that you will find many answers in this Users Guide. To obtain support please contact your local Distributor or Field Application Engineer (FAE).

Before Contacting Support: Please be prepared to provide as much information as possible:

CPU Board

      1. Type.

      2. Part Number (find PN on label)

      3. Serial Number if available (find SN on label)

Configuration

      1. DRAM Type and Size.

      2. BIOS Revision (find the version info in the BIOS Setup).

3. BIOS Settings different than *Default* Settings (refer to the BIOS Setup section).

- System

1. O/S Make and Version.

2. Driver Version numbers (Graphics, Network, and Audio).

3. Attached Hardware: Hard disks, CD-Rom, LCD Panels etc.

1 Introduction

This manual describes thePCM-A351 boards made by ICBANQ. In this manual the boards will also be denoted PCM-A351.

The PCM-A351 boards are based on Intel   Apollo Lake (System on Chip)   and will be available in two versions. The two types of boards are listed in this table:

Ordering Information	
Article	**Description**
PCM-A351-A10-X	Display: 1x LVDS+ 1x HDMI + 1x VGA
PCM-A351W-A10-X	Display: 1x LVDS+ 1x HDMI + 1x VGA Temperature :-40°C to +85°C
Note: **X-CPU model，CPU：J3355,J3455,J4205,N3350,N3450,N4200**	

Use of this Users Guide implies a basic knowledge of   PC-AT hard- and software.

New users are recommended to study the short installation procedure stated in the following chapter before switching-on the power.

All configuration and setup of the CPU board is either done automatically or manually by the user via the BIOS setup menus. Only exceptions are the "Clear CMOS" Jumper and the "Always On" jumper.

Latest revision of this manual, datasheet, BIOS, drivers, BSP's (Board Support Packages), Mechanical drawings (2D and 3D) can be contect us:

2 Installation Procedure

2.1 Installing the Board

To get the board running follow these steps. If the board shipped from YDSTECH has already components like RAM and CPU cooler mounted, then relevant steps below can be skipped.

1. **Turn off the PSU (Power Supply Unit)**

> ⚠️ **Warning**: Turn off PSU (Power Supply Unit) completely (no mains power connected to the PSU) or leave the Power Connectors unconnected while configuring the board. Otherwise components (RAM, LAN cards etc.) might get damaged. Make sure to use +12V single supply only. Alternatively use a standard ATX PSU with suitable cable kit and PS_ON# active.

2. Insert the DDR3L SODIMM module

For a list of approved DDR3L SODIMMs contact your Distributor or FAE. See also chapter "System Memory Support".

3. Cooler Installation

Normally the cooler is pre-mounted, but in case not, then make sure the heat paste etc. on the cooler is intact and cover the full area of the SoC. Connect Cooler Fan electrically to the FAN_CPU connector.

4. Connecting Interfaces

Insert all external cables for hard disk, keyboard etc. A monitor must be connected in order to change BIOS settings.

5. Connect and turn on PSU

Connect PSU to the board by theVin-External connector. Please note that current limitations apply, see relevant connector description.

6. Power Button

If the board does not start by itself when switching on the ATX PSU AC mains, then follow these instructions to start the board. Install the Always on Jumper in the Always On position or toggle the PWRBTN_IN# signal (available in the FRONTPNL connector), by momentary shorting pins 3 (PWRBTN_IN#) and pin 2 (GND). A "normally open" switch is recommended.

7. BIOS Setup

Enter the BIOS setup by pressing the <Del> key during boot up.

Enter "Exit Menu" and Load Setup Defaults.

Refer to the "BIOS Configuration / Setup "section of this manual for details on BIOS setup. Please note that BIOS may boot in UEFI shell, if so then type exit to activate BIOS menu and select Set-up.

> **Note:** To clear all BIOS settings, including Password protection, activate "Clear CMOS Settings" Jumper for ≈10 sec (without power connected).

8. Mounting the board in chassis

⚠️ **Warning**: When mounting the board to chassis etc. please notice that the board contains components on both sides of the PCB which can easily be damaged if board is handled without reasonable care. A damaged component can result in malfunction or no function at all.

When fixing the Motherboard on a chassis it is recommended using screws with integrated washer and a diameter of ≈7mm. Do not use washers with teeth, as they can damage the PCB and cause short circuits.

2.2 Requirements IEC60950

Take care when designing chassis interface connectors in order to fulfill the IEC60950 standard.

When an interface or connector has a VCC (or other power) pin which is directly connected to a power plane like the VCC plane:

To protect the external power lines of the peripheral devices the customer has to ensure:

• Wires have suitable rating to withstand the maximum available power.

• That the enclosure of the peripheral device fulfils the fire protecting requirements of IEC60950.

Lithium battery precautions

CAUTION! Danger of explosion if battery is incorrectly re- placed. Replace only with same or equivalent type recommended by manufacturer. Dispose of used batteries according to the manufacturer's instruc- tions.	**VORSICHT!** Explosionsgefahrbeiunsachgemäßem Austausch der Batterie. Ersatz nurdurch den selbenodereinenvomHerstellerempfohlenengleichwertigen Typ. EntsorgunggebrauchterBatteriennachAnga- ben des Herstellers.
ATTENTION! Risqued'explosion avec l'échangeinadéquat de la batterie. Remplacementseulement par le mêmeou un type équivalentrecommandé par le producteur. L'évacuation des batteries usagéesconformément à des indications du fabricant.	**PRECAUCION!** Peligro de explosiónsi la batería se sustituyeincorrectamente. Sustituyasolamentepor el mismo o tipoequivalenterecomendadopor el fabricante. Dispongalasbateríasusadassegúnlasinstrucciones del fabricante.
ADVARSEL! Lithiumbatteri – Eksplosionsfarevedfejlagtighåndtering. Udskiftningmå kun ske med batteriafsammefabrikatog type. Levérdetbrugtebatteritilbagetilleverandøren.	**ADVARSEL!** Eksplosjonsfarevedfeilaktigskifteavbatteri. Benyttsammebatteritypeeller en tilsvarende type anbefaltavapparatfabrikanten. Bruktebatterierkasseresihenholdtilfabrikantensinstruksjoner.
VARNING! Explosionsfara vid felaktigtbatteribyte. Användsammabatteritypeller en ekvivalenttypsomrekommenderasavapparattillverkaren. Kasseraanväntbatterienligtfabrikantensinstruktion.	**VAROITUS!** Paristovoiräjähtää, jos se on virheellisestiasennettu. Vaihdaparistoainoastaanlalteval- mistajansuosittelemaantyyppiln. Hävitäkäytettyparistovalmistajanohjeidenmukaisesti.

3 System Specifications

3.1 Component main data

Technical Information	
Form Factor	3.5" board

SOC	Intel$^®$ Apollo Lake SoC (2 or 4 cores) , Low power 6-10W TDP
	Supports:
	    Intel® Apollo J3355 dual core 2.0GHz 10W
	    Intel® Apollo J3455 quad core 1.5GHz 10W
	    Intel® Apollo J4205 quad core 1.5GHz 10W
	    Intel® Apollo N3350 quad core 1.1GHz 6W
	    Intel® Apollo N3450 quad core 1.1GHz 6W
	    Intel® Apollo N4200 quad core 1.1GHz 6W

Memory	SO-DIMM Memory supporting DDR3L1866/1333 MHz (up to 8GB)
Graphics	2x independent graphic outputs (eDP/LVDS, HDMI1.4a,VGA) LVDS up to 1920x1200 eDP up to 2560x1600/ HDMI up to 1920x1200/ VGA up to 2560x1600
Ethernet	2x Intel i211-AT 10/100/1000Mb/s Ethernet
SATA	1x mSATA + 1x SATA 2.0
USB	2x USB 2.0 and 4x USB2.0/3.0 (4 on front I/O, 2 internal)
Serial Ports	4x RS232 (3 wire) and 2x RS232/422/485
I/O Features	1x mPCIe, 8x GPIOs，1x SIM
Audio	ALC662 HD Audio (Line-in ,Line-out, Mic-in)
Power Supply	+9V~+24VDC, Recommend +12VDC
Temperature	Operating-20°C to +75°C ,-40°C to +85°C (optional)
Dimensions	146 mm x 101 mm
Cooling	Passive cooling solutions
Operating systems	WIN10, Linux, VxWorks

3.2 System overview

The block diagram below shows the architecture and main components of thePCM-A351. The key component on the board is the Intel® Apollo Lake.
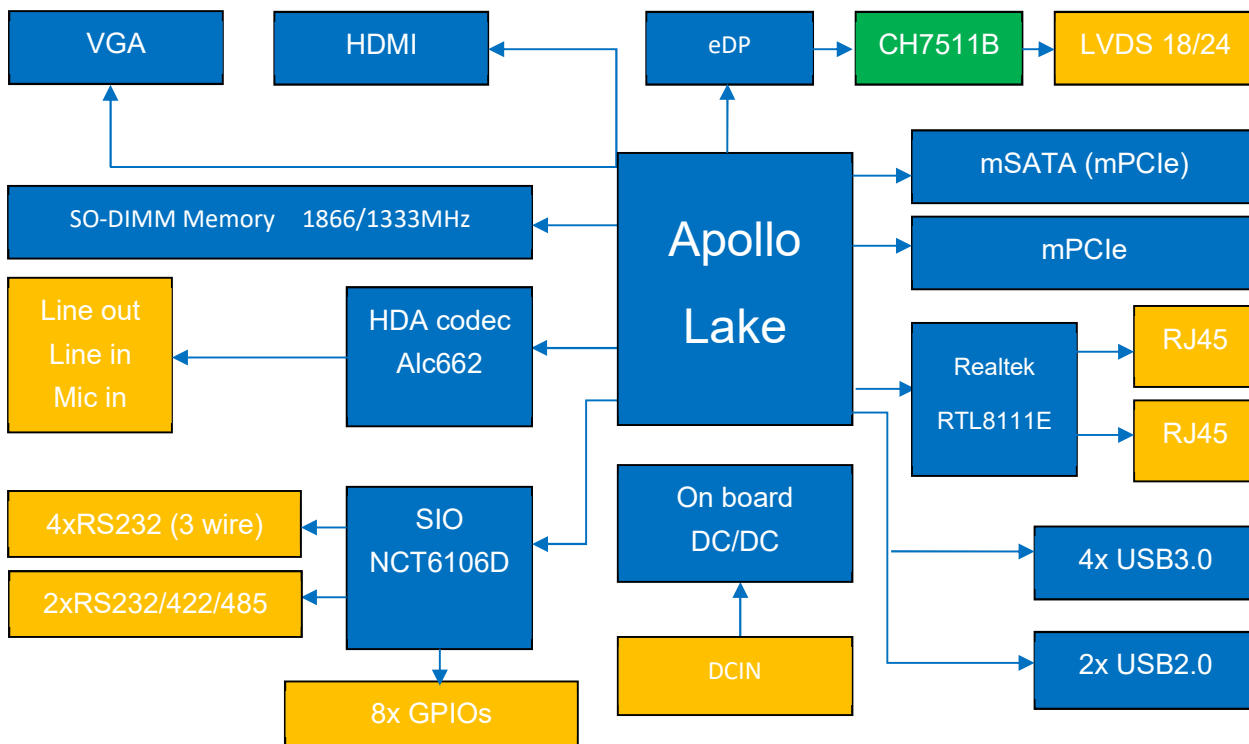
3.3 Integrated pre-mounted cooler
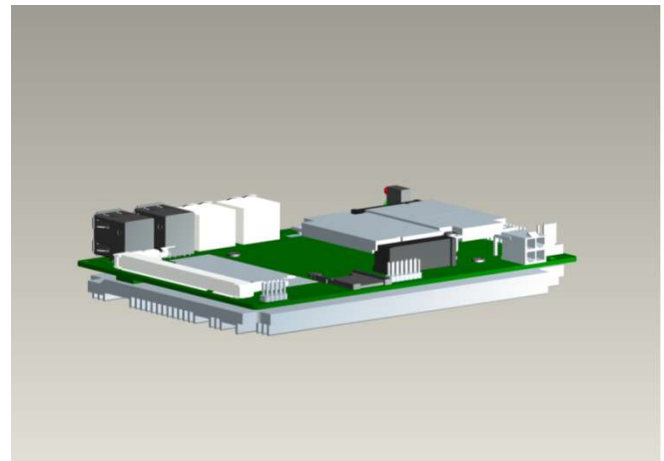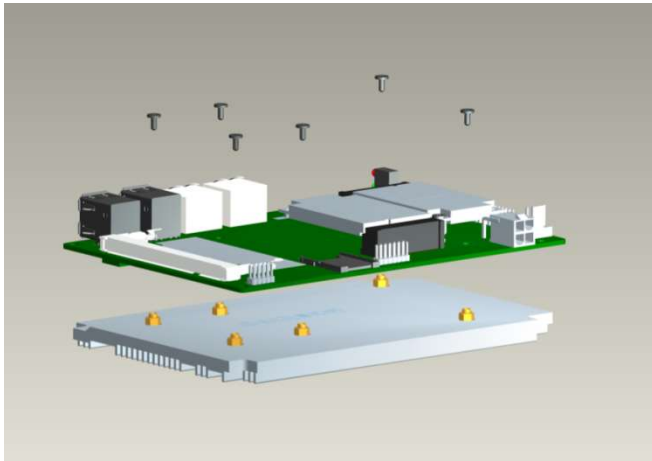
4 Connector Locations

4.1 PCM-A351 –Connector Location

Vin Ext. | mSATA | SATA Power | SATA1 | BAT | USB (5-6) | Audio

GPIO

COM (1-6)

COM SEL

PWR_
LVDS

LVDS
or eDP

SODIMM

Note1

mPCIe(3G or Wi-Fi)
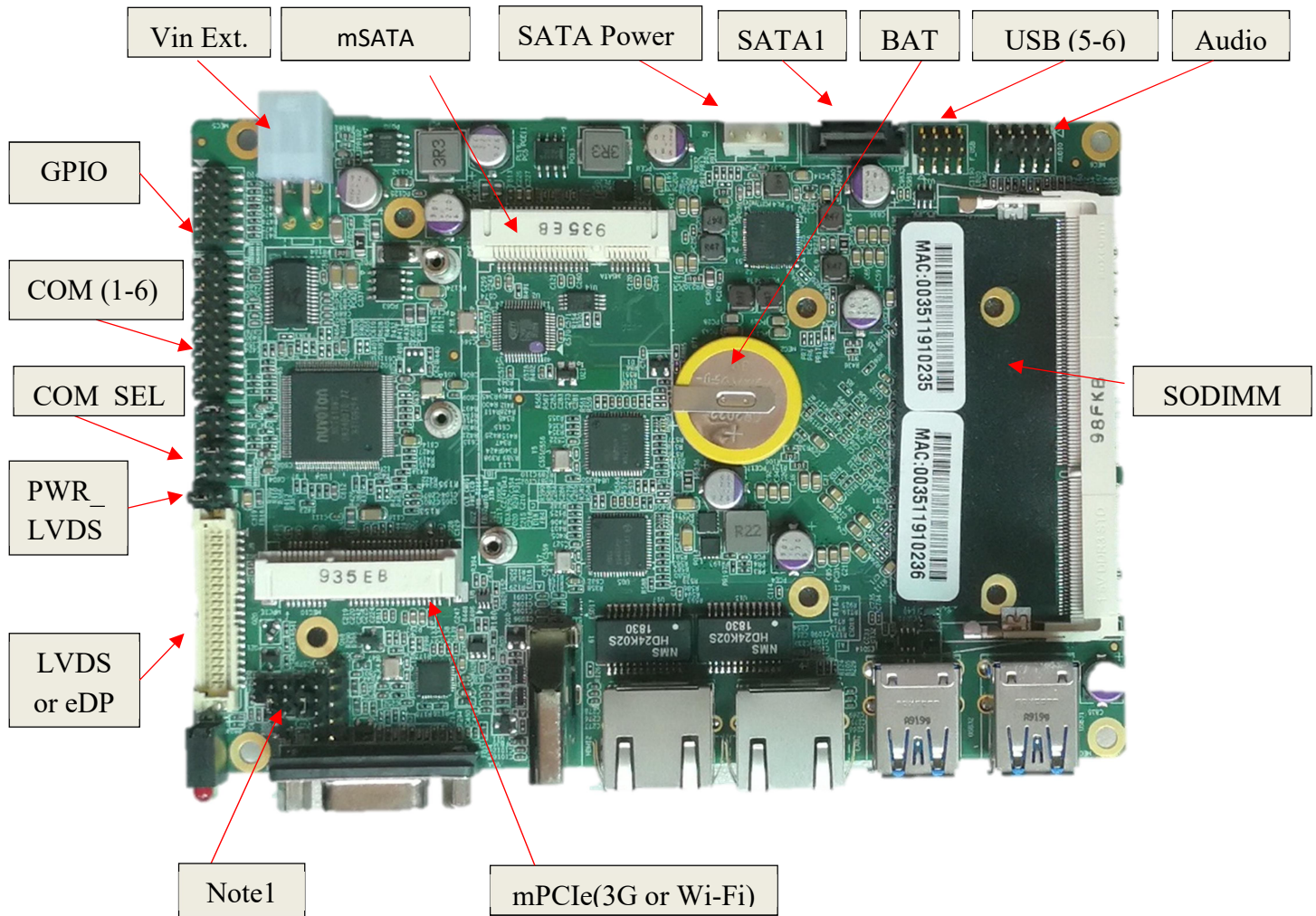
Note1: The rectangular hole in the socket is the pin1

Clear
CMOS | PWR_LCD | Reset&
Power on | Auto
BTN | SIM1 | Touch
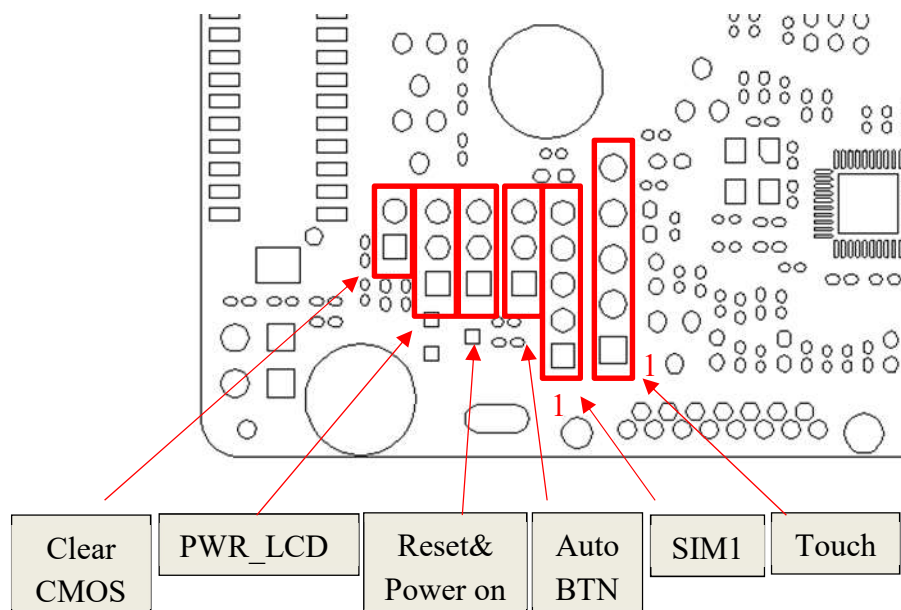
5 Connector Definitions

The following sections provide pin definitions and detailed description of all on-board connectors.
The connector definitions follow the following notation:
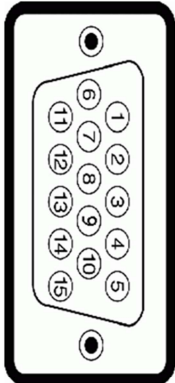
Column name	Description
Pin	Shows the pin-numbers in the connector. The graphical layout of the connector definition tables is made similar to the physical connectors.
Signal	The mnemonic name of the signal at the current pin. The notation "XX#" states that the signal "XX" is active low.

Type	AI: Analogue Input.
	AO: Analogue Output.
	I: Input, TTL compatible if nothing else stated.
	IO: Input / Output. TTL compatible if nothing else stated.
	IOT: Bi-directional tri-state IO pin.
	IS: Schmitt-trigger input, TTL compatible.
	IOC: Input / open-collector Output, TTL compatible.
	IOD: Input / Output, CMOS level Schmitt-triggered. (Open drain output)
	DSO: Differential Signaling Output with complementary signals on two paired wires
	DSI: Differential Signaling Input with complementary signals on two paired wires
	DSIO: Differential Signaling Input / Output (combined DSO and DSI)
	O: Output, TTL compatible.
	OC: Output, open-collector or open-drain, TTL compatible.
	OT: Output with tri-state capability, TTL compatible.
	LVDS: Low Voltage Differential Signal.
	PWR: Power supply or ground reference pins.
	NC: Pin not connected.
	Additional notations:
	   -5.0 +5.0V signal voltage level, e.g. I-5.0
	   -3.3 +3.3V signal voltage level, e.g. O-3.3
	   -1.8 +1.8V signal voltage level, e.g. IO-1.8

Level	Ioh: Typical current in mA flowing out of an output pin through a grounded load, while the output voltage is > 2.4 V DC (if nothing else stated). Iol: Typical current in mA flowing into an output pin from a VCC connected load, while the output voltage is < 0.4 V DC (if nothing else stated).
Pull U/D	On-board pull-up or pull-down resistors on input pins or open-collector output pins.
Note	Special remarks concerning the signal.

The abbreviation TBD is used for specifications which are not available yet or which are not sufficiently specified by the component vendors.
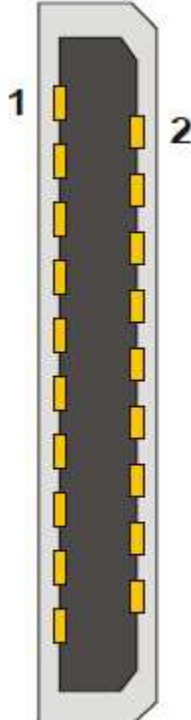
6 IO-Area Connectors

6.1 VGA Connectors

	Pin	Signal	Description	Type
	1	RED	Red component signal	
	2	GREEN	Green component signal	
	3	BLUE	Blue component signal	
	4	N/C	**Not connected**	
	5	GND	**Ground**	PWR
	6	GND R	Red component ground	
	7	GND G	Green component ground	
	8	GND B	Blue component ground	
	9	+5V	5V Power，**Not connected**	PWR
	10	GND	**Ground**	PWR
	11	N/C	**Not connected**	
	12	SDA	Serial data signal	EDID
	13	H SYNC	Horizontal synchronization	
	14	V SYNC	Vertical synchronization	
	15	SCL	Serial clock signal	EDID

6.2 HDMI Connectors (HDMI1)

The HDMI® interface is available through the standard 19 pin Type A HDMI® connector

	Pin	Signal	Description	Type
	1	TMDS2+	TMDS data 2 (positive)	DSO-3.3
	2	GND	Ground	PWR
	3	TMDS2-	TMDS data 2 (negative)	DSO-3.3
	4	TMDS1+	TMDS data 1(positive)	DSO-3.3
	5	GND	Ground	PWR
	6	TMDS1-	TMDS data 1 (negative)	DSO-3.3
	7	TMDS0+	TMDS data 0 (positive)	DSO-3.3
	8	GND	Ground	PWR
	9	TMDS0-	TMDS data 0 (negative)	DSO-3.3
	10	TMD CLK+	TMDS clock (positive)	DSO-3.3
	11	GND	Ground	PWR
	12	TMD CLK-	TMDS clock (negative)	DSO-3.3
	13	N.C.	Not connected	NC
	14	N.C.	Not connected	NC
	15	DDC_CLK	DDC clock	IO-5.0
	16	DDC_DATA	DDC data	IO-5.0
	17	GND	Ground	PWR
	18	VCC5 [1]	Power +5V	PWR
	19	TMDS_HPD	Hot plug detect	I-5.0

Note: **1) To protect the external power lines of peripheral devices make sure that**

    - the wires have the right diameter to withstand the maximum available current.

    - to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

6.3 Ethernet Connector

In order to achieve the specified performance of the Ethernet port, Category 5 twisted pair cables must be used with 10/100MB and Category 5E, 6 or 6E with 1Gb LAN networks.

The signals for the Ethernet ports are as follows:

Signal	Description
MDI[0]+ / MDI[0]-	In MDI mode, this is the first pair in 1000Base-T, i.e. the BI_DA+/- pair, and is the transmit pair in 10Base-T and 100Base-TX. In MDI crossover mode, this pair acts as the BI_DB+/- pair, and is the receive pair in 10Base-T and 100Base-TX.
MDI[1]+ / MDI[1]-	In MDI mode, this is the second pair in 1000Base-T, i.e. the BI_DB+/- pair, and is the receive pair in 10Base-T and 100Base-TX. In MDI crossover mode, this pair acts as the BI_DA+/- pair, and is the transmit pair in 10Base-T and 100Base-TX.
MDI[2]+ / MDI[2]-	In MDI mode, this is the third pair in 1000Base-T, i.e. the BI_DC+/- pair. In MDI crossover mode, this pair acts as the BI_DD+/- pair.
MDI[3]+ / MDI[3]-	In MDI mode, this is the fourth pair in 1000Base-T, i.e. the BI_DD+/- pair. In MDI crossover mode, this pair acts as the BI_DC+/- pair.

Note: MDI = Media Dependent Interface.

The pinout of the RJ45 connectors is as follows

Signal	PIN	Type	Ioh/Iol	Note
MDI0+				
MDI0-				
MDI1+				
MDI2+				
MDI2-				
MDI1-				
MDI3+				
MDI3-				
Flashing => communication	8 7 6 5 4 3 2 1			

6.4 USB Connectors (IO Area)

The PCM-A351 board contains support for 1 USB3.0/2.0 port (Lower USB port, USB1)and3 USB2.0 port (USB2, USB3, USB4) in the IO area.

USB 2.0 ports allowing data transfers up to 480Mb/s. The USB 3.0 port allowing data transfers up to 5Gb/s. (Two internal USB ports are available via internal 8-pin connectors)

For USB2.0 cabling it is required to use only High Speed USB cable, specified in USB2.0 standard:
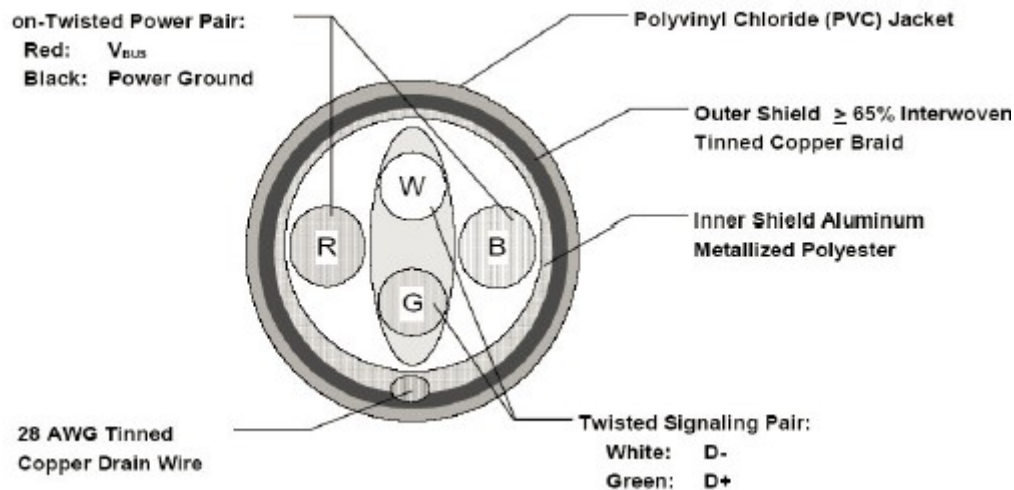
For USB3.0 cabling it is required to use only High Speed USB cable, specified in USB3.0 standard:
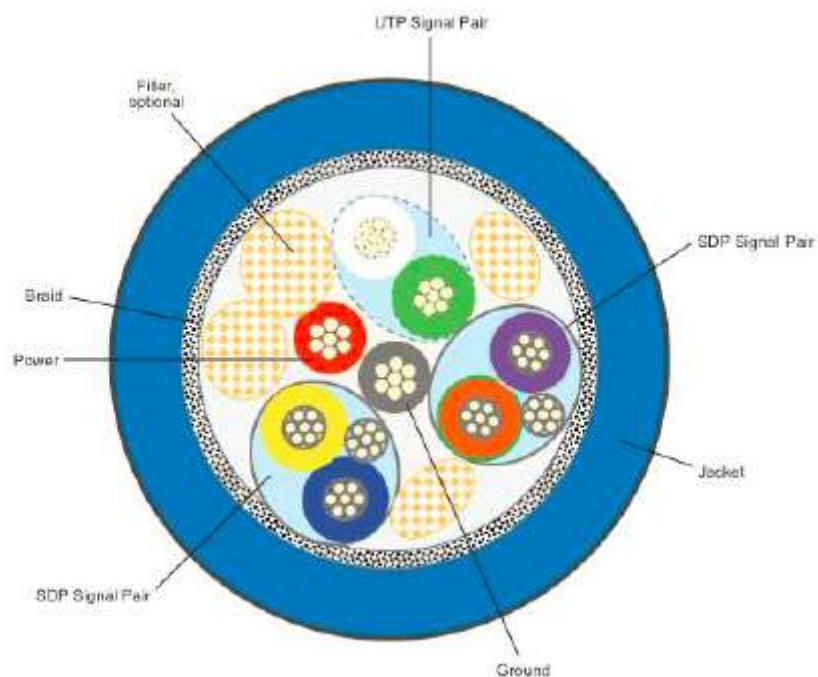
The dual USB connector USB31 USB32,Port 0,1,2 and 3 supports USB3.0/2.0.

Note	Type	Signal	PIN	Signal	Type	Note
	IO	USB1-		USB1+	IO	
	PWR	5V	1 2 3 4	GND	PWR	
	IO	RX1-	5 6 7 8 9	TX1+	5	6
	IO	RX1+		TX1-		
	PWR	GND			PWR	
	IO	USB2-		USB2+	IO	
	PWR	5V	1 2 3 4	GND	PWR	
	IO	RX2-	5 6 7 8 9	TX2+	IO	
	IO	RX2+		TX2-	IO	
	PWR	GND			PWR	

Note 1: In order to meet the requirements of USB standard, the 5V input supply must be at least 5.00V

Signal	Description
USBn+ USBn- RXn+ RXn- TXn+ TXn- (n= 0,1)	Differential pair works as serial differential receive/transmit data lines.
5V/SB5V	5V supply for external devices. SB5V is supplied during power-down to allow wakeup on USB device activity. Protected by 1.0A current limiting circuit for each USB port.

6.5 DC Power Jack Connector (Vin Ext.)

The DC Power Jack Connector (Vin Ext.) connector must be used to supply the board with +9V~+24V (+/-5%). Maximum allowed current is 5A.
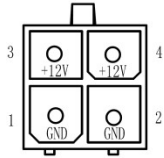
Warning: Hot Plugging power supply is not supported. Hot plugging might damage the board.

Notes:To protect the external power lines of peripheral devices make sure that

- the wires have the right diameter to withstand the maximum available current.

- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

7 Internal Connectors

7.1 Power Connector (J1.)

Header	Pin	Signal	Min.	Typ.	Max.	Units
	1	GND				
	2	GND				
	3	Power	+9.0	+12.0	+24.0	V
	4	Power	+9.0	+12.0	+24.0	V
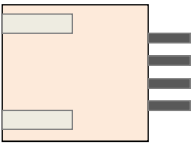
Maximum allowed current on each pin is 5A.

Available cable kit:

Power Cable

7.2 Internal SATA Power Connector (SATA_PWR.)

Header	Pin	Signal	Description	Type
1	1	GND	Power Ground	PWR
	2	+5V	+5V power input	PWR
	3	+5V	+5V power input	PWR
	4	GND	Power Ground	PWR

Maximum allowed current on each pin is 2A.

Available cable kit:

SATA Power Cable

7.3 SATA (Serial ATA) Disk interface

Sata connector pinning:

PIN		Signal	Type	Ioh/Iol	Note
	1	GND	PWR	-	
	2	SATA* TX+			
	3	SATA* TX-			
	4	GND	PWR	-	
	5	SATA* RX-			
	6	SATA* RX+		-	
	7	GND	PWR		

Signal	Description
SATA* RX+ / RX-	Host transmitter differential signal pair
SATA* TX+ / TX-	Host receiver differential signal pair

Available cable kit:

SATA Signal Cable

7.4 LVDS Flat Panel Connector (J8)

The LVDS and eDP connector is based on 40 pole connector.

The Connector reserved to automatically adjust the screen brightness ALS (Ambient Lightsensor) InterfaceforeDP (Supported on win8 or win 8.1system).

| Note	Type	Signal	PIN		Signal	Type	Note
Default 5V	PWR	+5V or +12V	1	2	LVDS B3+	LVDS	
	PWR	LCD_VCC	3	4	LVDS B3-	LVDS	
	OT	BKLTEN#	5	6	LVDS B2+	LVDS	
	OT	BKLTCTL	7	8	LVDS B2-	LVDS	
	OT	DDC CLK	9	10	LVDS B1+	LVDS	
	OT	DDC DATA	11	12	LVDS B1-	LVDS	
Aux(-) channel used by eDP		Aux Ch(n)	13	14	LVDS B0+	LVDS	
Aux(+) channel used by eDP		Aux Ch(p)	15	16	LVDS B0-	LVDS	
	I	INT#	17	18	LVDS BCLK+	LVDS	
	LVDS	LVDS A3+	19	20	LVDS BCLK-	LVDS	
	LVDS	LVDS A3-	21	22	GND	PWR	
	LVDS	LVDS A2+	23	24	+5V or +12V	PWR	
	LVDS	LVDS A2-	25	26	LCD_VCC	PWR	
	LVDS	LVDS A1+	27	28	GND	PWR	
	LVDS	LVDS A1-	29	30	GND	PWR	
	LVDS	LVDS A0+	31	32	Lane 1(p)	LVDS	used by eDP
	LVDS	LVDS A0-	33	34	Lane 1(n)	LVDS	used by eDP
	LVDS	LVDS ACLK+	35	36	Lane 0(p)	LVDS	used by eDP
	LVDS	LVDS ACLK-	37	38	Lane 0(n)	LVDS	used by eDP
	PWR	GND	39	40	Hot Plug	I	Internally pull down (100K ohm)

Note: The LVDS connector supports single and dual channel, 18/24bit SPWG panels up to a resolution of 1920x1080 and with limited frame rate up to 1920x1200.

Signal	Description
LVDS A0..A3	LVDS A Channel data
LVDS ACLK	LVDS A Channel clock
LVDS B0..B3	LVDS B Channel data
LVDS BCLK	LVDS B Channel clock
BKLTCTL	Backlight control (1), PWM signal to implement voltage in the range 0-3.3V
BKLTEN#	Backlight Enable signal (active low) (2)
LCDVCC	VCC supply to the display. 5V or 3.3V (1A Max.) selected in BIOS setup menu. Power sequencing depends on LVDS panel selection. (Shared with eDP connector)
DDC CLK	DDC Channel ClockorAmbient Light SensorI2C clock
DDC DATA	DDC Channel Data or Ambient Light SensorI2Cdata
INT#	Ambient Light SensorInterrupt

Notes: Windows API will be available to operate the BKLTCTL signal. Some Inverters have a limited voltage range 0- 2.5V for this signal: If voltage is > 2.5V the Inverter might latch up. Some Inverters generates noise on the BKLTCTL signal, causing the LVDS transmission to fail (corrupted picture on the display). By adding a 1Kohm resistor in series with this signal, mounted at the Inverter end of the cable kit, the noise is limited and the picture is stable.

Available cable kit:
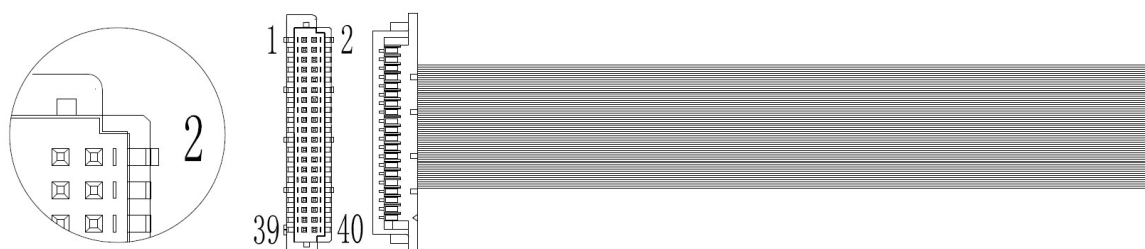
LVDS   Cable

Notes: The pin1& pin24 voltage of this LVDS interface can be adjusted by PWR_LVDS.

PWR_LVDS		Description
pin1-2	pin2-3	
X		Pin1&24 of LVDS connector(J8) is DC IN.
	X	Pin1&24 of LVDS connector(J8) is 5V.

Warning: Short connected to the 1-2 pin, the 1 pin voltage of the LVDS connector is equal to the main board input voltage.

Notes: The pin3& pin26 voltage of this LVDS interface can be adjusted by PWR_LCD.

PWR_LCD		Description
pin1-2	pin2-3	
X		Pin3&26 of LVDS connector(J8) is 3.3V.
	X	Pin3&26 of LVDS connector(J8) is 5V.

7.5 SIM card Connector (SIM1)

Support the expansion of SIM card, with the 3G/4G module, to achieve a wireless network connection.
The SIM card extension board is optional.
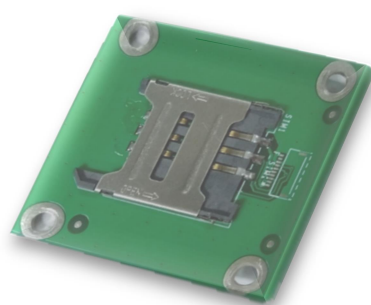
SIM1	
PIN	Signal
1	VCC
2	RST
3	CLK
4	DATA
5	GND

7.6 USB Connectors (USB5 and USB6)

The PCM-A351 support two internal USB 2.0 ports (USB5 and USB6) allowing data transfers up to 480Mb/s.
Legacy Keyboard/Mouse and wakeup from sleep states are supported. Over-current detection on all fourteen USB ports is supported.

Note	Type	Signal	PIN		Signal	Type	Note
	PWR	+5V	1	2	5V	PWR	
	IO	USB5-	3	4	USB6-	IO	
	IO	USB5+	5	6	USB6+	IO	
	PWR	GND	7	8	GND	PWR	

Note1:

Signal	Description
USBx+ USBx-	Differential pair works as Data/Address/Command Bus.
5V/SB5V	5V supply for external devices. SB5V is supplied during power down to allow wakeup on USB device activity. Protected by 1.0A current limiting circuit for each USB port.

In order to meet the requirements of USB standard, the 5V input supply must be at least 5.00V.

7.7 Serial COM1 – COM6 Ports

4X RS232 and 2X232/422/485 serial ports are available on the PCM-A351.

Description	Type	Signal	PIN		Signal	Type	Description	Serial number
RS232 signal	I	RS_232_A_RX	1	2	RS_232_A_TX	O	RS232 signal	COM1
RS232 signal	I	RS_232_B_RX	3	4	RS_232_B_TX	O	RS232 signal	COM2
RS232 signal	I	RS_232_C_RX	5	6	RS_232_C_TX	O	RS232 signal	COM3
RS232 signal	I	RS_232_D_RX	7	8	RS_232_D_TX	O	RS232 signal	COM4
RS232 signal	I	RS_232_E_RX	9	10	RS_232_E_TX	O	RS232 signal	COM5
RS232 signal	I	RS_232_F_RX	11	12	RS_232_F_TX	O	RS232 signal	COM6
RS485/RS422 signal	I	RS485_E_D- /RS422_E_TxD-	13	14	RS_485_E_D+ /RS422_E_TxD+	O	RS485/RS422 signal	COM1
RS422 signal	I	RS422_E_RxD-	15	16	RS422_E_RxD+	O	RS422 signal	COM1
RS485/RS422 signal	I	RS485_F_D- /RS422_F_TxD-	17	18	RS_485_F_D+ /RS422_F_TxD+	O	RS485/RS422 signal	COM2
RS422 signal	I	RS422_F_RxD-	19	20	RS422_F_RxD+	O	RS422 signal	COM2
Ground		Ground	21	22	GND		Ground	Ground

The typical definition of the signals in the COM ports is as follows:

Signal	Description
TxD	Transmitted Data sends data to the communications link. The signal is set to the marking state (0V) on hardware reset when the transmitter is empty or when loop mode operation is initiated.
RxD	Received Data, receives data from the communications link.

Note1:

COM_SEL : mode select,Connect jumper to select COM1、COM2 mode.

PIN		Signal	Serial number
1	2	RS232 mode（Default）	
3	4	RS485 mode	COM1
5	6	RS422 mode	
7	8	RS232 mode（Default）	
9	10	RS485 mode	COM2
11	12	RS422 mode	

7.8 Audio Connector(AUDIO)

The on-board Audio circuit implements High Definition Audio with UAA (Universal Audio Architecture), featuring 24-bit stereo DAC and 20-bit stereo ADCs.

Description	Type	Signal	PIN		Signal	Type	Description
	O	Line-out right	1	2	Line-out left	O	
		GND	3	4	GND		
Microphone	I	Mic right	5	6	Mic left	O	Microphone
	PWR	GND	7				
	I	Line-in right	9	10	Line-in left	I	

Available cable kit:
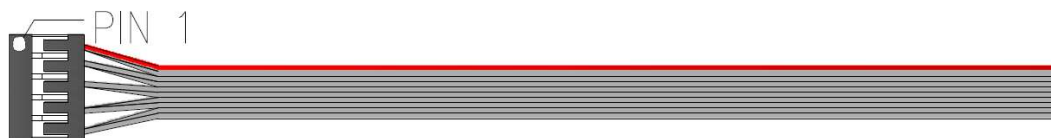
Audio cable

Audio Jack:
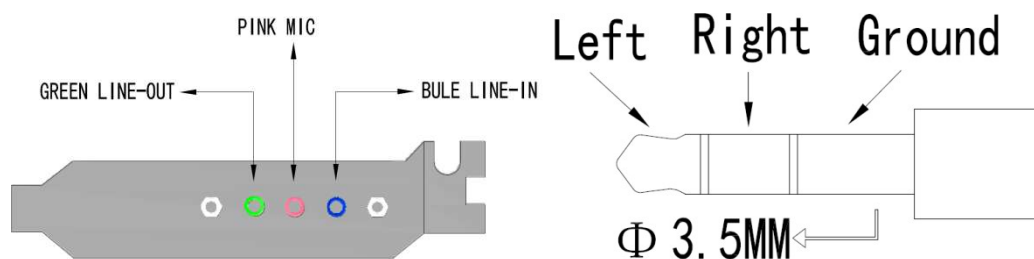
7.9 GPIO Connector (GPIO)

PullUP	Ioh/Iol	Type	Signal	PIN		Signal	Type	Ioh/Iol	PullUP
		PWR	3.3V	1	2	GND	PWR		
10k ohm	TBD	IOT	GPIO0	3	4	GPIO1	IOT	TBD	10k ohm
10k ohm	TBD	IOT	GPIO2	5	6	GPIO3	IOT	TBD	10k ohm
10k ohm	TBD	IOT	GPIO4	7	8	GPIO5	IOT	TBD	10k ohm
10k ohm	TBD	IOT	GPIO6	9	10	GPIO7	IOT	TBD	10k ohm
		PWR	GND	11	12	3.3V	PWR		

Signal	Description
3.3V	
GPIO0..7	General Purpose Inputs / Output. These Signals may be controlled or monitored through the use of the KT-API-V2 (Application Programming Interface).

7.10 Clear CMOS

Connect jumper to clear CMOS settings. Don't leave the jumper installed.

	Description
pin1-2	Load Default BIOS Settings exclusive erasing Password

7.11 Power Button and Reset (Reset& Power on)

	Description
pin1-2	Power Button In. Toggle this signal low to boot the board or to shut down.
pin2-3	Reset Input active low.

7.12 "Always On" (AUTO_BTN)

The "Always On" can be used to implement hardware controlled always ON by jumper. When "Always On" is selected, the board will power up automatically when power is connected.

The board can still be shut down by PWRBTN_IN# (power button in) activation (via PWR).

AUTO_BTN	Description
pin1-2	Always On selection
pin2-3	The machine must be switched on and off by means of the power on button