MB-i89Q0

Micro-ATX Industrial Motherboard

Quick Installation Guide

Version 1.0

Form Factor	CPU	Chipset
Micro-ATX Industrial Motherboard	***Socket LGA1151 for Intel® Core i7/i5/i3 Processors***	***Intel® PCH Q170***

Audio	LAN	BIOS ACT
Realtek® ALC269 HD, MIC-in/Line-out/ Line-in, with Amplifier	***Intel® i210AT PCIe GbE Controller Intel® i219LM PCIe GbE***	***Anti-Crash Technology for system BIOS recovering***

I/O	Video
PCIe/ PCI/ SATA/ COM/ USB 3.0/ USB 2.0	***DVI-I/ DisplayPort***

♦ 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 e-mail to our customer service when you still can not find out the answer.

E-mail: info@arbor.com.tw

CE FC Tested To Comply With FCC Standards FOR HOME OR OFFICE USE RoHS VERIFIED

4041890004100P

Specifications

Form Factor	Micro-ATX Industrial Motherboard
CPU	Support 6th Generation Intel® Core™ i7/i5/i3 processors in LGA1151 socket
Memory	4 x 288-pin DDR4 Long-DIMM sockets, supporting 2133/1866MHz SDRAM up to 64GB
Chipset	Intel® PCH Q170
BIOS	AMI UEFI ROM
TPM	Support TPM 1.2 & 2.0 daughterboard via LPC connector (optional)
Watchdog Timer	1~255 levels reset
Super IO Chipset	FINTEK F81768 FINTEK F81216AD (OEM request)
Serial Port	2 x RS-232 ports, up to 4 x RS-232 ports (OEM request)
USB Port	10 x USB 2.0 ports, 4 x USB 3.0/2.0 ports
Keyboard & Mouse	6-pin wafer connector for PS/2 keyboard/ mouse via Y-cable
Expansion Bus	1 x PCI slot 1 x PCIex16 Gen 3.0 slot 1 x PCIex4 in x8 slot 1 x PCIex1 slot
Storage	Six Serial ATA ports with 600MB/s HDD transfer rate
	RAID 0, 1, 5, 10 supported
Ethernet Chipset	1 x Intel® i210AT PCIe GbE controller 1 x Intel® i219LM PCIe GbE PHY
Audio Interface	Realtek® ALC269 5.1 Channel HD Audio CODEC,Mic-in/ Line-in/ Line-out with Amplifier
Graphic Chipset	Integrated Intel® HD Graphics 5x0
Graphic Interface	1 x DVI-I port, 2 x DisplayPort ports
Power Requirement	24-pin + 4-pin ATX power connector
Power Consumption	2.34A @+12V with i3-6100 (Typical) 3.83A @+12V with i7-6700 (Typical)
Operating Temp.	0 ~ 60ºC (32 ~ 140ºF)
Operating Humidity	10 ~ 95% @ 60ºC (non-condensing)
Dimension (L x W)	244 x 244 mm (9.6” x 9.6”)

Recommended CPU List:
Intel® Core™ i7-6700 quad-core 3.4 GHz processor
Intel® Core™ i5-6500 quad-core 3.6 GHz processor
Intel® Core™ i3-6100 dual-core 3.7 GHz processor

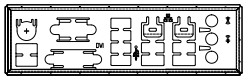
Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

1 x MB-i89Q0 Industrial Motherboard

1 x Driver CD

1 x Quick Installation Guide



1 x I/O Bracket

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

Ordering Information

MB-i89Q0	Socket LGA1151/ PCH Q170 for Intel® 6th Gen. processor micro-ATX motherboard
CPF-67Q0-C1	CPU COOLING FAN FOR LGA1151

Optional Accessories

SCDB-3291	TPM 1.2 Daughter board with Infineon OPTIGA TPM SLB9660
SCDB-3292	TPM 2.0 Daughter board with Infineon OPTIGA TPM SLB9665
CBK-11-89Q0-00	Cable kit 2 x USB 2.0 cable w/ bracket (2 ports / cable) 1 x COM port cable 6 x SATA cables 2 x DP cables

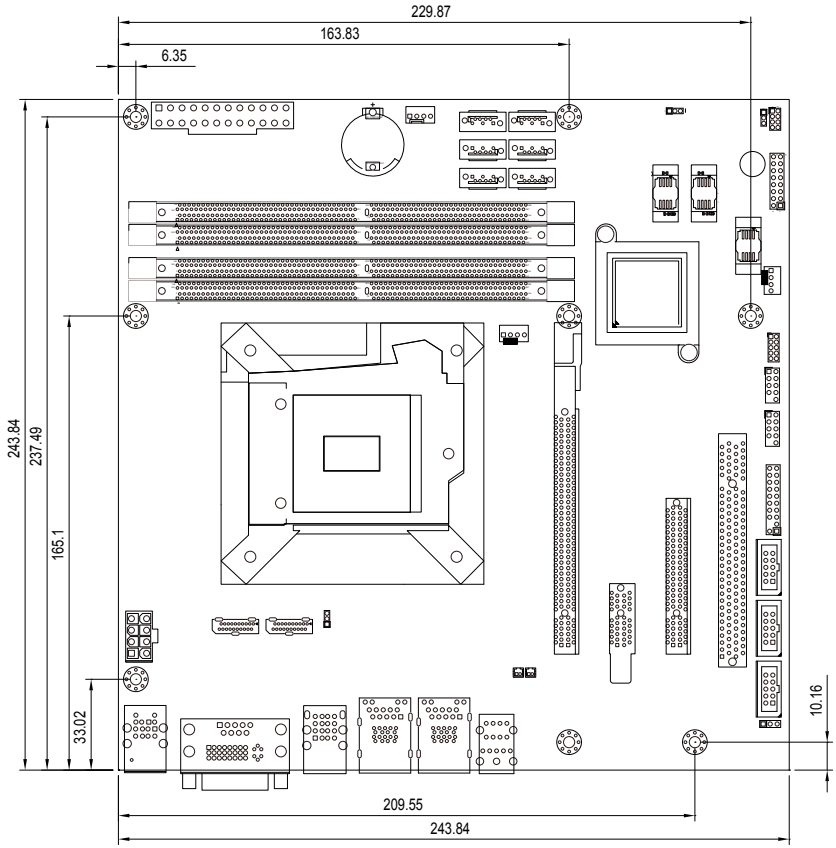
The Installation Paths of CD Driver

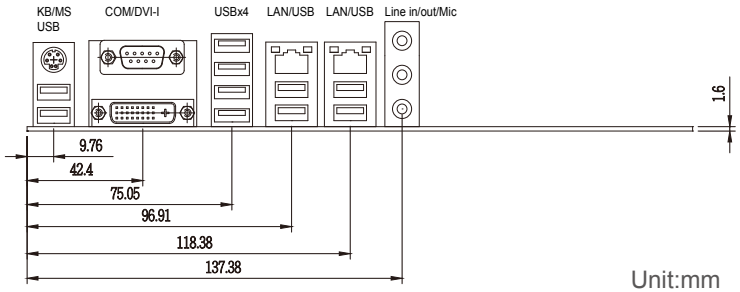
The CPU board supports Windows 10 64-bit. Find the necessary drivers by the following paths on the CD that comes with your purchase.

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

Board Dimensions





Unit:mm

Jumpers/ Connectors Quick Reference

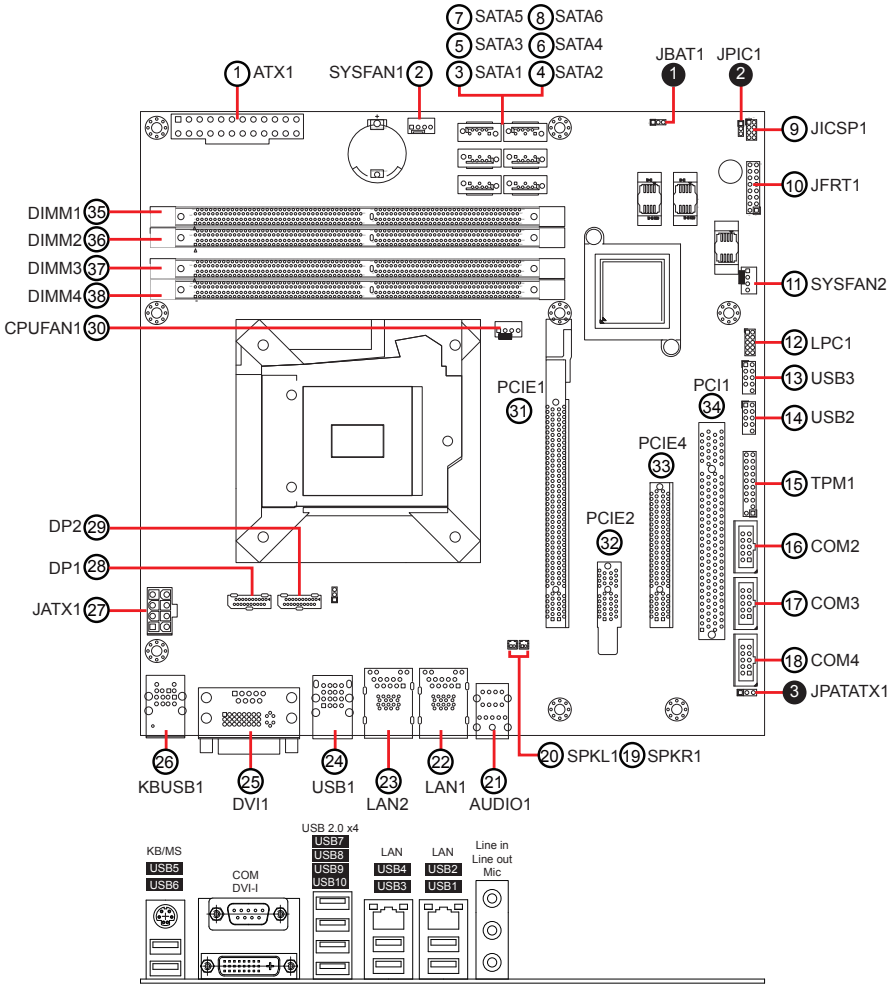
Jumpers

Jumper	Description
❶JBAT1	CMOS Setting
❷JPIC1	ACT Function Setting
❸JPATATX1	AT/ATX Mode Selection

Connectors

Connector	Description
①ATX1	ATX Power Connector
②⑪SYSFAN1, 2	Fan Power Connectors
③~⑧SATA1~6	Serial ATA Connectors
⑨JICSP1	For Internal Use Only
⑩JFRT1	Connectors for front-panel switches and LED status lamps
⑫LPC1	Low Pin Count Connector
⑬⑭USB3, 2	USB 2.0 Connectors
⑮TPM1	TPM Connector
⑯⑰⑱COM2, 3, 4	RS-232 Connectors
⑲⑳SPKR1, SPKL1	Speaker Connectors
㉑AUDIO1	Audio Interface Port
㉒㉓LAN1, 2	RJ-45+USB 3.0 Stacked Connectors
㉔USB1	USB 2.0 Stacked Connectors
㉕DVI1	Stacked COM1 & DVI-I Connectors
㉖KBUSB1	PS/2 Keyboard & USB 2.0 Stacked Connectors
㉗JATX1	ATX 12V Connector
㉘㉙DP1, 2	DisplayPort Connectors
㉚CPUFAN1	CPU Fan Power Connector
㉛PCIE1	PCI Express x16 Gen 3.0 Slot
㉜PCIE2	PCI Express x1 Slot
㉝PCIE4	PCI Express x8 Slot with x4 Single
㉞PCI1	PCI Slot
㉟~㊳DIMM1~4	288-pin DDR4 Memory Slots

Jumpers & Connectors Location



Jumpers

❶JBAT1: CMOS Setting

Connector type: 2.54mm pitch 1x3-pin header

Pin	Description
1-2	Keep CMOS (default)
2-3	Clear CMOS

❷JPIC1: ACT Function Setting

Connector type: 2.00mm pitch 1x3-pin header

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

❸JPATATX1: AT/ATX Mode Selection

Connector type: 2.54mm pitch 1x3-pin header

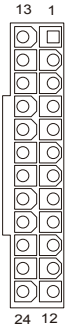
Pin	Description
1-2	AT Mode
2-3	ATX Mode (Default)

Connectors

①ATX1: ATX Power Connector

Connector type: 24-pin ATX power supply connector

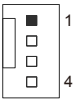
Pin	Desc.	Pin	Desc.
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	COM	15	COM
4	+5V	16	PS-ON
5	COM	17	COM
6	+5V	18	COM
7	COM	19	COM
8	PW-OK	20	NC
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	COM



②⑪ SYSFAN1, 2: Fan Power Connectors

Connector type: 2.54mm pitch 1x4-pin wafer one wall connector

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



③~⑧ SATA1~6: Serial ATA Connectors

Connector type: lockable SATA connectors with housing

The pin assignments conform to the industry standard.

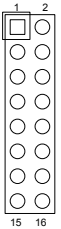
⑨ JICSP1: For Internal Use Only

Connector type: 2.00mm pitch 2x4-pin header

⑩ JFRT1: Connectors for front-panel switches and LED status lamps

Connector type: 2.54mm pitch 2x8-pin header

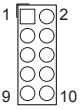
Pin	Description	Pin	Description
1	LED-	2	LED+
3	PWRBTN-	4	PWRBTN+
5	RESET-	6	RESET+
7	HDD LED+	8	GND
9	HDD LED-	10	SPEAKER+
11	SMB_CLK	12	SPEAKER+
13	SMB_DATA	14	SPEAKER-
15	GND	16	SPEAKER-



⑫ LPC1: Low Pin Count Connector

Connector Type: 2.00mm pitch 2x5-pin header

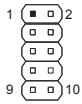
Pin	Desc.	Pin	Desc.
1	CLK_PC_24M	2	GND
3	L_FRAME#	4	L_ADØ
5	PLTRST#	6	SERIRØ
7	L_AD3	8	L_AD2
9	+V3.3S	10	L_AD1



⑬ USB3: USB 2.0 Connectors

Connector Type: 2.54mm pitch 2x5-pin header

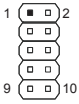
Pin	Desc.	Pin	Desc.
1	+5VS	2	+5VS
3	USBP11N	4	USBP12N
5	USBP11P	6	USBP12P
7	GND	8	GND
9	N/C	10	GND



⑭ USB2: USB 2.0 Connectors

Connector Type: 2.54mm pitch 2x5-pin header

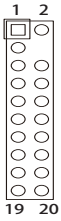
Pin	Desc.	Pin	Desc.
1	+5VS	2	+5VS
3	USBP13N	4	USBP14N
5	USBP13P	6	USBP14P
7	GND	8	GND
9	N/C	10	GND



⑮ TPM1: TPM Connector (Optional)

Connector type: 2.54mm pitch 2x10-pin header

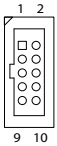
Pin	Desc.	Pin	Desc.
1	CLK_LPC1_24M	2	GND
3	L_FRAME#	4	N/C
5	PLT_RST	6	N/C
7	L_AD3	8	L_AD2
9	+V3.3S	10	L_AD1
11	L_AD0	12	GND
13	N/C	14	N/C
15	+V3.3A	16	SER_IRQ
17	GND	18	CLKR#
19	LPCPD#_LPC	20	N/C



⑯⑰⑱COM2, 3, 4: RS-232 Connectors (COM3 & 4 optional)

Connector type: 2.54mm pitch 2x5-pin header

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



⑲⑳ SPKR1, SPKL1: Speaker Connectors

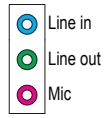
Connector Type: 1.25mm pitch 1x2-pin wafer connector

Pin	Description
1	INSPL/R+
2	INSPL/R-

㉑ AUDIO1: Audio Interface Port

Connector type: 3 x 3.5mm stacked phone jack

Audio Jack	Description
Blue	Line-in
Green	Line-out
Pink	Mic-in

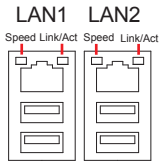


㉒㉓ LAN1, 2: RJ-45+USB 3.0 Stacked Connectors

Connector type: RJ-45 connector with LED + Double-stacked USB 3.02/2.0 type A connectors

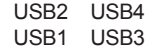
LAN

LED	Definition
Speed	Amber:1000M Green: 10/100M
Link/ Act	On: Linked Blink: Network Activity Off: No Link



USB

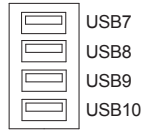
The pin assignments conform to the industry standard.



㉔ USB1: USB 2.0 Stacked Connectors

Connector type: Quad-stacked USB 2.0 type A connectors

The pin assignments conform to the industry standard.

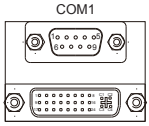


㉕ DVI1: Stacked COM1 & DVI-I Connectors

Connector type: Male type 9-pin D-SUB connector+female type DVI-I connector

COM1:

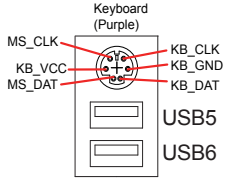
Pin	Desc.	Pin	Desc.
1	DCD#	2	RXD
3	TXD	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#		



DVI-I: The pin assignments conform to the industry standard.

㉖ KBUSB1: PS/2 Keyboard & USB 2.0 Stacked Connectors

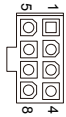
Connector type: 6-pin Mini-DIN & Double-stacked USB 2.0 type A connectors



㉗ JATX1: 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



㉘ ㉙ DP1, 2: DisplayPort Connectors

Connect the display device to the DisplayPort Connector

The pin assignments conform to the industry standard.

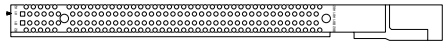
㉚ CPUFAN1: CPU Fan Power Connector

Connector type: 2.54mm pitch 1x4 wafer one wall connector

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

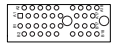
㉛ PCIE1: PCIe x16 Gen 3.0 Slot

Connector type: PCI Express x16 Gen 3.0 slot
The pin assignments conform to the industry standard.



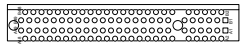
㉜ PCIE2: PCIe x1 Slot

Connector type: PCI Express x1 slot
The pin assignments conform to the industry standard.



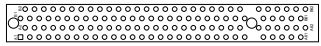
㉝ PCIE4: PCIe x8 Slot w/ x4 Single

Connector type: PCI Express x8 slot with x4 single
The pin assignments conform to the industry standard.



㉞ PCI1: PCI Slot

Connector type: 32-bit PCI slot
The pin assignments conform to the industry standard.



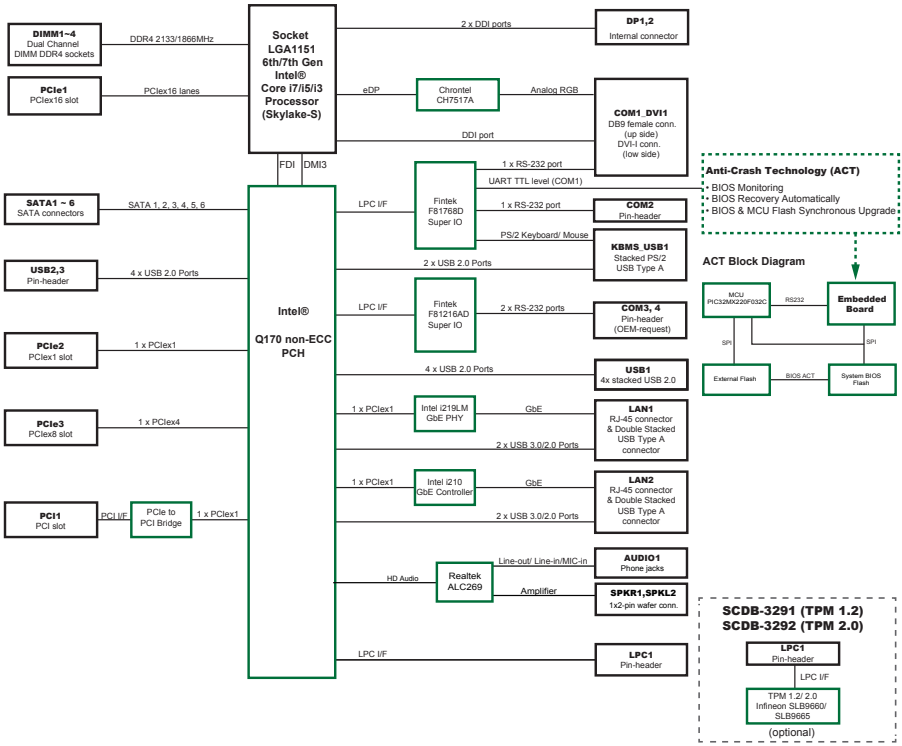
㉟ ㊱ ㊲ ㊳ DIMM1~4: 288-pin DDR4 Memory Slots

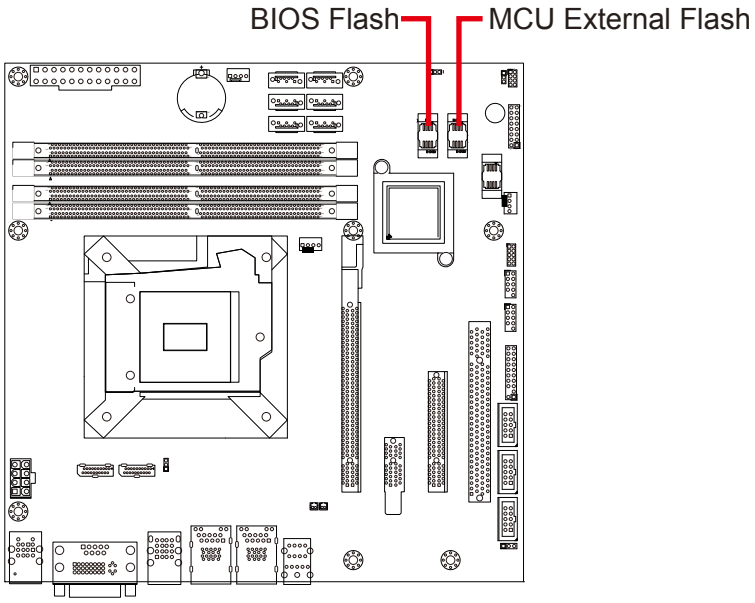
Connector type: 288-pin DDR4 DIMM slots

The pin assignments conform to the industry standard.

Anti-Crash Technology for BIOS Recovering

Board Block Diagram





- BIOS Flash: Master ROM for BIOS
- MCU External Flash: Slave ROM for backup BIOS

The motherboard supports Anti-Crash Technology (ACT) for automatical system BIOS recovering. If problem is detected on the BIOS flash, then the recovery process will automatically start to load the backup BIOS from the MCU external flash (slave ROM) to prevent system crash.

When a new version of BIOS is available and you want to update both the master and slave ROMs with the new BIOS, please contact ARBOR for technical support.