

# MB-i87Q0

## Micro-ATX Industrial Motherboard

### Quick Installation Guide

Version 1.2

<b>Form Factor</b> <i>Micro-ATX Industrial Motherboard</i>	<b>CPU</b> <i>Intel® 4<sup>th</sup> Gen. Core™ Processors in LGA1150</i>	<b>Chipset</b> <i>Intel® Q87 PCH</i>
<b>I/O</b> <i>PCIe/ PCI/ SATA/ USB/ COM/ DIO</i>	<b>LAN</b> <i>Intel® PCIe i217LM GbE PHY (iAMT supported) Intel® PCIe i210AT GbE controller</i>	<b>Audio</b> <i>Realtek ALC662 HD Audio Codec</i>
<b>Video</b> <i>DVI-I/ DisplayPort</i>		

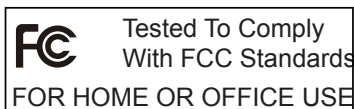
### ◆ Technical Support

If you have any technical difficulties, please consult the user's manual first at:  
<ftp://ftp.arbor.com.tw/pub/manual>

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

<http://www.arbor.com.tw>

E-mail: [info@arbor.com.tw](mailto:info@arbor.com.tw)



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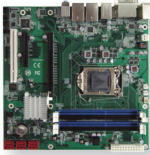
## Specifications

<b>Form Factor</b>	Micro-ATX Industrial Motherboard
<b>CPU</b>	Intel® 4th Generation Core™ i7/i5/i3 and Pentium® / Celeron® processors in LGA1150 socket
<b>Chipset</b>	Intel® Q87 PCH
<b>System Memory</b>	4 x DDR3 Long-DIMM sockets, supporting 1600MT/s SDRAM up to 32GB
<b>Display</b>	Integrated Intel® HD Graphics <ul style="list-style-type: none"><li>• 1 x DVI-I connector</li><li>• 1 x DisplayPort 1.2a</li></ul>
<b>Ethernet</b>	1 x Intel® PCIe i217LM GbE PHY (iAMT supported) 1 x Intel® PCIe i210AT GbE controller
<b>I/O Chip</b>	Fintek F71869ED
<b>BIOS</b>	AMI BIOS
<b>Watchdog Timer</b>	1~255 levels reset
<b>Serial ATA</b>	6 x serial ATA ports with 600MB/s HDD transfer rate RAID 0, 1, 5, 10 supported
<b>Serial Port</b>	2 x COM ports ( RS-232/422/485 selectable)
<b>Universal Serial Bus</b>	10 x USB 2.0 ports 4 x USB 3.0/2.0 ports,
<b>KB/MS</b>	1 x 6-pin mini-DIN connector for PS/2 keyboard, and mouse via Y-cable
<b>Expansion Bus</b>	1 x PCIe x16 slot 1 x PCIe x4 interface x8 slot 1 x PCI slot
<b>Digital I/O</b>	1 x 16-bit digital IO, 8-bit input/ 8-bit output
<b>Audio</b>	Realtek ALC662 HD Audio CODEC, MIC-in/ Line-out
<b>Power Connector</b>	1 x 24-pin ATX power connector 1 x 4-pin 12V ATX power connector
<b>Operating Temp.</b>	0°C ~ 60°C (32°F ~ 140°F)
<b>Storage Temp.</b>	-20°C ~ 80°C (-4°F ~ 176°F)
<b>Humidity</b>	10 ~ 95% @ 60°C (non-condensing)
<b>Dimension (L x W)</b>	244 x 244 mm (9.6" x 9.6")

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## Packing List

Before starting to install the board, make sure the following items are shipped:



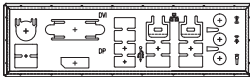
1 x MB-i87Q0 Industrial Motherboard



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

<b>MB-i87Q0</b>	Intel® 4th Gen. Core™ Embedded Micro-ATX Motherboard
<b>CPF-67Q0-C1</b>	CPU Colling Fan for LGA1150/ 1155/ 1156 CPU
<b>CBK-10-87Q0-00</b>	Cable kit 1 x two-port COM cable 2 x USB cables 6 x SATA cables 1 x PS/2 Y-cable

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## Recommended CPU List

Intel® Core™ i7-4770S quad-core 3.1GHz  
Intel® Core™ i7-4790S quad-core 3.2GHz  
Intel® Core™ i7-4770TE quad-core 2.3GHz  
Intel® Core™ i5-4570S quad-core 2.9GHz  
Intel® Core™ i5-4590S quad-core 3.0GHz  
Intel® Core™ i5-4570TE dual-core 2.7GHz  
Intel® Core™ i3-4330 dual-core 3.6GHz  
Intel® Core™ i3-4350T dual-core 3.1GHz  
Intel® Core™ i3-4330TE dual-core 2.4GHz  
Intel® Pentium® Processor G3420 dual-core 3.2GHz  
Intel® Pentium® Processor G3320TE dual-core 2.3GHz  
Intel® Celeron® Processor G1820 dual-core 2.7GHz  
Intel® Celeron® Processor G1820TE dual-core 2.2GHz

## Find Device Drivers on CD

### Windows 7

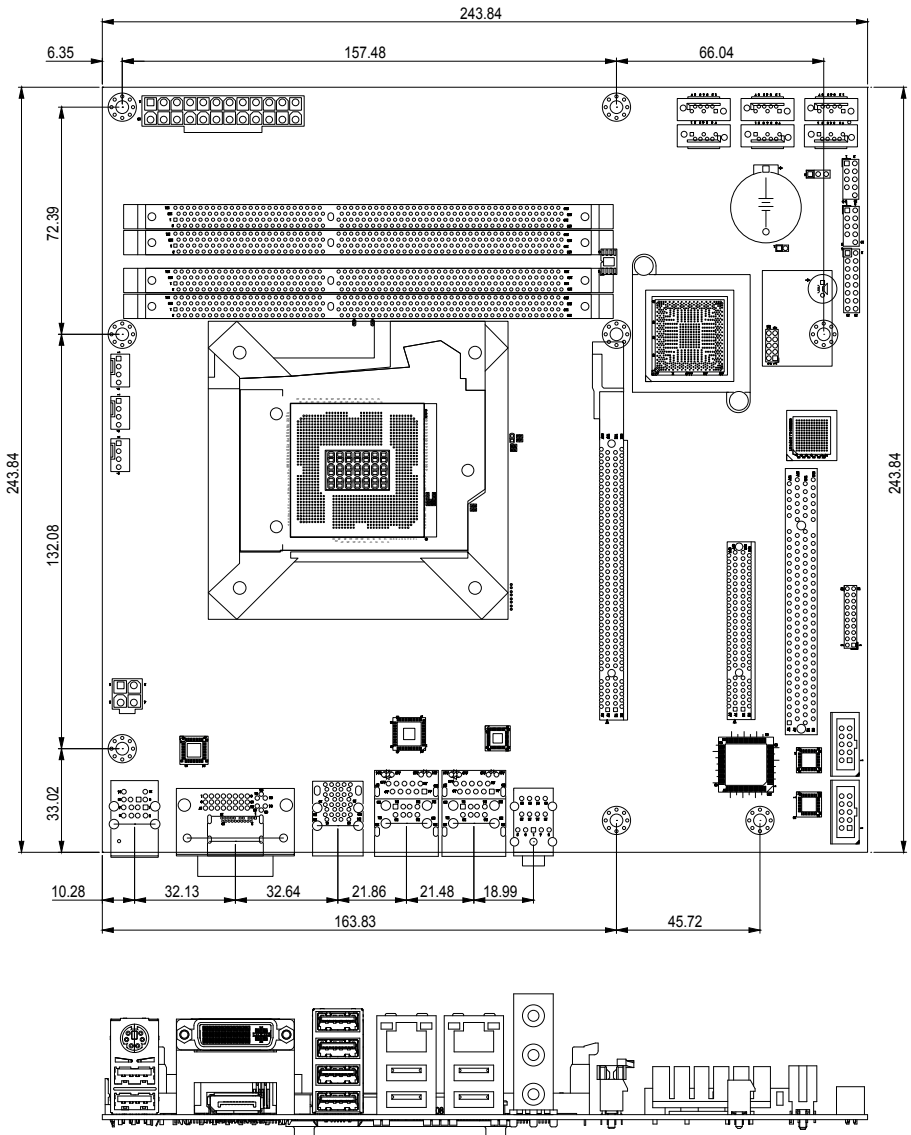
Device	Driver Path
Chipset	MB-i87Q0\Chipset
VGA	MB-i87Q0\Graphic\Win32_V9.18.10.3107 MB-i87Q0\Graphic\Win64_153117
LAN	MB-i87Q0\Ethernet\Win7
Audio	MB-i87Q0\AUDIO
Management Engine	MB-i87Q0\ME\32bits_ME9.0_5M_V9.0.2.1345 MB-i87Q0\ME\64bits\WIN7
USB3.0	MB-i87Q0\USB3.0\32bits_USB3_V2.5.0.19 MB-i87Q0\USB3.0\64bits_USB_3.0_Win7_2.5.1.28

### Windows 8

Device	Driver Path
Chipset	MB-i87Q0\Chipset
VGA	MB-i87Q0\Graphic\Win32_V9.18.10.3107 MB-i87Q0\Graphic\Win64_153117
LAN	MB-i87Q0\Ethernet\Win8
Audio	MB-i87Q0\AUDIO
Management Engine	MB-i87Q0\ME\32bits_ME9.0_5M_V9.0.2.1345 MB-i87Q0\ME\64bits\WIN8\MEI_Win8.1_5.0M_9.5.15.1730_PV

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# Board Dimensions



Unit: mm

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## Jumpers/Connectors Quick Reference

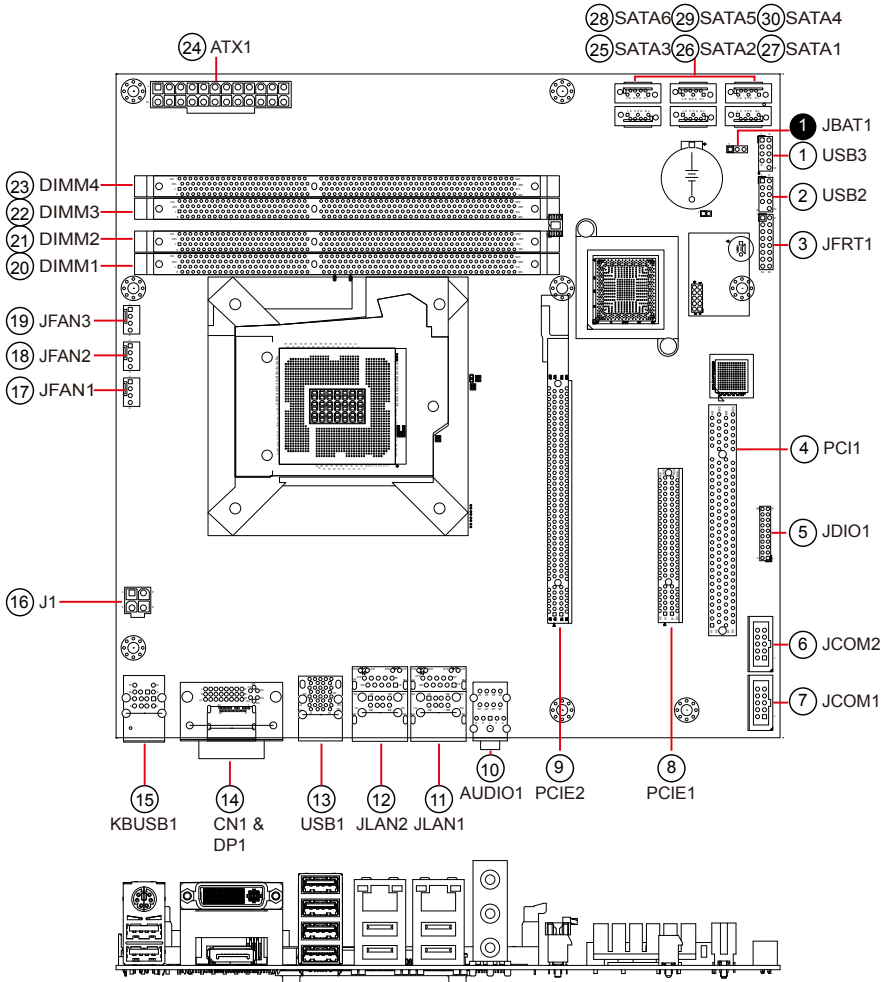
### Jumpers

Label	Description
<b>JBAT1</b>	CMOS setting

### Connectors

Label	Description
<b>KBUSB1</b>	Keyboard/mouse PS/2 and USB stacked connectors
<b>DP1</b>	DisplayPort connector
<b>CN1</b>	DVI-I port
<b>USB1</b>	Four USB3.0 ports
<b>JLAN1</b>	One LAN port and double-stacked USB 2.0 ports
<b>JLAN2</b>	
<b>Audio1</b>	Audio connector
<b>JCOM1</b>	RS232/RS422/RS485 connector
<b>JCOM2</b>	
<b>JDIO1</b>	DIO connector
<b>JFRT1</b>	Connectors for front-panel switches and LED status lamps
<b>USB2</b>	Connector for USB2.0 ports
<b>USB3</b>	
<b>SATA1~6</b>	Serial ATA connector
<b>ATX1</b>	ATX power supply connector
<b>DIMM1~4</b>	DDR3 DIMM connectors
<b>JFAN1,2,3</b>	4-pin fan connector
<b>J1</b>	12V ATX power supply connector
<b>PCIE2</b>	PCIE x16 connector
<b>PCIE1</b>	PCIE x8 connector
<b>PCI1</b>	PCI connector

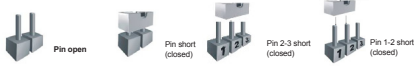
# Jumper & Connector Locations



## Jumpers

### Jumper Settings

The jumper is "short" (closed) when the jumper cap is placed on pins. If not, that means the jumper is "open".



### ① JBAT1: Clears/keeps CMOS

Jumper type: 2.54mm pitch 1x3-pin header

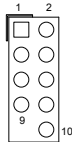
Pin	Description
1-2	Keeps CMOS (default)
2-3	Clears CMOS

## Connectors

### ①② USB2,3: Connectors for USB 2.0 ports

Connector type: 2.54mm pitch 10-pin header

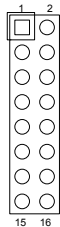
Pin	Description	Pin	Description
1	+5V(A)	2	+5V(B)
3	USBD-(A)	4	USBD-(B)
5	USBD+(A)	6	USBD+(B)
7	GND(A)	8	GND(B)
9	N/C(A)	10	GND(B)



### ③ JFRT1: Connectors for front-panel switches and LED status lamps

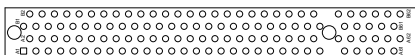
Connector type: 2.54mm pitch 2x8-pin header

Pin	Description	Pin	Description
1	P_LED+	2	PWR_BTN+
3	P_LED-	4	PWR_BTN-
5	P_LED-	6	RESET+
7	HDD_LED+	8	RESET-
9	HDD_LED-	10	SPK+
11	SMB(CLK)	12	SPK+
13	SMB(DAT)	14	SPK-
15	SMB(G)	16	SPK-



### ④ PCI1: PCI connector

Connector type: 32-bit PCI slot

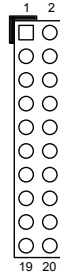


The pin assignments conform to the industry standard.

### ⑤ JDIO1: Digital I/O connector

Connector type: 2.54mm pitch 2x10-pin header

Pin	Description	Pin	Description
1	DIO_OUT_0	2	DIO_OUT_1
3	DIO_OUT_2	4	DIO_OUT_3
5	DIO_OUT_4	6	DIO_OUT_5
7	DIO_OUT_6	8	DIO_OUT_7
9	DIO_IN_0	10	DIO_IN_1
11	DIO_IN_2	12	DIO_IN_3
13	DIO_IN_4	14	DIO_IN_5
15	DIO_IN_6	16	DIO_IN_7
17	VCC5	18	GND
19	VCC5	20	GND



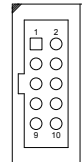
### ⑥⑦ JCOM1,2: Connectors for RS-232, RS422, RS485 serial ports

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

RS-232			
Pin	Description	Pin	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND	10	GND

RS-422	
Pin	Description
1	TX-
3	TX+
5	RX+
7	RX-

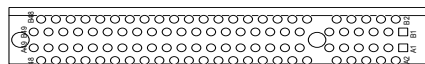
RS-485	
Pin	Description
1	TX- or RX-
3	TX+ or RX+



To configure the data transmission interface for the available serial ports, access BIOS Setup utility | Advanced | F71869E Super IO Configuration | Serial Port 1 & 2 Configuration.

### ⑧ PCIE1: PCI Express connector

Connector type: PCI Express x8 slot with x4 single

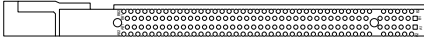


The pin assignments conform to the industry standard.



**⑨ PCIE2: PCI Express connector**

Connector type: PCI Express x16 slot






The pin assignments conform to the industry standard.

**⑩ AUDIO1: Audio interface ports**

Connector type: Triple-stacked ø3.5mm stereo audio jacks

**Description**

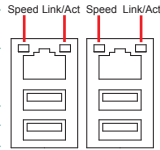
Line-in		Line in
Line-out		Line out
Mic-in		Mic

**⑪ ⑫ JLAN1,2: RJ-45+USB stacked ports**

Connector type: RJ-45 LAN port with LED lamps and double-stacked USB 2.0 Type A connectors

**LAN (RJ-45)**

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



**USB (Type A USB connector)**

The pin assignments conform to the industry standard.

**⑬ USB1: 4 x USB3.0 ports**

Connector type: Quadruple-stacked USB 3.0 Type A connectors

The pin assignments conform to the industry standard.



**⑭ CN1 & DP1: Stacked DVI-I connector and DisplayPort**

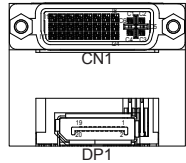
Connector type: Female DVI-I connector & DisplayPort 1.2 digital video connector

**CN1**

The pin assignments conform to the industry standard.

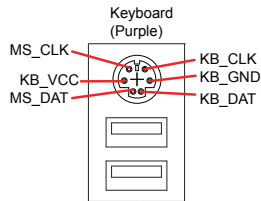
**DP1**

The pin assignments conform to the industry standard.



**⑮ KBUSB1: Keyboard/mouse PS/2 and USB 2.0 stacked ports**

Connector type: 6-pin Mini-DIN and Type A USB 2.0 stacked connectors

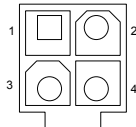


**⑯ J1: 12V ATX power supply connector**

Connector type: Standard 4-pin power connector

**Pin Desc.**

1	GND
2	GND
3	+12V
4	+12V



**⑰ ⑱ JFAN1, 2,3: Fan power connector**

Connector type: Onboard 1 x 4-pin one-wall wafer connector

**Pin Description**

1	GND
2	+12V
3	RPM
4	CTRL



Note: The fan must be a 12V fan.

### ⑳㉑㉒㉓ DIMM1,2,3,4: DDR3 DIMM connectors

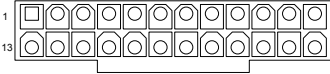
Connector type: 240-pin DDR3 DIMM sockets



The pin assignments conform to the industry standard.

### ㉔ATX1: ATX power connector

Connector type: 24-pin ATX power supply connector

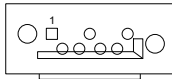


Pin	Desc.	Pin	Desc.	Pin	Desc.
1	+3.3V	9	+5VSB	17	GND
2	+3.3V	10	+12V	18	GND
3	GND	11	+12V	19	GND
4	+5V	12	+3.3V	20	-5V
5	GND	13	+3.3V	21	+5V
6	+5V	14	-12V	22	+5V
7	GND	15	GND	23	+5V
8	PW-OK	16	PS-ON	24	GND

### ㉕㉖㉗㉘㉙㉚ SATA1,2,3,4,5,6: Serial ATA connectors

Connector type: Lockable SATA connectors with housing, supporting 600MB/s HDD transfer rate.

The pin assignments conform to the industry standard.



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