

HiCORE-i89Q1

HiCORE-i89Q2

PICMG 1.3 Full-size SBC

Quick Installation Guide

Version 1.2

Form Factor <i>PICMG 1.3 Full-size SBC</i>	CPU <i>Socket LGA1151 for Intel® 6th Gen. Core processor</i>	Chipset <i>Intel® PCH Q170</i>
I/O <i>PCI/ PEG/ SATA/ USB/ LPT/ COM/ NGFF/ PCIe</i>	LAN <i>1 x Intel® i219LM PCIe GbE PHY 1 x Intel® i210AT PCIe GbE Controller</i>	Video <i>DVI-I or VGA DisplayPort</i>
Audio <i>HDA link</i>	BIOS ACT <i>Anti-Crash Technology for system BIOS recovering</i>	

◆ Technical Support

If you have any technical difficulties, please consult the user's manual first at:

<http://www.arbor-technology.com>

Please do not hesitate to call or e-mail our customer service when you still can not find out the answer.

E-mail: info@arbor.com.tw

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



Copyright © All Rights Reserved.

4041890100120P

Packing List

Before starting with the installation, make sure the following items are shipped:

HiCORE-i89Q1



HiCORE-i89Q2



1 x HiCORE-i89Q1 or HiCORE-i89Q2 PICMG 1.3 Full-size SBC



1 x Driver CD
1 x Quick Installation Guide

CBK-08-89Q1-00

Cable Kit

1 x RS-232 cable
1 x RS-232/422/485 cable
3 x SATA cable
2 x USB cable w/ bracket
1 x Keyboard & Mouse cable

If any of the above items is missing or appears damaged, contact your vendor immediately.

Ordering Information

HiCORE-i89Q1-D-x4	Socket LGA1151/PCH Q170 for 6th Generation Intel® Core™ i7/ i5/ i3 processors PICMG 1.3 full size SBC with BIOS for 1 x PCIe x4 w/ DVI-I
HiCORE-i89Q1-D-x1	Socket LGA1151/PCH Q170 for 6th Generation Intel® Core™ i7/ i5/ i3 processors PICMG 1.3 full size SBC with BIOS for 4 x PCIe x1 w/ DVI-I
HiCORE-i89Q2-V-x4	Socket LGA1151/PCH Q170 for 6th Generation Intel® Core™ i7/ i5/ i3 processors PICMG 1.3 full size SBC with BIOS for 1 x PCIe x4 w/ VGA
HiCORE-i89Q2-V-x1	Socket LGA1151/PCH Q170 for 6th Generation Intel® Core™ i7/ i5/ i3 processors PICMG 1.3 full size SBC with BIOS for 4 x PCIe x1 w/ VGA

Optional Accessories

PBPE-07SA	7-slot PICMG 1.3 backplane
PBPE-13SA	13-slot PICMG 1.3 backplane
PBPE-10SA (OEM request)	10-slot PICMG 1.3 backplane
HS-89Q1-C1	Copper CPU cooler for Intel® Core™ processor series
DP Cable	Male DP port to female DP port cable
FCDB-1111	Realtek ALC888 HD Audio daughterboard

Recommended CPU List

i7-6700 Quad-Core 3.4GHz

i5-6500 Quad-Core 3.6GHz

i3-6100 Dual-Core 3.7GHz

Specifications

Form Factor	PICMG 1.3 Full-size SBC
CPU	Support 6th Generation Intel® Core™ i7/i5/i3 processors in LGA1151 socket
Chipset	Intel® PCH Q170
Memory	4 x 288-pin DDR4 Long-DIMM sockets, supporting 2133/1866MHz SDRAM up to 64GB
BIOS	AMI UEFI BIOS
Watchdog Timer	1~255 levels reset
Super I/O	Fintek F81768
USB Port	4 x USB 2.0 ports to Golden finger 4 x USB 2.0 ports w/ pin-header 2 x USB 3.0/2.0 ports on bracket
Serial Port	1 x RS-232 1 x RS-232/422/485 selectable
Expansion Bus	1 x PCIe x4 Lanes or 4 x PCIe x1 Lanes 1 x PCIe x16 lanes Gen. 3 4 x PCI masters LPC interface

Storage	<p>Six Serial ATA ports with 600MB/s HDD transfer rate</p> <ul style="list-style-type: none"> - 3 ports on board - 1 port to NGFF M.2 socket-M - 2 port to Golden finger <p>SATA RAID 0, 1, 5, 10 supported</p>
Ethernet Chipset	<p>1 x Intel® i219LM PCIe GbE PHY</p> <p>1 x Intel® i210AT PCIe GbE controller</p>
Audio Interface	One 1x9-pin wafer connector for HD Audio daughterboard
Digital I/O	8-bit programmable digital input/output
KB/MS	6-pin wafer connector for keyboard and mouse via Y-cable
Parallel Port	SPP/EPP/ECP mode selectable
Graphic Chipset	Integrated Intel® HD Graphics (depends on CPU)
Graphic Interface	<p>1 x DVI-I port on board (HiCORE-i89Q1) or</p> <p>1 x VGA port on board (HiCORE-i89Q2)</p> <p>1 x DisplayPort</p>
OS Support	
Windows 10 64-bit	
Linux: Ubuntu	
Power Input	DC 12V, 5V
Power Consumption	2.66A@12V
Operating Temp.	0 ~ 60°C (32 ~ 122°F)
Operating Humidity	10 ~ 95% @ 60°C (non-condensing)
Dimensions (L x W)	338 x 126 mm (13.3" x 4.96")

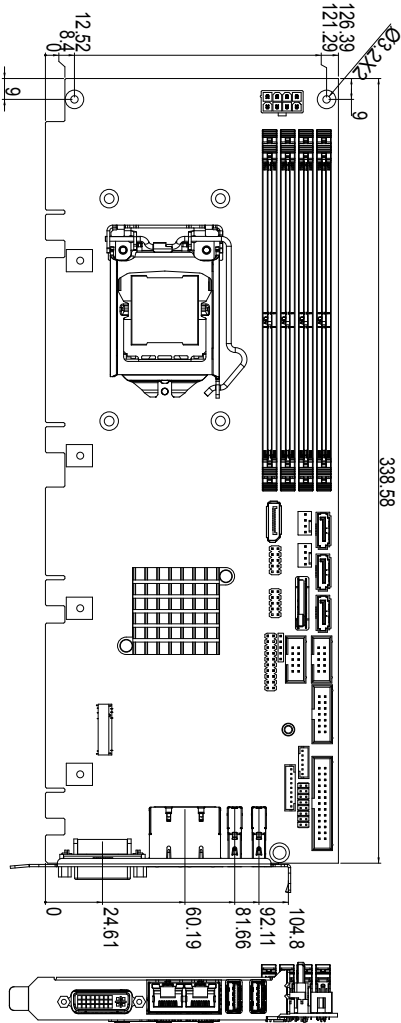
The Installation Paths of CD Driver

The CPU board supports Windows 10 64-bit. Find the necessary drivers by the following paths on the CD that comes with your purchase.

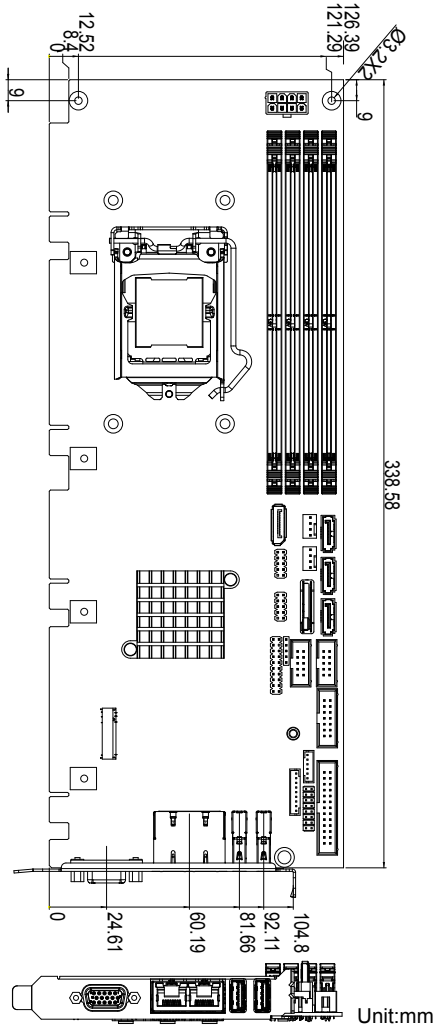
Windows 10 64-bit

Chipset	\\i89X\Chipset\Chipset_10.1.1.13_Public
Audio	\\i89X\Audio\7687_PG436_Win10_Win8.1_Win8_Win7_WHQLx64
LAN	\\i89X\Ethernet
Graphic	\\i89X\Graphic\IntelR Graphics Driver Production Version 15.40.16.64.4364
ME	\\i89X\ME\Intel(R)_ME_11.0_Corporate_11.0.0.1202
RAID	\\i89X\RAID\Intel Rapid Storage Technology Driver 14.8.0.1042
USB3.0	\\i89X\USB3.0\win8.1 64bit\Intel_USB_3.0_xHC_Adaptation_ Driver_MR1_Release_1.0.1.45_PV

Board Dimensions



HiCORE-i89Q1



HiCORE-i89Q2

Unit:mm

Jumpers & Connectors Quick Reference

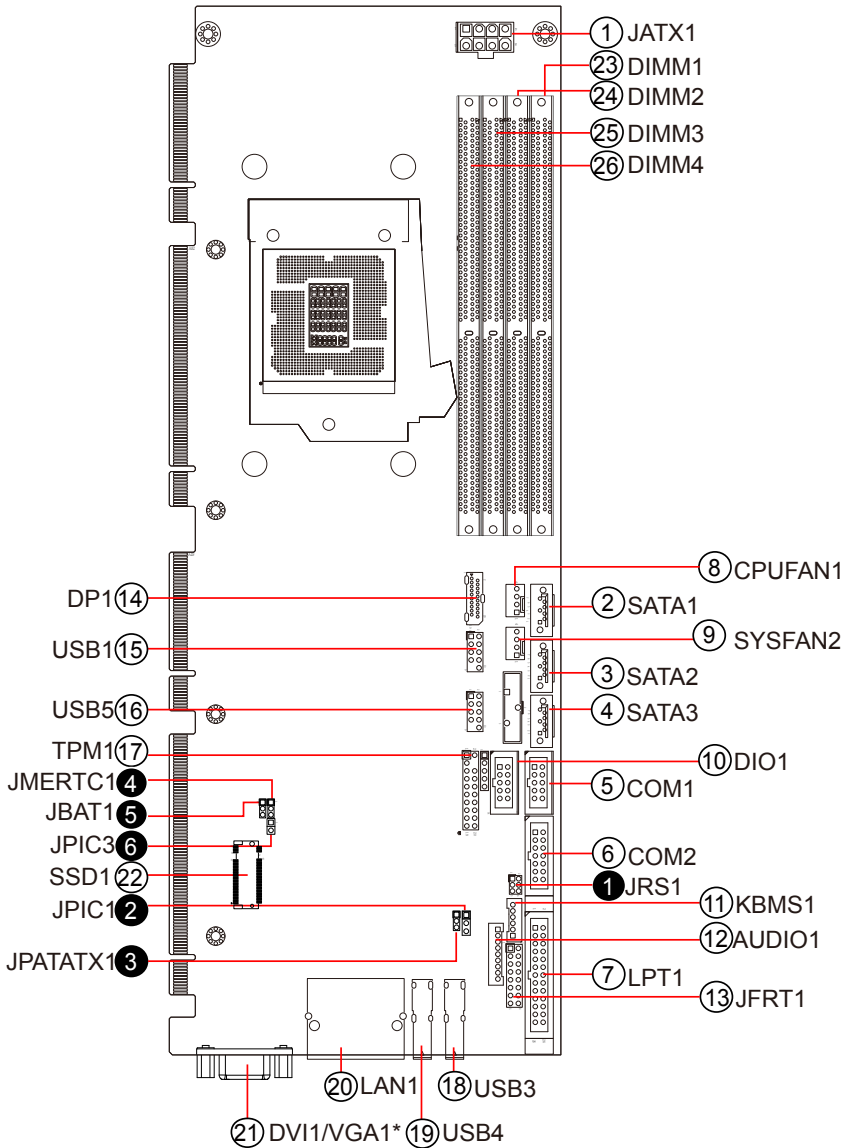
Jumpers

Label	Description
①JRS1	COM2 RS-232 / 422 / 485 Selection
②JPIC1	Internal Use
③JPATATX1	AT/ATX Mode Selection
④JMERTC1	SRTC Reset Selection
⑤JBAT1	CMOS Setting
⑥JPIC3	ACT Function Setting

Connectors

Label	Description
①JATX1	ATX 12V Connector
②③④SATA1~3	Serial ATA Connectors
⑤COM1	RS-232 COM Port Connector
⑥COM2	RS-232/422/485 Selectable COM Port Connector
⑦LPT1	Parallel Port Connector
⑧CPUFAN1, ⑨SYSFAN2	Fan Connectors
⑩DIO1	Digital I/O Connector
⑪KBMS1	Keyboard & Mouse Connector
⑫AUDIO1	AUDIO Connector
⑬JFRT1	Switches and Indicators
⑭DP1	DisplayPort Connector
⑮⑯USB1, 5	USB2.0 Connector
⑰TPM1	TPM Connector
⑱⑲USB3, 4	USB 3.0/2.0 Connector
⑳LAN1	Ethernet Connectors
㉑DVI1/ VGA1	DVI-I/ VGA Connector
㉒SSD1	NGFF M-Key Socket
㉓㉔㉕㉖DIMM1, 2, 3, 4	4x288-pin DDR4 Memory Slots

Jumpers & Connectors Location



* The graphic interface depends on your model. The figure is using HiCore-i89Q1's DVI port as an example.


Jumper

①JRS1: COM2 RS-232 / 422 / 485

Selection

Connector type: 2.00mm pitch 3x2-pin headers



Mode	RS-232 (Default)	RS-422	RS-485
1-2	Short	Open	Open
3-4	Open	Short	Open
5-6	Open	Open	Short



②JPIC1: Internal Use



③ JPATA1: AT/ATX Mode Selection

Connector type: 2.00mm pitch 1x3-pin headers

Pin	Mode	
1-2	AT Mode	
2-3	ATX Mode (default)	



④JMERTC1: SRTC Reset Selection

Connector type: 2.00mm pitch 1x3-pin headers

Pin	Mode	
1-2	Normal (default)	
2-3	Clear ME RTC	



⑤JBAT1: CMOS Setting

Connector type: 2.00mm pitch 1x3-pin headers

Pin	Mode	
1-2	Keep CMOS (Default)	
2-3	Clear CMOS	

⑥JPIC3: ACT Function Setting

Connector type: 2.00mm pitch 1x3-pin headers

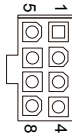
Pin	Mode	
1-2	ACT Enabled (default)	
2-3	ACT Disabled	

Connectors

①JATX1: ATX 12V Connector

Connector type: 8-pin power connector

Pin	Desc.	Pin	Desc.
1	GND	5	+12V
2	GND	6	+12V-
3	GND	7	+12V
4	GND	8	+12V



②③④SATA1~3: Serial ATA Connectors

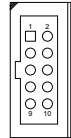
The pin assignments conform to the industry standard.



⑤COM1: RS-232 COM Port Connector

Connector Type: 2.54mm pitch 2x5-pin box headers.

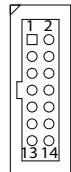
Pin	Desc.	Pin	Desc.
1	DCD#	2	DSR#
3	RXD	4	RTS#
5	TXD	6	CTS#
7	DTR#	8	RI#
9	GND	10	GND



⑥COM2: RS-232/422/485 selectable COM Port Connector

Connector type: 2.54mm pitch 2x7-pin box headers

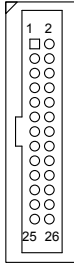
Pin	Desc.	Pin	Desc.
1	DCD#	2	DSR#
3	RXD	4	RTS#
5	TXD	6	CTS#
7	DTR#	8	RI#
9	GND	10	GND
11	442TX+/ 485+	12	422TX-/ 485-
13	422RX+	14	422RX-



⑦ LPT1: Parallel Port Connector

Connector type: 2.54mm pitch 2x13-pin box headers

Pin	Description	Pin	Description
1	LPT_STB#	2	LPT_AFD#
3	LPT_PD0	4	ERR#
5	LPT_PD1	6	LPT_INIT#
7	LPT_PD2	8	LPT_SLIN#
9	LPT_PD3	10	GND
11	LPT_PD4	12	GND
13	LPT_PD5	14	GND
15	LPT_PD6	16	GND
17	LPT_PD7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SELECT	26	N/C



⑧⑨ CPUFAN1, SYSFAN2: Fan Connectors

Connector type: 2.54mm pitch 1x4-pin wafer headers

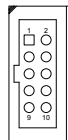
Pin	Description
1	GND
2	+12V
3	RPM
4	CTRL



⑩ DIO1: Digital I/O Connector

Connector type: 2.54mm pitch 2x5-pin box headers

Pin	Desc.	Pin	Desc.
1	DIO0	2	DIO1
3	DIO2	4	DIO3
5	DIO4	6	DIO5
7	DIO6	8	DIO7
9	+V5S	10	GND



⑪ KBMS1: Keyboard & Mouse Connector

Connector type: 2.00mm pitch 1x6-pin wafer headers

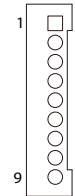
Pin	Description
1	KB_DAT
2	GND
3	MS_DAT
4	KB_CLK
5	VCC PS2
6	MS_CLK



⑫ AUDIO1: Audio Connector

Connector type: 2.00mm pitch 1x9-pin headers.

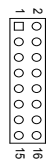
Pin	Desc.
1	+12V
2	+V3.3S
3	HDA_SYNC
4	HDA_SDO
5	GND
6	HDA_BGLK
7	GND
8	HDA_RST#
9	AZA_SDI_0



⑬ JFRT1: Switches and Indicators

Connector type: 2.54 mm pitch 2x8-pin headers

Pin	Desc.	Pin	Desc.
1	PLED+	2	SW_ON_R_N
3	PLED-	4	GND
5	PLED-	6	EXTRST_N
7	HD_LED_+	8	GND
9	HD_LED_N	10	SPKRV+
11	SMB_CLK_RESUME	12	SPKRV+
13	SMB_DAT_RESUME	14	SPKRV-
15	GND	16	SPKRV-



⑭ DP1: DisplayPort Connector

Connect the display device to the DisplayPort Connector

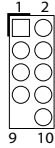
The pin assignments conform to the industry standard.



⑮ ⑯ USB1&5: USB2.0 Connector

Connector type: 2.54mm pitch 2x5-pin headers

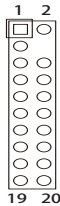
Pin	Desc.	Pin	Desc.
1	+V5S	2	+V5S
3	USBPN	4	USBPN
5	USBPP	6	USBPP
7	GND	8	GND
9	N/C	10	GND



⑰ TPM1: TPM Connector

Connector type: 2.54mm pitch 2x10-pin headers

Pin	Desc.	Pin	Desc.
1	CLK_LPC1_24M	2	GND
3	L_FRAME#	4	N/C
5	PLT_RST	6	N/C
7	L_AD3	8	L_AD2
9	+V3.3S	10	L_AD1
11	L_AD0	12	GND
13	N/C	14	N/C
15	+V3.3A	16	SER_IRQ
17	GND	18	CLKR#
19	LPCPD#_LPC	20	N/C



⑳ DVI1: DVI-I Connector (HiCore-i89Q1)

Connector type: DVI-I connector

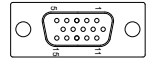
The pin assignments conform to the industry standard.



VGA1: VGA Connector (HiCore-i89Q2)

Connector type: D-Sub 15-pin female connector

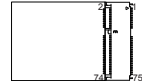
Pin	Desc.	Pin	Desc.
1	RED	9	5V
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	D-DATA
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	D-DCLK
8	GND		



㉑ SSD1: NGFF M-Key Socket

Connector type: NGFF M-Key Socket for storage

The pin assignments conform to the industry standard.



㉓ ㉔ ㉕ ㉖ DIMM1, 2, 3, 4: 4x288-pin DDR4 Memory Slots

Connector type: 288-pin DDR4 DIMM slots



The pin assignments conform to the industry standard.

⑱ ⑲ USB3&4: USB 3.0/2.0 Connectors

Connector type: USB connectors

The pin assignments conform to the industry standard.



㉚ LAN1: GbE Connectors

Connector type: Dual RJ-45 GbE LAN with LED indicators.

The pin assignments conform to the industry standard.

