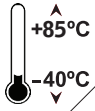
Wide Operating Temperature



EmETXe-i89M0

COM Express® Basic Type 6 CPU Module

Quick Installation Guide

Version 1.1

Form Factor	CPU	Video
COM Express® Basic Type 6 CPU Module	*6th Generation Intel® Core™ i7-6822EQ*	*24-bit Dual Channels LVDS/ DDI*

LAN	Audio	I/O
Intel® i219LM PCIe GbE PHY with iAMT	*HD Audio Link*	*USB 2.0 / SATA/ PCIe/ I2C/ GPIO/UART*

♦ Technical Support

If you have any technical difficulties, please consult the user's manual first on our website.

https://www.arbor-technology.com

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

E-mail: 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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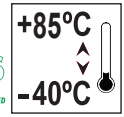


COM Express supports seven pin-out Type applying to Basic and Extended form factors:
Module Type 1 and 10 support single connector with two rows of pins (220 pins)
Module Type 2, 3, 4, 5 and 6 support two connectors with four rows of pins (440 pins) Connector placement and most mounting holes have transparency between Form Factors.
The differences among the Module Type 6 and EmETXe-i89M0 are summarized in table below:

Module Type	Standard Type 6	EmETXe-i89M0
Connectors	2	2
Connector Rows	A, B, C, D	A, B, C, D
PCIe Lanes (Max)	24	24
LAN (Max)	1	1
Serial Ports (Max)	2	2
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-i89M0 COM Express CPU Module

1 x Quick Installation Guide

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

Specifications

System	
CPU	Soldered onboard 6th Generation Intel® Core™ i7-6822EQ 2.0GHz (Base) / 2.8GHz (Turbo)
Chipset	Intel® PCH QM170
Memory	2 x DDR4-RS SO-DIMM sockets
BIOS	AMI UEFI BIOS
Watchdog Timer	1~255 levels reset
I/O	
USB Port	8 x USB 2.0 ports
	4 x USB SuperSpeed ports
Serial Port	2 x UART ports (RX/TX only)
Storage	4 x Serial ATA ports with 600MB/s HDD transfer rate
Expansion Bus	8 x PCIex1 lanes, 1 x PCIex16 lane,I2C Interface,GPIO
Ethernet Chipset	1 x Intel® i219LM PCIe GbE PHY with iAMT
Audio	HD audio link
TPM	TPM supported (OEM request)
Display	
Graphics Chipset	Intergrated Intel® HD Graphics 530
Graphics Interface	LCD: Dual Channels 24-bit LVDS
	3 x DDI ports
Mechanical & Environmental	
Power Requirement	5V~20V +/- 5% wide range voltage input, +5VSB
Power Consumption	2.58A@12V(i7-6822EQ typical)
Operating Temp.	-40 ~ 85°C (-40 ~ 185°F)
Operating Humidity	10 ~ 95% @ 85ºC (non-condensing)
Dimension (L x W)	125 x 95 mm (4.9” x 3.7”)

Ordering Information

EmETXe-i89M0-6822EQ	6th Generation Intel® Core™ i7-6822EQ 2.0GHz (Base) / 2.8GHz (Turbo) COM Express® Compact Type 6 WT CPU module

Optional Accessories

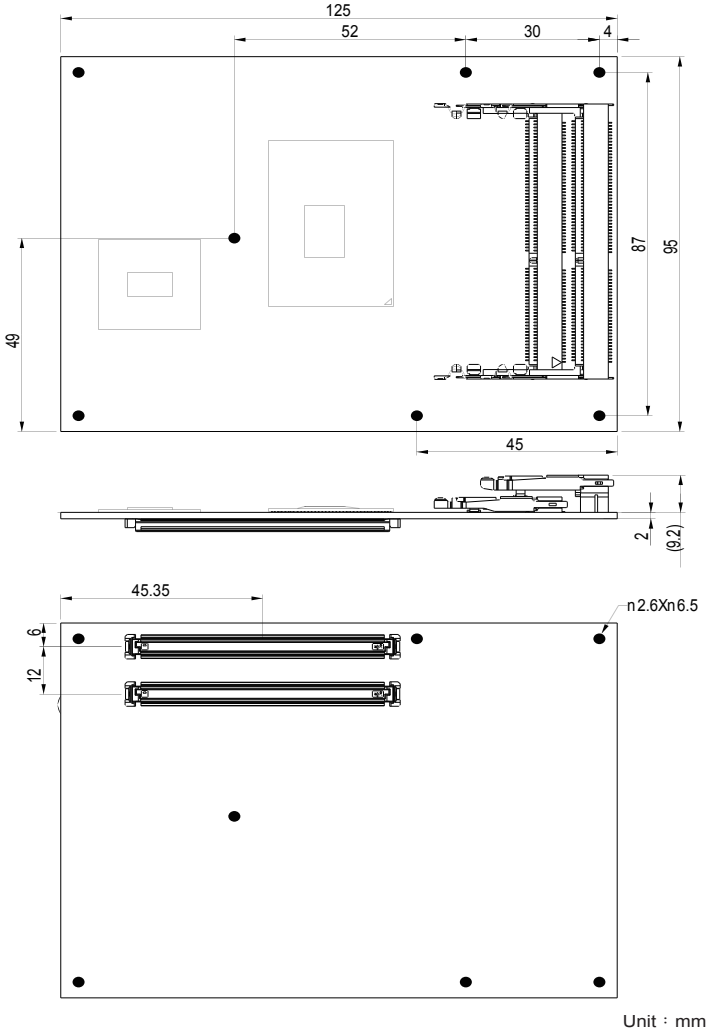
HS-89M0-F1	Heat spreader, threaded standoffs (bore hole) (125x95x18mm)
HS-89M0-C1	Heat sink with FAN 125x95x39.7mm
PBE-1705-F1	COM Express® Type 6 evaluation carrier board with SIO F71869ED module in ATX form factor
CBK-03-1705-00	Cable kit • 1 x SATA cable • 2 x COM Flat cables

Driver Installation

The CPU module supports Windows 8.1 and 10. To install the drivers, please go to our website at **www.arbor-technology.com** and download the driver pack from the product page. Then unzip the downloaded file and follow the sequence below to install the drivers: **Chipset → Graphic → Audio → other drivers**

Driver	Path
Chipset	\i89X\Chipset\Chipset_10.1.1.13_Public
Graphic	\i89X\Graphic\IntelR Graphics Driver Production Version 15.40.16.64.4364
Audio	\i89X\Audio\7687_PG436_Win10_Win8.1_WHQLx64
Ethernet	\i89X\Ethernet
USB3.0	\i89X\USB3.0\win8.1 64bit\Intel_USB_3.0_xHC_Adaptation_Driver_MR1_Release_1.0.1.45_PV **(For Win 8.1 only)**
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

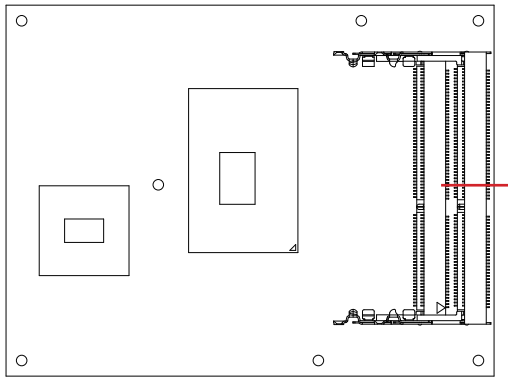
Board Dimensions



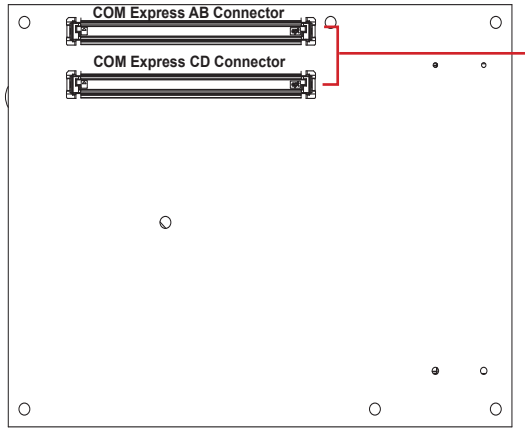
Unit：mm

Connectors Quick Reference

Top Side



Bottom Side



COM Express AB Connector (bottom side)

B1	GND (FIXED)	GND (FIXED)	A1
B2	GBE0_ACT#	GBE0_MDI3-	A2
B3	LPC_FRAME#	GBE0_MDI3+	A3
B4	LPC_AD0	GBE0_LINK100#	A4
B5	LPC_AD1	GBE0_LINK1000#	A5
B6	LPC_AD2	GBE0_MDI2-	A6
B7	LPC_AD3	GBE0_MDI2+	A7
B8	LPC_DRQ0#	GBE0_LINK#	A8
B9	LPC_DRQ1#	GBE0_MDI1-	A9
B10	LPC_CLK	GBE0_MDI1+	A10
B11	GND (FIXED)	GND (FIXED)	A11
B12	PWRBTN#	GBE0_MDI0-	A12
B13	SMB_CK	GBE0_MDI0+	A13
B14	SMB_DAT	GBE0_CTREF	A14
B15	SMB_ALERT#	SUS_S3#	A15
B16	SATA1_TX+	SATA0_TX+	A16
B17	SATA1_TX-	SATA0_TX-	A17
B18	SUS_STAT#	SUS_S4#	A18
B19	SATA1_RX+	SATA0_RX+	A19
B20	SATA1_RX-	SATA0_RX-	A20
B21	GND (FIXED)	GND (FIXED)	A21
B22	SATA3_TX+	SATA2_TX+	A22
B23	SATA3_TX-	SATA2_TX-	A23
B24	PWR_OK	SUS_S5#	A24
B25	SATA3_RX+	SATA2_RX+	A25
B26	SATA3_RX-	SATA2_RX-	A26
B27	WDT	BATLOW#	A27
B28	N/C	SATA_ACT#	A28
B29	AC_SDIN1	AC_SYNC	A29
B30	AC_SDIN0	AC_RST#	A30
B31	GND	GND	A31
B32	SPKR	AC_BITCLK	A32
B33	I2C_CK	AC_SDOUT	A33
B34	I2C_DAT	BIOS_DISABLE0#	A34
B35	THRM#	THRMTRIP#	A35
B36	USB7-	USB6-	A36
B37	USB7+	USB6+	A37
B38	USB_4_5_OC#	USB_6_7_OC#	A38
B39	USB5-	USB4-	A39
B40	USB5+	USB4+	A40
B41	GND	GND	A41
B42	USB3-	USB2-	A42
B43	USB3+	USB2+	A43
B44	USB_0_1_OC#	USB_2_3_OC#	A44
B45	USB1-	USB0-	A45
B46	USB1+	USB0+	A46
B47	EXCD1_PERST#	VCC_RTC	A47
B48	EXCD1_CPPE#	EXCD0_PERST#	A48
B49	SYS_RESET#	EXCD0_CPPE#	A49
B50	CB_RESET#	LPC_SERIRQ	A50
B51	GND	GND	A51
B52	PCIE_RX10+	PCIE_TX5+	A52
B53	PCIE_RX10-	PCIE_TX5-	A53
B54	DIO_5	DIO_0	A54
B55	PCIE_RX9+	PCIE_TX9+	A55

B56	PCIE_RX9-	PCIE_TX9-	A56
B57	DIO_6	GND	A57
B58	PCIE_RX4+	PCIE_TX4+	A58
B59	PCIE_RX4-	PCIE_TX4-	A59
B60	GND	GND	A60
B61	PCIE_RX3+	PCIE_TX3+	A61
B62	PCIE_RX3-	PCIE_TX3-	A62
B63	DIO_7	GPI1	A63
B64	PCIE_RX2+	PCIE_TX2+	A64
B65	PCIE_RX2-	PCIE_TX2-	A65
B66	PCH_WAKE0#	GND	A66
B67	EC_WAKE1#	GPI2	A67
B68	PCIE_RX1+	PCIE_TX1+	A68
B69	PCIE_RX1-	PCIE_TX1-	A69
B70	GND	GND	A70
B71	LVDS_B0+	LVDS_A0+	A71
B72	LVDS_B0-	LVDS_A0-	A72
B73	LVDS_B1+	LVDS_A1+	A73
B74	LVDS_B1-	LVDS_A1-	A74
B75	LVDS_B2+	LVDS_A2+	A75
B76	LVDS_B2-	LVDS_A2-	A76
B77	LVDS_B3+	LVDS_VDD_EN	A77
B78	LVDS_B3-	LVDS_A3+	A78
B79	LVDS_BKLT_EN	LVDS_A3-	A79
B80	GND	GND	A80
B81	LVDS_B_CK+	LVDS_A_CK+	A81
B82	LVDS_B_CK-	LVDS_A_CK-	A82
B83	LVDS_BKLT_CTRL	LVDS_I2C_CK	A83
B84	VCC_5V_SBY	LVDS_I2C_DAT	A84
B85	VCC_5V_SBY	DIO_3	A85
B86	VCC_5V_SBY	RSVD	A86
B87	VCC_5V_SBY	RSVD	A87
B88	BIOS_DISABLE1#	PCIE_CLK+	A88
B89	N/C	PCIE_CLK-	A89
B90	GND	GND	A90
B91	N/C	SPI_POWER	A91
B92	N/C	SPI_MISO	A92
B93	N/C	GPO0	A93
B94	N/C	SPI_CLK	A94
B95	N/C	SPI_MOSI	A95
B96	N/C	TPM_PP	A96
B97	SPI_CS#	N/C	A97
B98	N/C	UART_TX0	A98
B99	N/C	UART_RX0	A99
B100	GND	GND	A100
B101	FAN_PWMOUT	UART_TX1	A101
B102	FAN_TACHIN	UART_RX1	A102
B103	SLEEP#	LID#	A103
B104	VCC_12V	VCC_12V	A104
B105	VCC_12V	VCC_12V	A105
B106	VCC_12V	VCC_12V	A106
B107	VCC_12V	VCC_12V	A107
B108	VCC_12V	VCC_12V	A108
B109	VCC_12V	VCC_12V	A109
B110	GND	GND	A110

COM Express CD Connector (bottom side)

D1	GND (FIXED)	GND (FIXED)	C1
D2	GND	GND	C2
D3	USB_SSTX0-	USB_SSRX0-	C3
D4	USB_SSTX0+	USB_SSRX0+	C4
D5	GND	GND	C5
D6	USB_SSTX1-	USB_SSRX1-	C6
D7	USB_SSTX1+	USB_SSRX1+	C7
D8	GND	GND	C8
D9	USB_SSTX2-	USB_SSRX2-	C9
D10	USB_SSTX2+	USB_SSRX2+	C10
D11	GND (FIXED)	GND (FIXED)	C11
D12	USB_SSTX3-	USB_SSRX3-	C12
D13	USB_SSTX3+	USB_SSRX3+	C13
D14	GND	GND	C14
D15	DDI1_CTRLCLK_AUX+	N/C	C15
D16	DDI1_CTRLCLK_AUX-	N/C	C16
D17	N/C	N/C	C17
D18	N/C	N/C	C18
D19	PCIE_TX11+	PCIE_RX11+	C19
D20	PCIE_TX11-	PCIE_RX11-	C20
D21	GND(FIXED)	GND(FIXED)	C21
D22	PCIE_TX12+	PCIE_RX12+	C22
D23	PCIE_TX12-	PCIE_RX12-	C23
D24	N/C	DDI1_HPD	C24
D25	N/C	N/C	C25
D26	DDI1_PAIR0+	N/C	C26
D27	DDI1_PAIR0-	N/C	C27
D28	N/C	N/C	C28
D29	DDI1_PAIR1+	N/C	C29
D30	DDI1_PAIR1-	N/C	C30
D31	GND(FIXED)	GND (FIXED)	C31
D32	DDI1_PAIR2+	DDI2_CTRLCLK_AUX+	C32
D33	DDI1_PAIR2-	DDI2_CTRLDATA_AUX-	C33
D34	DDI1_DDC_AUX_SEL	DDI2_DDC_AUX_SEL	C34
D35	N/C	N/C	C35
D36	DDI1_PAIR3+	DDI3_CTRLCLK_AUX+	C36
D37	DDI1_PAIR3-	DDI3_CTRLDATA_AUX-	C37
D38	N/C	DDI3_DDC_AUX_SEL	C38
D39	DDI2_PAIR0+	DDI3_PAIR0+	C39
D40	DDI2_PAIR0-	DDI3_PAIR0-	C40
D41	GND(FIXED)	GND(FIXED)	C41
D42	DDI2_PAIR1+	DDI3_PAIR1+	C42
D43	DDI2_PAIR1-	DDI3_PAIR1-	C43
D44	DDI2_HPD	DDI3_HPD	C44
D45	N/C	N/C	C45
D46	DDI2_PAIR2+	DDI3_PAIR2+	C46
D47	DDI2_PAIR2-	DDI3_PAIR2-	C47
D48	N/C	N/C	C48
D49	DDI2_PAIR3+	DDI3_PAIR3+	C49
D50	DDI2_PAIR3-	DDI3_PAIR3-	C50
D51	GND (FIXED)	GND (FIXED)	C51
D52	PEG_TX0+	PEG_RX0+	C52
D53	PEG_TX0-	PEG_RX0-	C53
D54	PEG_LANE_RV#	N/C	C54
D55	PEG_TX1+	PEG_RX1+	C55

D56	PEG_TX1-	PEG_RX1-	C56
D57	TYPE2#	N/C	C57
D58	PEG_TX2+	PEG_RX2+	C58
D59	PEG_TX2-	PEG_RX2-	C59
D60	GND (FIXED)	GND (FIXED)	C60
D61	PEG_TX3+	PEG_RX3+	C61
D62	PEG_TX3-	PEG_RX3-	C62
D63	N/C	N/C	C63
D64	N/C	N/C	C64
D65	PEG_TX4+	PEG_RX4+	C65
D66	PEG_TX4-	PEG_RX4-	C66
D67	GND	N/C	C67
D68	PEG_TX5+	PEG_RX5+	C68
D69	PEG_TX5-	PEG_RX5-	C69
D70	GND (FIXED)	GND (FIXED)	C70
D71	PEG_TX6+	PEG_RX6+	C71
D72	PEG_TX6-	PEG_RX6-	C72
D73	GND	GND	C73
D74	PEG_TX7+	PEG_RX7+	C74
D75	PEG_TX7-	PEG_RX7-	C75
D76	GND	GND	C76
D77	N/C	N/C	C77
D78	PEG_TX8+	PEG_RX8+	C78
D79	PEG_TX8-	PEG_RX8-	C79
D80	GND (FIXED)	GND (FIXED)	C80
D81	PEG_TX9+	PEG_RX9+	C81
D82	PEG_TX9-	PEG_RX9-	C82
D83	N/C	N/C	C83
D84	GND	GND	C84
D85	PEG_TX10+	PEG_RX10+	C85
D86	PEG_TX10-	PEG_RX10-	C86
D87	GND	GND	C87
D88	PEG_TX11+	PEG_RX11+	C88
D89	PEG_TX11-	PEG_RX11-	C89
D90	GND (FIXED)	GND (FIXED)	C90
D91	PEG_TX12+	PEG_RX12+	C91
D92	PEG_TX12-	PEG_RX12-	C92
D93	GND	GND	C93
D94	PEG_TX13+	PEG_RX13+	C94
D95	PEG_TX13-	PEG_RX13-	C95
D96	GND	GND	C96
D97	N/C	N/C	C97
D98	PEG_TX14+	PEG_RX14+	C98
D99	PEG_TX14-	PEG_RX14-	C99
D100	GND (FIXED)	GND (FIXED)	C100
D101	PEG_TX15+	PEG_RX15+	C101
D102	PEG_TX15-	PEG_RX15-	C102
D103	GND	GND	C103
D104	VCC_12V	VCC_12V	C104
D105	VCC_12V	VCC_12V	C105
D106	VCC_12V	VCC_12V	C106
D107	VCC_12V	VCC_12V	C107
D108	VCC_12V	VCC_12V	C108
D109	VCC_12V	VCC_12V	C109
D110	GND (FIXED)	GND (FIXED)	C110