

**Wide Operating  
Temperature**



# EmETXe-i87M2

## Wide-temperature COM Express® Basic Type 6 CPU Module Quick Installation Guide

Version 1.1

### Form Factor

**COM Express® Basic Type  
6 CPU Module**

### CPU

**5<sup>th</sup> Generation Intel® Core™  
i7-5700EQ**

### Chipset

**Intel® PCH QM87**

### Video

**DDI/ Analog RGB/ 24-bit  
Dual Channels LVDS**

### LAN

**Intel® i218LM GbE PHY**

### Audio

**HD Audio Interface**

### I/O

**USB 2.0/ USB 3.0/ SATA/  
PCIe x1/ PCIe x16/**

## ◆ Technical Support

If you have any technical difficulties, please consult the user's manual first at:  
<http://arbor-technology.com/>

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

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

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



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COM Express supports seven pin-out Type applying to Basic and Extended form factors:

Module Type 1 and 10 support single connector with two rows of pins (220 pins)

Module Type 2, 3, 4, 5 and 6 support two connectors with four rows of pins (440 pins) Connector placement and most mounting holes have transparency between Form Factors.

The differences among the Module Type 6 and EmETXe-i87M2 are summarized in table below:

Module Type	Standard Type 6	EmETXe-i87M2
Connectors	2	2
Connector Rows	A, B, C, D	A, B, C, D
PCIe Lanes (Max)	24	23
LAN (Max)	1	1
Serial Ports (Max)	2	0
Digital Display I/F (Max)	3	3
USB 3.0 Ports (Max)	4	4

## Packing List

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



1 x EmETXe-i87M2 COM Express CPU Module



1 x Driver CD

1 x Quick Installation Guide

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

## Specifications

<b>System</b>	
CPU	Soldered onboard 5 <sup>th</sup> Generation Intel® Core™ i7-5700EQ 2.6GHz (Base) /3.4GHz (Turbo)
Memory	2 x DDR3L ECC SO-DIMM sockets, supporting 1600MHz up to 16GB SDRAM
Chipset	Intel® PCH QM87
BIOS	AMI® UEFI BIOS
Watchdog Timer	1~255 levels reset
<b>I/O</b>	
USB Port	12 x USB ports: - 8 x USB 2.0 ports - 4 x USB 3.0 ports
Storage	4 x Serial ATA ports: - 2 ports with 600MB/s HDD transfer rate - 2 ports with 300MB/s HDD transfer rate SATA RAID 0, 1, 5, 10 supported
Expansion Bus	1 x PCIe x16 Gen3 lanes
	7 x PCIe x1 Gen2 lanes
Ethernet Chipset	1 x Intel® i218LM GbE PHY
Audio	HD Audio link
<b>Display</b>	
Graphics Chipset	Integrated Intel® HD Gen 7.5
Graphics Interface	Analog RGB supports up to 1920x1200@60Hz
	LCD: Dual Channels 24-bit LVDS up to 1920 x 1200 @60Hz (OEM request)
	3 x DDI ports
<b>Mechanical &amp; Environmental</b>	
Power Requirement	+12V, 5VSB
Power Consumption	1.13A@12V, 0.31A@5V, 0.36A@3.3V with i7-5700EQ (Typical)
Operating Temp.	-40 ~ 85°C (-40 ~ 185°F)
Operating Humidity	0% ~ 95% @ 60°C (non-condensing)
Dimension (L x W)	125 x 95 mm (4.9" x 3.7")

## Ordering Information

<b>EmETXe-i87M2-5700EQ</b>	5 <sup>th</sup> Generation Intel® Core™ i7-5700EQ 2.6GHz (Base) /3.4GHz (Turbo)/ QM87 WT COM Express® CPU module
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## Optional Accessories

<b>HS-87M2-C2</b>	Cooler 125x95x34mm
<b>PBE-1702</b>	COM Express® Type 6 evaluation carrier board (ATX form factor)
<b>CBK-04-1702-00</b>	Cable Kit 1 x SATA cable 2 x COM-port cables 1 x USB cable

## Find Device Drivers on CD

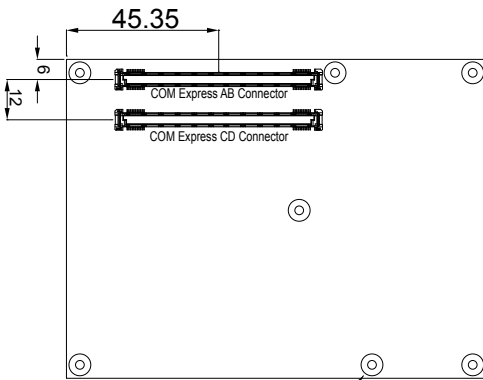
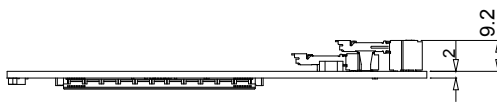
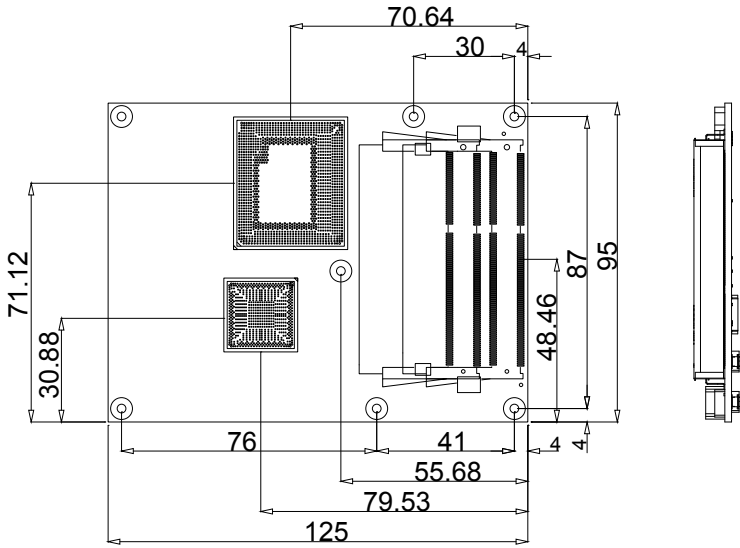
### Windows 7

Driver	Path
Chipset	\EmETXe-i87M2\Chipset\Chipset_10.1.1.7
Graphic	32bit: \EmETXe-i87M2\Graphic\32bit\Intel® Graphics Driver Production Version 15.40.8.4281
	64bit: \EmETXe-i87M2\Graphic\64bit\Intel® Graphics Driver Production Version 15.40.8.64.4281
Audio	32bit: \EmETXe-i87M2\Audio\32bit
	64bit: \EmETXe-i87M2\Audio\64bit
Ethernet	\EmETXe-i87M2\Ethernet\20_0_CD
ME	\EmETXe-i87M2\ME\ME9.0_5M_V9.0.13.1402
USB 3.0	\EmETXe-i87M2\USB3.0\Intel_USB_3.0_Driver_3.0.5.69

### Windows 8.1

Driver	Path
Chipset	\EmETXe-i87M2\Chipset\Chipset_10.1.1.7
Graphic	32bit: \EmETXe-i87M2\Graphic\32bit\Intel® Graphics Driver Production Version 15.40.8.4281
	64bit: \EmETXe-i87M2\Graphic\64bit\Intel® Graphics Driver Production Version 15.40.8.64.4281
Audio	32bit: \EmETXe-i87M2\Audio\32bit
	64bit: \EmETXe-i87M2\Audio\64bit
Ethernet	\EmETXe-i87M2\Ethernet\20_0_CD
ME	\EmETXe-i87M2\ME\ME9.0_5M_V9.0.13.1402

# Board Dimensions



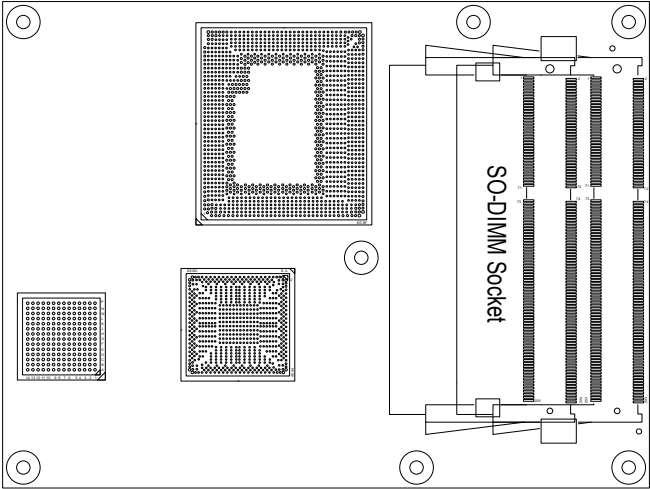
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Unit: mm

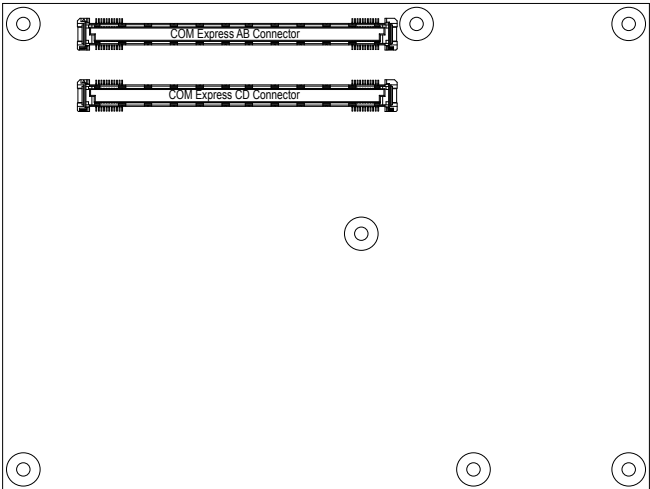
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# Connectors Quick Reference

## Top Side



## Bottom Side



## COM Express AB Connector (bottom side)

B1	GND (FIXED)	GND (FIXED)	A1	B56	PCIE_RX4-	PCIE_TX4-	A56
B2	GBE0_ACT#	GBE0_MDI3-	A2	B57	GPO2	GND	A57
B3	LPC_FRAME#	GBE0_MDI3+	A3	B58	PCIE_RX3+	PCIE_TX3+	A58
B4	LPC_AD0	GBE0_LINK100#	A4	B59	PCIE_RX3-	PCIE_TX3-	A59
B5	LPC_AD1	GBE0_LINK1000#	A5	B60	GND	GND	A60
B6	LPC_AD2	GBE0_MDI2-	A6	B61	PCIE_RX2+	PCIE_TX2+	A61
B7	LPC_AD3	GBE0_MDI2+	A7	B62	PCIE_RX2-	PCIE_TX2-	A62
B8	LPC_DRQ0#	N/C	A8	B63	GPO3	GPI1	A63
B9	LPC_DRQ1#	GBE0_MDI1-	A9	B64	PCIE_RX1+	PCIE_TX1+	A64
B10	LPC_CLK	GBE0_MDI1+	A10	B65	PCIE_RX1-	PCIE_TX1-	A65
B11	GND (FIXED)	GND (FIXED)	A11	B66	WAKE0#	GND	A66
B12	PWRBTN#	GBE0_MDI0-	A12	B67	WAKE1#	GPI2	A67
B13	SMB_CK	GBE0_MDI0+	A13	B68	PCIE_RX0+	PCIE_TX0+	A68
B14	SMB_DAT	GBE0_CTREF	A14	B69	PCIE_RX0-	PCIE_TX0-	A69
B15	SMB_ALERT#	SUS_S3#	A15	B70	GND	GND	A70
B16	SATA1_TX+	SATA0_TX+	A16	B71	LVDS_B0+	LVDS_A0+	A71
B17	SATA1_TX-	SATA0_TX-	A17	B72	LVDS_B0-	LVDS_A0-	A72
B18	SUS_STAT#	SUS_S4#	A18	B73	LVDS_B1+	LVDS_A1+	A73
B19	SATA1_RX+	SATA0_RX+	A19	B74	LVDS_B1-	LVDS_A1-	A74
B20	SATA1_RX-	SATA0_RX-	A20	B75	LVDS_B2+	LVDS_A2+	A75
B21	GND (FIXED)	GND (FIXED)	A21	B76	LVDS_B2-	LVDS_A2-	A76
B22	SATA3_TX+	SATA2_TX+	A22	B77	LVDS_B3+	LVDS_VDD_EN	A77
B23	SATA3_TX-	SATA2_TX-	A23	B78	LVDS_B3-	LVDS_A3+	A78
B24	PWR_OK	SUS_S5#	A24	B79	LVDS_BKLT_EN	LVDS_A3-	A79
B25	SATA3_RX+	SATA2_RX+	A25	B80	GND	GND	A80
B26	SATA3_RX-	SATA2_RX-	A26	B81	LVDS_B_CK+	LVDS_A_CK+	A81
B27	WDT	BATLOW#	A27	B82	LVDS_B_CK-	LVDS_A_CK-	A82
B28	AC_SDIN2	ATA_ACT#	A28	B83	CKLVDS_BKLT_CTRL	LVDS_I2C_CK	A83
B29	AC_SDIN1	AC_SYNC	A29	B84	VCC_5V_SBY	LVDS_I2C_DAT	A84
B30	AC_SDINO	AC_RST#	A30	B85	VCC_5V_SBY	GPI3	A85
B31	GND	GND	A31	B86	VCC_5V_SBY	RSV4	A86
B32	SPKR	AC_BITCLK	A32	B87	VCC_5V_SBY	RSV3	A87
B33	I2C_CK	AC_SDOUT	A33	B88	BIOS_DIS1#	PCIE0_CK_REF+	A88
B34	I2C_DAT	BIOS_DISABLE0#	A34	B89	VGA_RED	PCIE0_CK_REF-	A89
B35	THRM#	THRMTRIP#	A35	B90	GND	GND	A90
B36	USB7-	USB6-	A36	B91	VGA_GRN	SPI_POWER	A91
B37	USB7+	USB6+	A37	B92	VGA_BLU	SPI_MISO	A92
B38	USB_4_5_OC#	USB_6_7_OC#	A38	B93	VGA_HSYNC	GPO0	A93
B39	USB5-	USB4-	A39	B94	VGA_VSYNC	SPI_CLK	A94
B40	USB5+	USB4+	A40	B95	VGA_I2C_CK	SPI_MOSI	A95
B41	GND	GND	A41	B96	VGA_I2C_DAT	TPM_PP	A96
B42	USB3-	USB2-	A42	B97	SPI_CS#	TYPE10#	A97
B43	USB3+	USB2+	A43	B98	RSV2	(N/C)SERR0_TX	A98
B44	USB_0_1_OC#	USB_2_3_OC#	A44	B99	RSV1	(N/C)SERR0_RX	A99
B45	USB1-	USB0-	A45	B100	GND	GND	A100
B46	USB1+	USB0+	A46	B101	FAN_PWMOUT	(N/C)SERR1_TX	A101
B47	EXCD1_PERST#	VCC_RTC	A47	B102	FAN_TACHIN	(N/C)SERR1_RX	A102
B48	EXCD1_CPPE#	EXCD0_PERST#	A48	B103	SLEEP#	LID#	A103
B49	SYS_RESET#	EXCD0_CPPE#	A49	B104	VCC_12V	VCC_12V	A104
B50	CB_RESET#	LPC_SERIRQ	A50	B105	VCC_12V	VCC_12V	A105
B51	GND	GND	A51	B106	VCC_12V	VCC_12V	A106
B52	PCIE_RX5+	PCIE_TX5+	A52	B107	VCC_12V	VCC_12V	A107
B53	PCIE_RX5-	PCIE_TX5-	A53	B108	VCC_12V	VCC_12V	A108
B54	GPO1	GPI0	A54	B109	VCC_12V	VCC_12V	A109
B55	PCIE_RX4+	PCIE_TX4+	A55	B110	GND	GND	A110

## COM Express CD Connector (bottom side)

D1	GND (FIXED)	GND (FIXED)	C1	D56	PEG_TX1-	PEG_RX1-	C56
D2	GND	GND	C2	D57	TYPE2#	TYPE1#	C57
D3	USB_SSTX0-	USB_SSRX0-	C3	D58	PEG_TX2+	PEG_RX2+	C58
D4	USB_SSTX0+	USB_SSRX0+	C4	D59	PEG_TX2-	PEG_RX2-	C59
D5	GND	GND	C5	D60	GND (FIXED)	GND (FIXED)	C60
D6	USB_SSTX1-	USB_SSRX1-	C6	D61	PEG_TX3+	PEG_RX3+	C61
D7	USB_SSTX1+	USB_SSRX1+	C7	D62	PEG_TX3-	PEG_RX3-	C62
D8	GND	GND	C8	D63	RSVD	RSVD	C63
D9	USB_SSTX2-	USB_SSRX2-	C9	D64	RSVD	RSVD	C64
D10	USB_SSTX2+	USB_SSRX2+	C10	D65	PEG_TX4+	PEG_RX4+	C65
D11	GND (FIXED)	GND (FIXED)	C11	D66	PEG_TX4-	PEG_RX4-	C66
D12	USB_SSTX3-	USB_SSRX3-	C12	D67	GND	RSVD	C67
D13	USB_SSTX3+	USB_SSRX3+	C13	D68	PEG_TX5+	PEG_RX5+	C68
D14	GND	GND	C14	D69	PEG_TX5-	PEG_RX5-	C69
D15	DDI1_CTRLCLK_AUX+	(N/C)DDI1_PAIR6+	C15	D70	GND (FIXED)	GND (FIXED)	C70
D16	DDI1_CTRLCLK_AUX-	(N/C)DDI1_PAIR6-	C16	D71	PEG_TX6+	PEG_RX6+	C71
D17	RSVD	RSVD	C17	D72	PEG_TX6-	PEG_RX6-	C72
D18	RSVD	RSVD	C18	D73	GND	GND	C73
D19	PCIE_TX6+	PCIE_RX6+	C19	D74	PEG_TX7+	PEG_RX7+	C74
D20	PCIE_TX6-	PCIE_RX6-	C20	D75	PEG_TX7-	PEG_RX7-	C75
D21	GND(FIXED)	GND(FIXED)	C21	D76	GND	GND	C76
D22	PCIE_TX7+ (N/C)	(N/C)PCIE_RX7+	C22	D77	RSVD	RSVD	C77
D23	PCIE_TX7- (N/C)	(N/C)PCIE_RX7-	C23	D78	PEG_TX8+	PEG_RX8+	C78
D24	RSVD	DDI1_HPD	C24	D79	PEG_TX8-	PEG_RX8-	C79
D25	RSVD	(N/C)DDI1_PAIR4+	C25	D80	GND (FIXED)	GND (FIXED)	C80
D26	DDI1_PAIR0+SDV0_RED+	(N/C)DDI1_PAIR4-	C26	D81	PEG_TX9+	PEG_RX9+	C81
D27	DDI1_PAIR0-	RSVD	C27	D82	PEG_TX9-	PEG_RX9-	C82
D28	RSVD	RSVD	C28	D83	RSVD	RSVD	C83
D29	DDI1_PAIR1+	(N/C)DDI1_PAIR5+	C29	D84	GND	GND	C84
D30	DDI1_PAIR1-	(N/C)DDI1_PAIR5-	C30	D85	PEG_TX10+	PEG_RX10+	C85
D31	GND(FIXED)	GND (FIXED)	C31	D86	PEG_TX10-	PEG_RX10-	C86
D32	DDI1_PAIR2+	DDI2_CTRLCLK_AUX+	C32	D87	GND	GND	C87
D33	DDI1_PAIR2-	DDI2_CTRLCLK_AUX-	C33	D88	PEG_TX11+	PEG_RX11+	C88
D34	DDI1_DDC_AUX_SEL	DDI2_DDC_AUX_SEL	C34	D89	PEG_TX11-	PEG_RX11-	C89
D35	RSVD	RSVD	C35	D90	GND (FIXED)	GND (FIXED)	C90
D36	DDI1_PAIR3+	DDI3_CTRLCLK_AUX+	C36	D91	PEG_TX12+	PEG_RX12+	C91
D37	DDI1_PAIR3-	DDI3_CTRLCLK_AUX-	C37	D92	PEG_TX12-	PEG_RX12-	C92
D38	RSVD	DDI3_DDC_AUX_SEL	C38	D93	GND	GND	C93
D39	DDI1_PAIR0+	DDI3_PAIR0+	C39	D94	PEG_TX13+	PEG_RX13+	C94
D40	DDI1_PAIR0-	DDI3_PAIR0-	C40	D95	PEG_TX13-	PEG_RX13-	C95
D41	GND(FIXED)	GND(FIXED)	C41	D96	GND	GND	C96
D42	DDI1_PAIR1+	DDI3_PAIR1+	C42	D97	RSVD	RSVD	C97
D43	DDI1_PAIR1-	DDI3_PAIR1-	C43	D98	PEG_TX14+	PEG_RX14+	C98
D44	DDI2_HPD	DDI3_HPD	C44	D99	PEG_TX14-	PEG_RX14-	C99
D45	RSVD	RSVD	C45	D100	GND (FIXED)	GND (FIXED)	C100
D46	DDI2_PAIR2+	DDI3_PAIR2+	C46	D101	PEG_TX15+	PEG_RX15+	C101
D47	DDI2_PAIR2-	DDI3_PAIR2-	C47	D102	PEG_TX15-	PEG_RX15-	C102
D48	RSVD	RSVD	C48	D103	GND	GND	C103
D49	DDI2_PAIR3+	DDI3_PAIR3+	C49	D104	VCC_12V	VCC_12V	C104
D50	DDI2_PAIR3-	DDI3_PAIR3-	C50	D105	VCC_12V	VCC_12V	C105
D51	GND (FIXED)	GND (FIXED)	C51	D106	VCC_12V	VCC_12V	C106
D52	PEG_TX0+	PEG_RX0+	C52	D107	VCC_12V	VCC_12V	C107
D53	PEG_TX0-	PEG_RX0-	C53	D108	VCC_12V	VCC_12V	C108
D54	PEG_LANE_RV#	TYPE0#	C54	D109	VCC_12V	VCC_12V	C109
D55	PEG_TX1+	PEG_RX1+	C55	D110	GND (FIXED)	GND (FIXED)	C110