

PPC-MB-620 Mini-ITX Motherboard with Intel® Core™ i9/i7/i5/i3/Celeron® Processor, DP/HDMI, 5 x COM, 6 x USB, 3 x LAN, PCIe x16, and M.2 (M Key, B 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-620 mini-ITX motherboard
2. 1 x COM cable (1-to-4 DB9)
3. 1 x SATA cable
4. 1 x PPC-MB-620 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

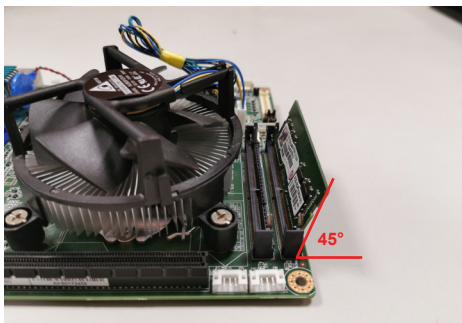
If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Note 1: For detailed PPC-MB-620 specifications, refer to the latest product information provided on the Advantech website (PPC-600 model).

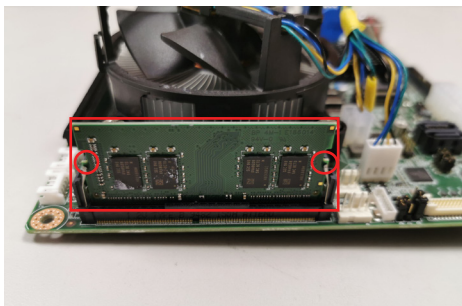
Note 2: Acrobat Reader is required to view PDF files. This software can be downloaded from www.adobe.com/Products/acrobat/readstep2.html (Acrobat is a trademark of Adobe).

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.



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-620, Rev. A1.

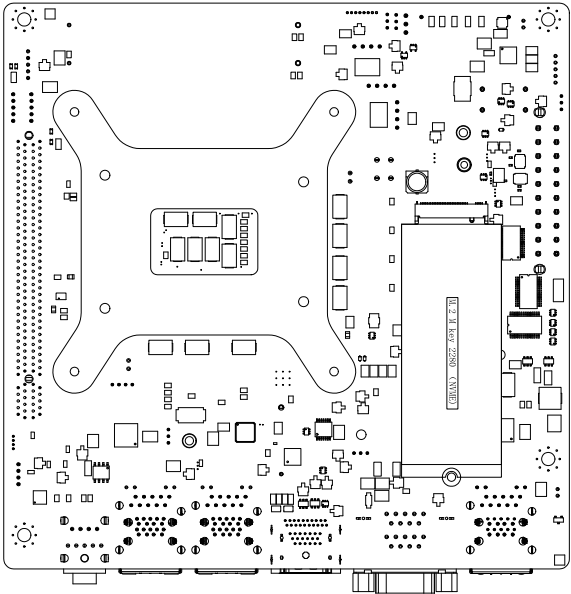
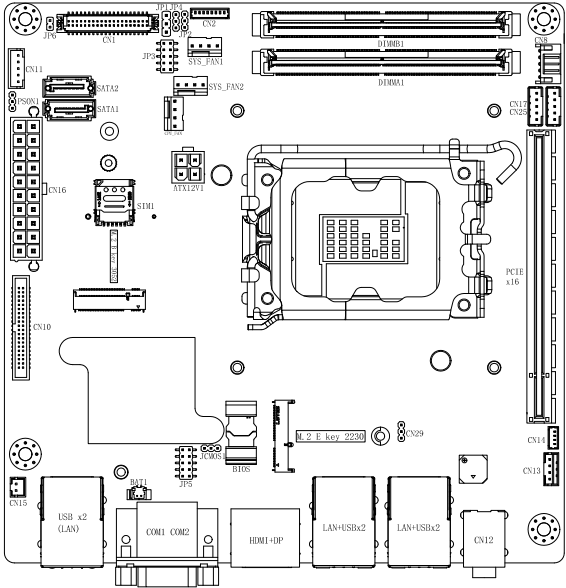
Part No. 2044062000
Printed in China

Edition 1
March 2023

Specifications

System	CPU	i9-12900E/ i9-12900TE	i7-12700E/ i7-12700TE	i5-12500E/ i5-12500TE	i3-12100E/ i3-12100TE	G7400E/ G7400TE	G6900E/ G6900TE
	Core Number	16/16	12/12	6/6	4/4	2/2	2/2
	Max Speed	2.3GHz (Up to 5.0GHz)/ 1.1GHz (Up to 4.8GHz)	2.1GHz (Up to 4.8GHz)/ 1.4GHz (Up to 4.6GHz)	2.9GHz (Up to 4.5GHz)/ 1.9GHz (Up to 4.3GHz)	3.2GHz (Up to 4.2GHz)/ 2.1GHz (Up to 4.0GHz)	3.6GHz/ 3.0GHz	3.0GHz/ 2.4GHz
	SmartCache	30/30MB	25/25MB	18/18MB	12/12MB	6/6MB	4/4MB
	TDP	65W/35W	65W/35W	65W/35W	60W/35W	46W/35W	46W/35W
Memory	2 x 262-pin SODIMM DDR5, 4800 MHz , up to 32 GB (non-ECC)						
Chipset		Q670E			H610E		
Ethernet	Controller	LAN1: 1Gb Intel i219LM (support AMT 16.0 only for i7 & i5); LAN2: 2.5Gb Intel i226-LM			LAN1: 1Gb Intel i219LM (support AMT 16.0 only for i7 & i5); LAN2: 2.5Gb Intel i226-LM LAN3: 2.5Gb Intel i226-LM		
	Connector	RJ45 x2			RJ45 x3		
Rear I/O	USB	6 (USB 3.2 Gen 2)			6 (2 x USB 3.2 Gen 2, 2 x USB 3.2 Gen 1, 2 x USB 2.0)		
	Ethernet	2			3		
	Display Port	1					
	HDMI	1					
	Audio	2 (Mic-in, Line-out)					
	Serial	2 (1 x RS-232/422/485, 1 x RS-232)					
Internal Connector	USB	3 x USB 2.0			1 x USB 2.0		
	SATA	2 x SATA 3.0 (support RAID 0,1)			2 x SATA 3.0		
	Serial	3 x RS-232					
	TPM	1					
	GPIO	8-bit					
Expansion	M.2	1 x slot (2280 M key) for storage (SATA & PCIe*4); 1 x slot (2230 E key) for wireless (PCIe & USB2.0)					
		1 x slot (3042 & 3052 B key) supports PCIe & USB3.1 & USB2.0			1 x slot (3042 & 3052 B key) supports PCIe & USB2.0		
	PCIe x16 (Gen5)	1 x slot					
Watchdog Timer		255 timer intervals, configurable using software					
Dimensions (W x H)		170 mm x 170 mm (6.69" x 6.69")					
OS support		Microsoft® Win 10 IOT LTSC(64-bit)/Win 11, Linux					

Board Layout: Jumper and Connector Locations



Jumpers and Connectors

The PPC-MB-620 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
CN12	Mic-In/Line-Out connector
LAN+USBx2 (left)	RJ45(i219) + USB 3.2 stack connector
LAN+USBx2 (right)	RJ45(i226) + USB 3.2 stack connector
HDMI+DP	HDMI+DisplayPort connector
COM1(UP)/COM2(Down)	COM 1/2 connector
USBx2(LAN)	USB 3.2/RJ45(i226) stack connector
CN15	Power button connector
CN14	Power LED connector
CN13	Audio amplifier output connector
CN10	COM 3/4/5 and GPIO connector
CN16	ATX power supply connector
ATX12V1	ATX 12V power supply connector
PCIEX16	PCIe x16 slot connector
CN11	Touchscreen connector
SATA1/SATA2	SATA signal connector
CPU FAN	CPU fan power connector
SYS FAN1/SYS FAN2	System fan power connector
CN17/CN25	2 x USB 2.0 pin header
CN8	USB 2.0 pin header
DIMMA/DIMMB	DDR5 SODIMM socket
CN2	LVDS backlight inverter power connector
CN1	LVDS panel connector
M.2 E Key 2230	M.2 E key
M.2 B Key 3052	M.2 B key
SIMI	SIMI Card Connector
M.2 M Key 2280(NVME)	M.2 M key
BAT1	Battery connector

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	GND	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.)

CN11: 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

CN14: Power LED Connector

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

CN13: Audio Amplifier Output Connector

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

Jumpers and Connectors (Cont.)

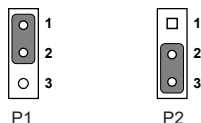
Jumper Settings

Jumper List

Jumper	Function
JP1	LCD power select
JP2	Enable power select
JP3	LVDS resolution select
JP4	LVDS PWM power select
JP5	COM pin 9 power select (COM 1 and 2)
JP6	Touch power select
PSON1	ATX/AT select
JCMOS1	RTC select

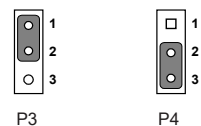
ATX/AT Select (PSON1)

(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 (JP6)

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



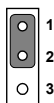
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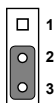
P6

LCD Power Select (JP1)

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



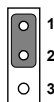
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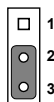
P8

Enable Power Select (JP2)

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



P9

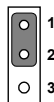


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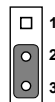
Jumpers and Connectors (Cont.)

LVDS PWM Power Select (JP4)

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



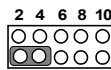
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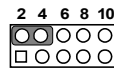
P12

COM Ring Select (JP5)

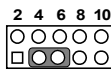
(1-3)/(2-4) P13/P14	COM 2/1 ring (default)
(3-5)/(4-6) P15/P16	COM 2/1 5V
(7-9)/(8-10) P17/P18	COM 2/1 12V



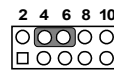
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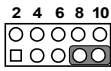
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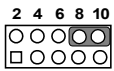
P15



P16



P17



P18