

PPC-MB-610 Mini-ITX Motherboard with Intel® Core™ i7/ i5/i3/Pentium®/Celeron® Processor, DP/VGA, 5 x COM, 6 x USB, Dual LAN, PCIe x16, and M.2 (M Key and E Key) Startup Manual

Packing List

Before installation, check to ensure that the following items are included in the shipment:

1. 1 x PPC-MB-610 mini-ITX motherboard
2. 1 x COM cable (1-to-4 DB9)
3. 1 x SATA cable
4. 1 x PPC-MB-610 startup manual
5. 1 x Warranty card
6. 1 x Thermal grease
7. 14 x COM port screws
8. 2 x M.2 packet screws

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Note 1: For detailed PPC-MB-610 specifications, refer to the latest product information provided on the Advantech website (PPC-61X1C model).

Note 2: Acrobat Reader is required to view PDF files. This software can be downloaded from www.adobe.com/Products/acrobat/readstep2.html (Acrobat is a trademark of Adobe).

For more information about this or other Advantech products, visit our website at

<http://www.advantech.com>

For technical support and service, visit our support website at

<http://support.advantech.com>

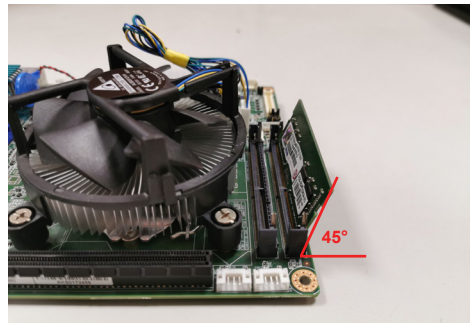
This manual is for PPC-MB-610, Rev. A2.

Part No. 2043776002
Printed in China

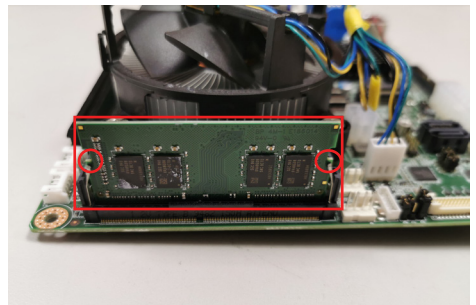
Edition 3
Jan 2021

Installation Guide

1. Insert the memory module into the memory slot at a 45 degree angle, as shown below. Ensure that the gold fingers of the module are fully inserted into the slot.



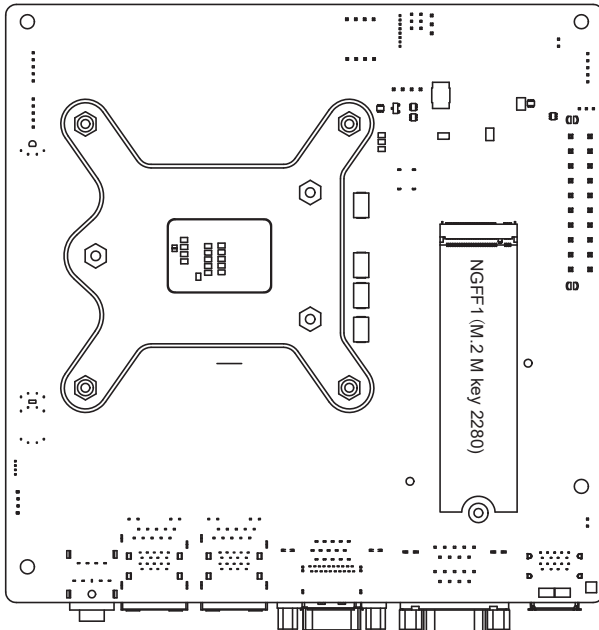
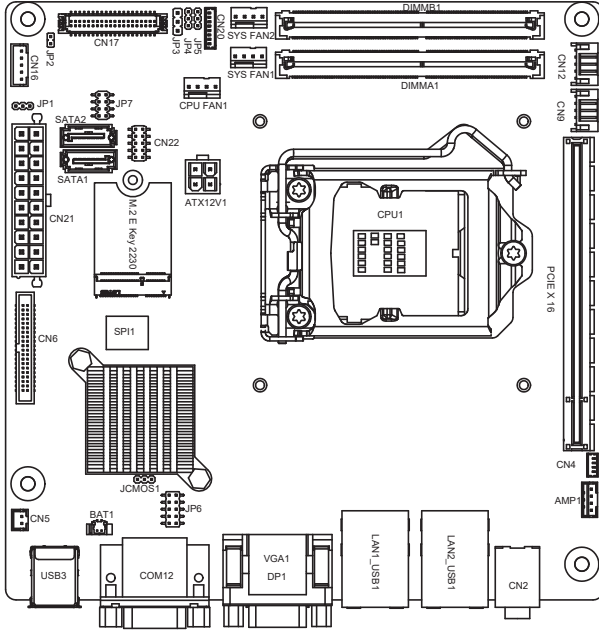
2. Once inserted, gently press the memory module into the slot until the tabs snap into place, securing the module in position.



Specifications

PPC-MB-610									
System	Processor	i7-8700/ i7-8700T	i5-8500/ i5-8500T	i3-8100/ i3-8100T	Pentium G5400/ G5400T	Celeron G4900/ G4900T	i7-9700E/ i7-9700TE	i5-9500E/ i5-9500TE	i3-9100E/ i3-9100TE
	Number of Cores	6/6	6/6	4/4	2/2	2/2	8/8	6/6	4/4
	Max Speed	3.2 GHz (up to 4.6 GHz) 2.4 GHz (up to 4.0 GHz)	3.0 GHz (up to 4.1 GHz) 2.1 GHz (up to 3.5 GHz)	3.6/3.1 GHz	3.7/3.1 GHz	3.1/2.9 GHz	2.6 GHz (up to 4.4 GHz)/ 1.8 GHz (up to 3.8 GHz)	3.0 GHz (up to 4.2 GHz)/ 2.2 GHz (up to 3.6 GHz)	3.1 GHz (up to 3.7 GHz)/ 2.2 GHz (up to 3.2 GHz)
	L3 Cache	12/12 MB	9/9 MB	6/6 MB	4/4 MB	2/2 MB	12/12 MB	9/9 MB	6/6 MB
	TDP	65/35 W	65/35 W	65/35 W	54/35 W	54/35 W	65/35 W	65/35 W	65/35 W
Chipset	Q370								
Memory	2 x 260-pin SODIMM DDR4, 2666 MHz, up to 32 GB (non ECC)								
Network (LAN)	2 x 10/100/1000 Mbps Ethernet, 1 x Intel® L219LM (with AMT 12.0 support for i7 and i5 only), 1 x Intel i211								
Rear I/O	1 x RS-232/422/485, 1 x RS-232, 1x DisplayPort 1.2, 1 x VGA, 6 x USB 3.1, 1 x Line-out, 1 x Mic-in								
Internal Connector	3 x RS-232, 1 x GPIO (8 x channels), 2 x speakerx, 1 x LED, 2 x USB 2.0, 1 x LVDS, 1 x touch control, 2 x SATA 3.0 (supports RAID 0, 1), 1 x LPC (supports TPM 2.0)								
Watchdog Timer	255 timer intervals, configurable using software								
Expansion	1 x M.2 slot (2280 M key) for storage, 1 x M.2 slot (2230 E key) for wireless modules 1 x PCIe x16 slot for riser cards								
Dimensions (W x H)	170 x 170 mm/6.69 x 6.69 in								
Operating System	Microsoft® Windows 10 (64 bit), Linux								

Board Layout: Jumper and Connector Locations



Jumpers and Connectors

The PPC-MB-610 motherboard features a number of jumpers that allow users to configure the system according to specific applications. The functions of each jumper and connector are listed in the table below.

Connector and Headers

Connectors and Headers List	
Label	Function
CN2	Mic-In/Line-Out connector
LAN2_USB1	RJ45 + USB 3.1 stack connector
LAN1_USB1	RJ45 + USB 3.1 stack connector
VGA1	VGA display connector
DP1	DisplayPort connector
COM12	COM 1/2 connector
USB3	2 x USB 3.1 connector
ATX12v1	ATX 12V power supply connector
CN21	ATX power supply connector
CN5	Power button connector
CN6	COM 3/4/5 and GPIO connector
BAT1	Battery connector
SPI1	SPI BIOS flash socket
CN16	Touchscreen connector
CN17	LVDS panel connector
CN20	LVDS backlight inverter power connector
Sysfan1 ~ 2	System fan power connector
CPUFAN1	CPU fan power connector
SATA1 ~ 2	SATA signal connector
CN4	Power LED connector
CN9/CN12	2 x USB 2.0 pin header
PCIEX16_1	PCIe x16 slot connector
AMP1	Audio amplifier output connector
DIMMA1/ DIMMB1	DDR4 SODIMM socket
CPU1	CPU socket
M.2_2	M.2 E key
NGFF1	M.2 M key

Jumpers and Connectors (Cont.)

COM12: COM 2 Connector

Pin	Definition (RS-232)	Definition (RS-422)	Definition (RS-485)
1	DCD	TX-	TX RX-
2	RXD	TX+	TX RX+
3	TXD	RX+	
4	DTR	RX-	
5	GND		
6	DSR		
7	RTS		
8	CTS		
9	RI		

CN6: COM 3/4/5 and GPIO Connector

1	COM3_DCD#	2	COM3_DSR#
3	COM3_RXD	4	COM3_RTS#
5	COM3_TXD	6	COM3_CTS#
7	COM3_DTR#	8	COM3_RI#
9	GND	10	GND
11	COM4_DCD#	12	COM4_DSR#
13	COM4_RXD	14	COM4_RTS#
15	COM4_TXD	16	COM4_CTS#
17	COM4_DTR#	18	COM4_RI#
19	GND	20	GND
21	COM5_DCD#	22	COM5_DSR#
23	COM5_RXD	24	COM5_RTS#
25	COM5_TXD	26	COM5_CTS#
27	COM5_DTR#	28	COM5_RI#
29	GND	30	GND
31	GND	32	SIO_GPIO6
33	SIO_GPIO4	34	SIO_GPIO2
35	SIO_GPIO0	36	SIO_GPIO7
37	SIO_GPIO5	38	SIO_GPIO3
39	SIO_GPIO1	40	+V5_DUAL

Jumpers and Connectors (Cont.)

CN16: Touch Connector

Pin	Definition
1	Y+
2	X+
3	SENSE
4	Y-
5	X-

Sysfan 1 ~ 2: System Fan Power Connector

Pin	Definition
1	GND
2	POWER
3	SPEED
4	PWM

CPUFAN1: CPU Fan Power Connector

Pin	Definition
1	GND
2	POWER
3	SPEED
4	PWM

CN4: Power LED Connector

Pin	Definition
1	+V5_DUAL
2	+V5
3	GND
4	GND

AMP1: Audio Amplifier Output Connector

Pin	Definition
1	SPK L-
2	SPK L+
3	SPK R+
4	SPK R-

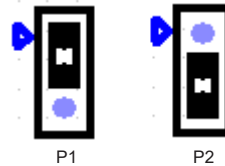
Jumpers and Connectors (Cont.)

Jumper Settings

Jumper List	
Jumper	Function
JP1	ATX/AT select
JCMOS1	RTC select
JP2	Touch power select
JP3	LCD power select
JP4	Enable power select
JP5	LVDS PWM power select
JP6	COM pin 9 power select (COM 1 and 2)
JP7	LVDS resolution select

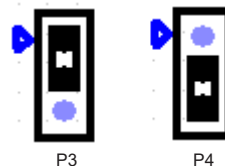
ATX/AT Select (JP1)

(1-2) P1	AT
(2-3) P2	ATX (default)



RTC Select (Jcmos1)

(1-2) P3	Normal (default)
(2-3) P4	Clear CMOS



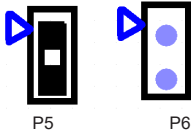
Jumpers and Connectors (Cont.)

DI/O Pin Definition (DB9)

Pin	Definition
1	GND
2	GPIO4
3	GPIO0
4	GPIO5
5	GPIO1
6	GPIO6
7	GPIO2
8	GPIO7
9	GPIO3

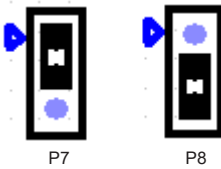
Touch Power Select (JP2)

(1-2) P5	Connect resistive touchscreen (default)
NC P6	Disconnect resistive touchscreen



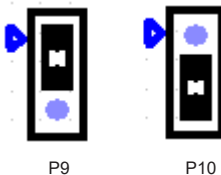
LCD Power Select (JP3)

(1-2) P7	+V5
(2-3) P8	+V3.3 (default)



Enable Power Select (JP4)

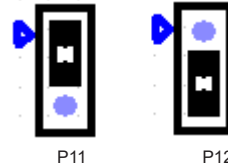
(1-2) P9	+V5
(2-3) P10	+V3.3 (default)



Jumpers and Connectors (Cont.)

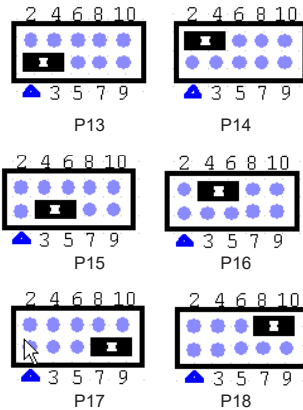
LVDS PWM Power Select (JP5)

(1-2) P11	+V5
(2-3) P12	+V3.3 (default)



COM Ring Select (JP6)

(1-3)/(2-4) P13/P14	COM 2/1 ring (default)
(3-5)/(4-6) P15/P16	COM 2/1 5V
(7-9)/(8-10) P17/P18	COM 2/1 12V



LVDS Resolution Select (JP7)

(1-2)/(5-6)/(7-8) P19	1024 x 768 (24 bit) (for PPC-6151C chassis)
(1-2)/(7-8) P20	1280 x 1024 (24 bit) (for PPC-6171C chassis)
(3-4)/(7-8) P21	1280 x 1024 (24 bit) (for PPC-6191C chassis)

