

Half-size PICMG 1.3 CPU Card supports LGA1151 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU, Intel® Q170, DDR4, VGA, iDP, Dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, PCIe Mini, mSATA, HD Audio, Intel® AMT and RoHS

HPCIE-Q170

Quick Installation Guide

Version 1.0

November 9, 2015

Package Contents

HPCIE-Q170 package includes the following items:

- 1 x HPCIE-Q170 single board computer
- 1 x SATA cable
- 1 x Utility CD
- 1 x QIG (Quick Installation Guide)



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Specifications

- CPU: 6th generation LGA1151 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor
- PCH: Intel® Q170
- BIOS: UEFI BIOS
- Memory: two 260-pin 1600/2133 MHz dual-channel non-ECC unbuffered DDR4 SO-DIMM (system max. 32 GB)
- Graphics: 9th generation Intel® HD Graphics, supporting DX11/12, OpenCL 2.x and OpenGL 4.3/4.4 decode/encode for HEVC, VP8, VP9, VDENC
- Display Output:
 - 1 x VGA (via Chrontel CH7517A, up to 1920x1200 @ 60Hz)
 - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160 @ 60Hz)
- Ethernet:
 - LAN1: Intel® I219-LM with Intel® AMT 10.0 support
 - LAN2: Intel® I211 PCIe controller
- Super I/O: Fintek F81866D
- Embedded Controller: ITE IT8587VG
- External I/O Interface
 - 2 x RJ-45 GbE
 - 2 x USB 3.0
 - 1 x VGA
- Internal I/O Interface
 - 4 x USB 2.0 (1x4 pin, p=2.0)
 - 2 x RS-232/422/485 (2x5 pin, p=2.0)
 - 1 x iDP (1x4 pin, p=2.0)
 - 1 x KB/MS (1x6 pin)
- Storage:
 - 2 x SATA 6G/s (Q170 supports RAID 0, 1)
 - 1 x PCIe Mini supports mSATA & USB 2.0 mSATA

- Expansion:
 - 16 lanes PCIe signal from CPU via golden finger
(support x16 or x8 + x8 or x4 + x4 + x8)
 - 4 lanes PCIe signal from Q170 via golden finger
- Audio: supports 7.1 channel HD Audio by IEI AC-KIT-892HD kit
- Front Panel
 - 1 x Front panel connector supports power LED, HDD LED, speaker, power button and reset button
- SMBus: one SMBus (1x4 pin)
- I²C: one I²C (1x4 pin)
- LAN LED: two LAN LED connectors (1x2 pin)
- Digital I/O: one 8-bit digital I/O (2x5 pin)
- Fan Connector
 - 1 x Smart fan connector (1x4 pin)
- Watchdog Timer: Software programmable supports 1~255 sec. system reset
- Power Supply
 - 5V or 12 V DC input
 - Support AT/ATX mode
- Operating Temperature: -20°C ~ 60°C
- Humidity: 10% ~95%, non-condensing
- Dimensions: 169 mm x 126 mm
- Weight:
 - GW:1000g
 - NW:420g

Ordering Information

- **HPCIE-Q170-R10:**
 - Half-size PICMG 1.3 CPU Card supports LGA1151 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU, Intel® Q170, DDR4, VGA, iDP, Dual

Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, PCIe Mini, mSATA, HD Audio, Intel® AMT and RoHS

- **19800-000075-RS**: KB/MS cable with bracket
- **32102-000100-200-RS**: SATA power cable
- **32200-015100-RS**: LPT cable
- **32200-074800-RS**: RS-422/485 cable, 200mm
- **AC-KIT-892HD-R10**: 7.1 channel HD Audio kit with Realtek ALC892 support dual audio streams
- **CF-1150SA-R10**: special cooler kit for LGA1150, high-performance compatible, 95W
- **CF-1150SB-R10**: special cooler kit for LGA1150, High-performance compatible, 65W
- **CF-1150SC-R20**: special cooler kit for LGA1150, 1U chassis compatible, 65W
- **CF-1150SE-R10**: special cooler kit for LGA1150, 1U chassis compatible, 95W
- **CF-1150SF-R10**: special cooler kit for LGA1150, 1U chassis compatible, 54W
- **DP-DP-R10**: DisplayPort to DisplayPort converter board (for IEI IDP connector)
- **DP-DVI-R10**: DisplayPort to DVI-D converter board (for IEI IDP connector)
- **DP-HDMI-R10**: DisplayPort to HDMI converter board (for IEI IDP connector)
- **DP-LVDS-R10**: DisplayPort to LVDS converter board (for IEI IDP connector)
- **DP-VGA-R10**: DisplayPort to VGA converter board (for IEI IDP connector)
- **SAIDE-KIT01-R10**: SATA to IDE/CF converter board

Jumpers and Connectors

LABEL	FUNCTION
J_ATX_AT1	AT/ATX mode select switch
J_CMOS1	Clear CMOS button
SW_BIOS1_1	BIOS setting jumper
COM1, COM2	Internal serial ports, RS-232/422/485
F_PANEL1	Front panel pin header
USB1, USB2	Internal USB 2.0 ports
CN1, CN2	External USB 3.0 ports
DIO1	8-bit digital I/O connector
JSPI1	BIOS SPI ROM programming connector
CPU_FAN1	CPU smart fan connector
LED_LAN1, LED_LAN2	LAN link LED connector
KB_MS1	Keyboard & mouse pin header
CPU12V1	+12V DC power input connector
SMB1	SMBus connector
I2C1	I ² C connector
DP1	Internal display port connector
S_ATA1, S_ATA2	SATA 6Gb/s drive connectors
VGA1	External VGA connector
J_AUDIO1	Audio pin header
MPCIE1	mSATA module slot
LAN1, LAN2	RJ-45 GbE connectors

SW_BIOS1_1: BIOS Setting	
PIN NO.	DESCRIPTION
Short 1-2	BIOS1 (Default)
Short 2-3	BIOS2

J_ATX_AT1: AT/ATX Mode Select Switch	
PIN NO.	DESCRIPTION
Short 1 - 2	ATX Mode (default)
Short 2 - 3	AT Mode

J_CMOS1: Clear CMOS Button	
PIN NO.	DESCRIPTION
Open	Normal Operation (Default)
Push	Clear CMOS

USB SW1: External USB (CN1 & CN2) Power Setting BIOS Option	
BIOS Option	DESCRIPTION
+5V DUAL (default)	Set the power source to +5V DUAL for the external USB ports (CN1 & CN2)
+5V	Set the power source to +5V for the external USB ports (CN1 & CN2)

USB SW2: Internal USB (USB1 & USB2) Power Setting BIOS Option	
BIOS Option	DESCRIPTION
+5V DUAL (default)	Set the power source to +5V DUAL for the internal USB ports (USB1 & USB2)
+5V	Set the power source to +5V for the internal USB ports (USB1 & USB2)

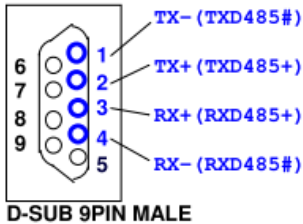
Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Chipset	
Auto Power Button Status	[Disabled(ATX)]
Restore AC Power Loss	[Last State] -----
> PCI Express Configuration	
> PCI Azalia Configuration	
USB SW1	[+5V DUAL]
USB SW2	[+5V DUAL]
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

CHASSIS1: Chassis Intrusion Jumper	
PIN NO.	DESCRIPTION
Open	Chassis close (default)
Short	Chassis open

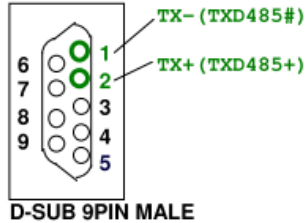
J_FLASH1: Flash Descriptor Security Override Jumper	
PIN NO.	DESCRIPTION
Short 1 - 2	No override
Short 2 - 3	override

COM1, COM2: RS-232/422/485 Internal Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	SIN	4	RTS
5	SOUT	6	CTS
7	DTR	8	RI
9	GND	10	GND

RS422 Pin define



RS485 Pin define



F_PANEL1: Front Panel Pin Header					
	PIN	DESCRIPTION		PIN	DESCRIPTION
Power Button	1	NC	Power LED	6	PWR_LED+
	2	PWRBTSW#		7	PWR_LED+
	3	GND		8	GND
HDD LED	4	+V5S	Reset	9	RESET+
	5	HDD_LED-		10	GND

USB1, USB2: USB 2.0 Port Pin Header			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	VCC

CN1, CN2: External USB 3.0 Port			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VBUS	2	D-
3	D+	4	GND
5	STDA_SSRX_N	6	STDA_SSRX_P
7	GND	8	STDA_SSTX_N
9	STDA_SSTX_P		

DIO1: Digital I/O Pin Header			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	DOUT3	4	DOUT2
5	DOUT1	6	DOUT0
7	DIN3	8	DIN2
9	DIN1	10	DIN0

JSPI1: BIOS SPI ROM Programming Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+V3.3M_SPI_CON	4	SPI_CLK_SW
2	SPI_CS	5	SPI_SI_SW
3	SPI_SO_SW	6	GND

CPU_FAN1: CPU Smart Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	FANIO
2	+12V	4	PWM

LED_LAN1: LAN1 LED Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3VLAN	2	LAN1_LINK_ACT-

LED_LAN2: LAN2 LED Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3VLAN	2	LAN2_LINK_ACT-

KB_MS1: Keyboard & Mouse Pin Header			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	4	KBDATA
2	MSDATA	5	KBCLK
3	MSCLK	6	GND

CPU12V1: +12V DC Power Input Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	+12V	4	+12V

SMB1: SMBus Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	SMBCLK
2	SMBDATA	4	+5V

I2C1: I²C Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	PCH_GP39 (I2C_CLK)
2	PCH_GP38 (I2C_DAT)	4	+5V

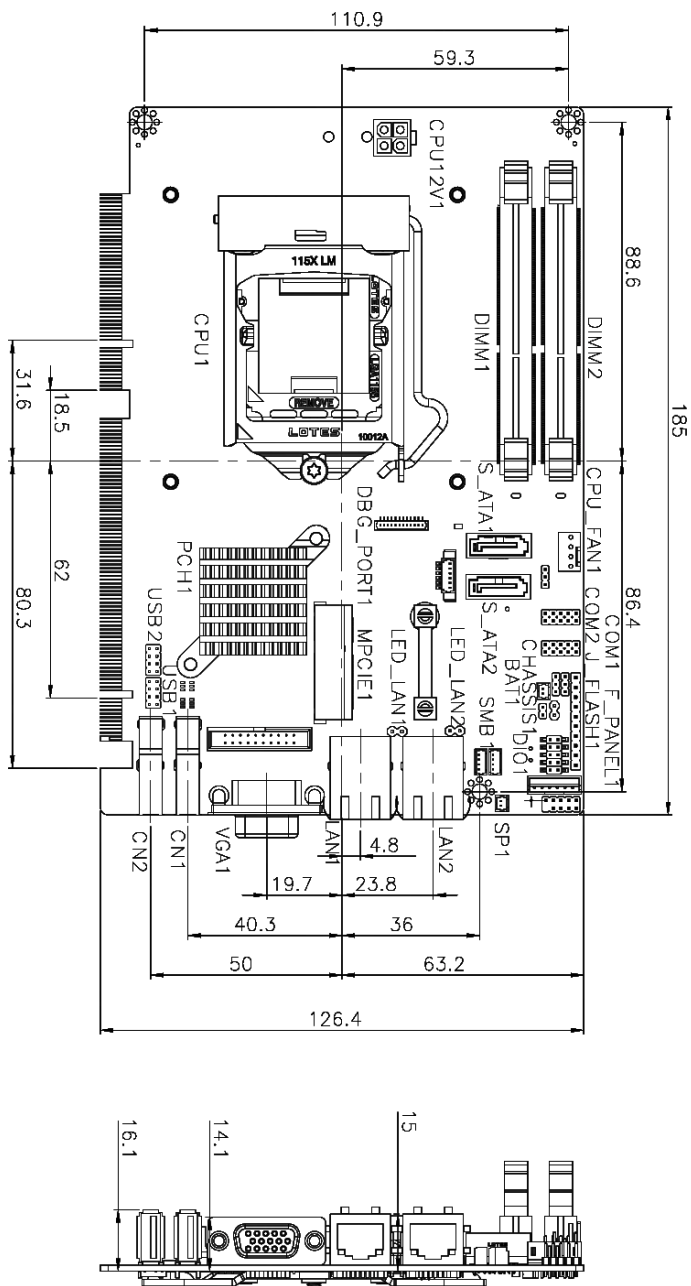
DP1: Internal Display Port Pin Header			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HPD	2	AUXP
3	GND	4	AUXN
5	AUX_CTRL_DET_D	6	GND
7	GND	8	LANE2P
9	LANE3P	10	LANE2N
11	LANE3N	12	GND
13	GND	14	LANE0P
15	LANE1P	16	LANE0N
17	LANE1N	18	+3.3V
19	+5V	20	NC

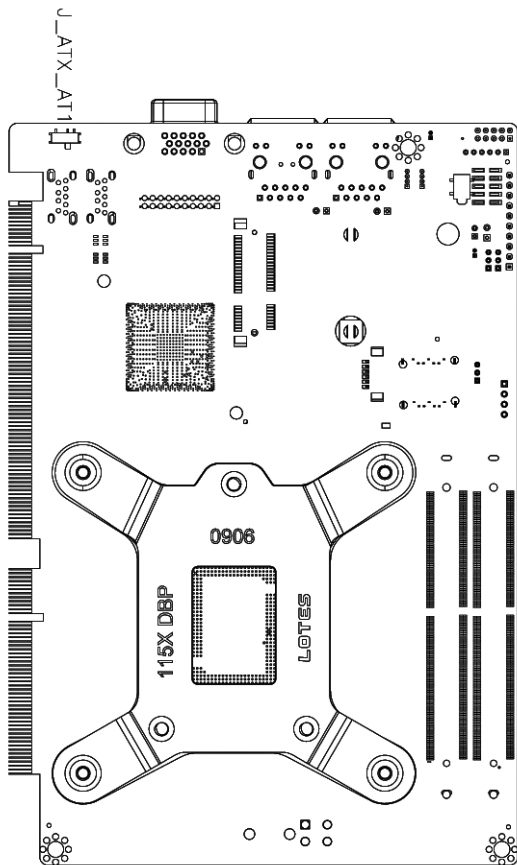
S_ATA1, S_ATA2: SATA 6Gb/s Drive Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SATA_TX+
3	SATA_TX-	4	GND
5	SATA_RX+	6	SATA_RX-
7	GND		

J_AUDIO1 : Audio Kit Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDA_SYNC	2	HDA_BIT_CLK
3	HDA_SDOOUT	4	HDA_SPKR
5	HDA_SDIN	6	HDA_RST#
7	HDA_VCC	8	HDA_GND
9	HDA_+12V	10	HDA_GND

MPCIE1: mSATA Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PCIE_WAKE#	2	+3.3V
3	N/C	4	GND
5	N/C	6	1.5V
7	N/C	8	N/C
9	GND	10	N/C
11	MSATA_CLK#	12	N/C
13	MSATA_CLK	14	N/C
15	GND	16	N/C
17	PLTRST_N	18	GND
19	N/C	20	+3.3V
21	GND	22	PLTRST_N
23	SATA_RX+	24	+3.3V
25	SATA_RX-	26	GND
27	GND	28	1.5V
29	GND	30	SMB_CLK
31	SATA_TX-	32	SMB_DATA
33	SATA_TX+	34	GND
35	GND	36	USB_DATA-
37	GND	38	USB_DATA+
39	+3.3V	40	GND
41	+3.3V	42	N/C
43	+3.3V	44	N/C
45	CLINK_CLK	46	N/C
47	CLINK_DATA	48	1.5V
49	CLINK_RST#	50	GND
51	MSATA_DET	52	+3.3V

Board Layout: Jumper and Connector Locations





(Unit: mm)