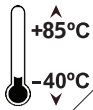


**Wide Operating
Temperature**



EmCORE-i90U2

3.5" Compact Board
Quick Installation Guide

Version 1.0

Form Factor <i>3.5" Compact Board</i>	CPU <i>Soldered onboard 7th Generation Intel[®] Core™ Processor</i>	Video <i>Dual Channel 24-bit LVDS/ HDMI/ DisplayPort</i>
I/O <i>SATA/ USB 3.0/ USB 2.0/ SIM/ COM/ M.2 B-Key, E-Key</i>	LAN <i>1 x Intel[®] i219LM PCIe PHY 4 x Intel[®] i210IT PCIe GbE w/ PoE IEEE 802.3af</i>	Audio <i>Realtek ALC269 HD Audio CODEC, MIC-in/ Line-out/ Line-in</i>

◆ Technical Support

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

Contact our customer service at the following addresses if your problem persists.
E-mail: info@arbor.com.tw

◆ Declaration of Conformity

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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4041900201100P

Packing List

Before starting with the installation, make sure the following items are shipped:



1 x EmCORE-i90U2 3.5" Compact Board w/ Cooler



1 x Quick Installation Guide

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

Ordering Information

EmCORE-i90U2-WT-7600U	7th Generation Intel® Core™ i7-7600U 3.5" compact board
EmCORE-i90U2-WT-7300U	7th Generation Intel® Core™ i5-7300U 3.5" compact board
EmCORE-i90U2-WT-7100U	7th Generation Intel® Core™ i3-7100U 3.5" compact board

Optional Accessories

CBK-09-90U2-00	Cable kit 1 x Audio cable 1 x SATA cable 1 x SATA power cable 2 x USB 2.0 cables 4 x COM cables
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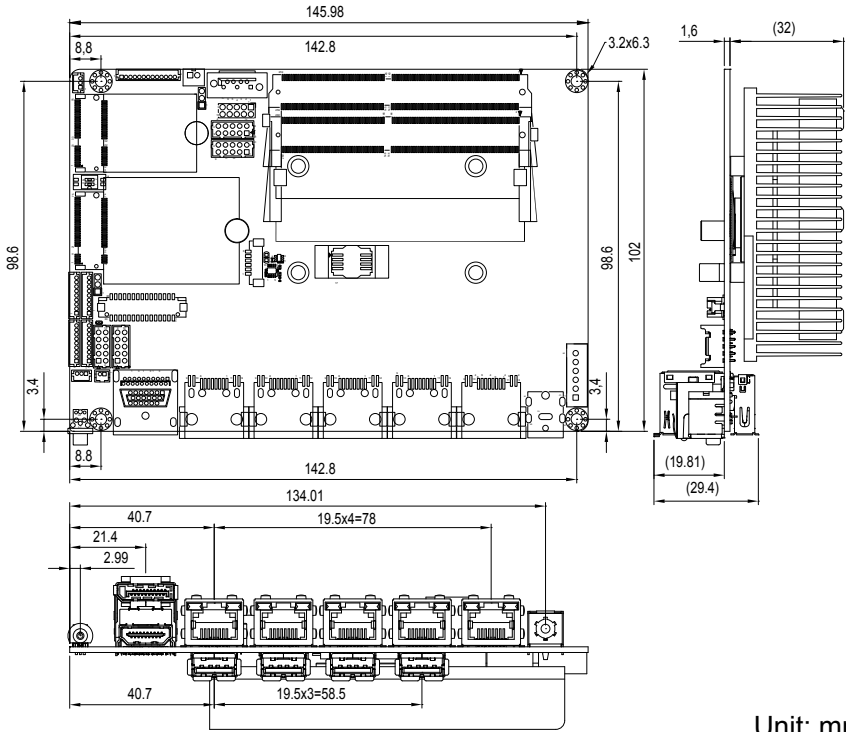
Driver Installation (6.8A)

To install the drivers, please visit our website at www.arbor-technology.com and download the driver pack from the product page.

The driver path is listed as below:

Driver	Path
Chipset	\\EmETXe-i90x0\Chipset
Graphic	\\EmETXe-i90x0\Graphic\win64
Audio	\\EmETXe-i90x0\Audio\Win10_Win8.1_Win8_Win7_WHQLx64
Ethernet	\\EmETXe-i90x0\Ethernet
ME	\\EmETXe-i90x0\ME
RST	\\EmETXe-i90x0\RST\SetupRST

Board Dimensions



Unit: mm

Specifications

Form Factor	3.5" Compact Board
CPU	Soldered onboard 7th Gen. Intel® Core™ Processor i7-7600U 2.8GHz/ 3.4GHz, i5-7300U 2.6GHz/2.8GHz, i3-7100U 2.4GHz
Memory	2 x DDR4 SO-DIMM sockets, supporting 2133/1866MHz SDRAM up to 32GB
BIOS	AMI UEFI BIOS
TPM	Support TPM 1.2 SLB9660 & 2.0 SLB9665 function onboard (OEM request)
Watchdog Timer	1~255 levels reset
Super I/O	Fintek F81866
USB Port	4 x USB 3.0/2.0 ports 4 x USB 2.0 ports
Serial Port	4 x RS-232/422/485 selectable
Expansion	1 x M.2 E-key (2230) socket for Wi-Fi module
	1 x NANO SIM socket
	4 x PCIe x1 lanes or 1 x PCIe x4 with FFC connector (OEM request)
Storage	1 x Serial ATA port with 600MB/s HDD transfer rate
	1 x M.2 B-key (2242) socket for SATA SSD or LTE, depending on module
Ethernet Chipset	1 x Intel® i219LM PCIe PHY controller
	4 x Intel® i210IT PCIe GbE controllers supporting 802.3af PoE
Digital I/O	8-bit Programmable
Audio	Realtek® ALC269 5.1 Channel HD Audio CODEC, Mic-in/ Line-in/ Line-out
Graphic Chipset	Integrated Intel® HD Graphics 620
Graphic Interface	Dual Channel 24-bit LVDS
	1 x DisplayPort 1.2
	1 x HDMI 1.4 port
OS Support	Windows 10 64-bit, Linux Ubuntu
Power Requirement	9~15V or 15~36V DC-In (configurable via DIP switch)
Power Consumption	19V, 3.16A (i7-7600U, full loading w/ PoE)
	19V, 3.15A (i5-7300U, full loading w/ PoE)
Operating Temp.	-40 ~ 85°C (-40 ~ 185°F)
Operating Humidity	10 ~ 95% @ 85°C (non-condensing)
Dimensions (L x W)	146 x 102 mm (5.7" x 4.0")

Jumpers & Connectors Quick Reference

Jumpers

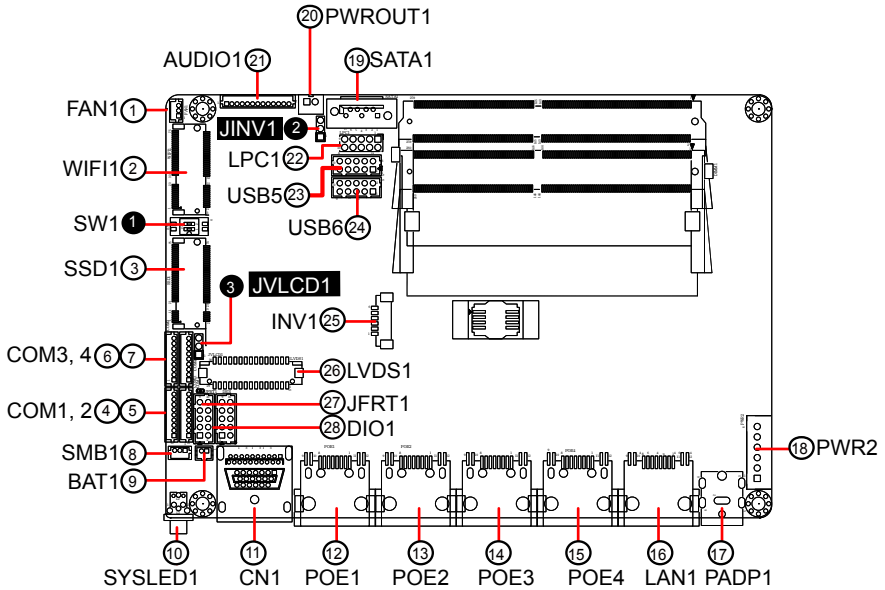
Jumper	Description
① SW1	Power mode selection
② JINV1	LCD inverter voltage selection
③ JVLCD1	LCD panel voltage selection

Connectors

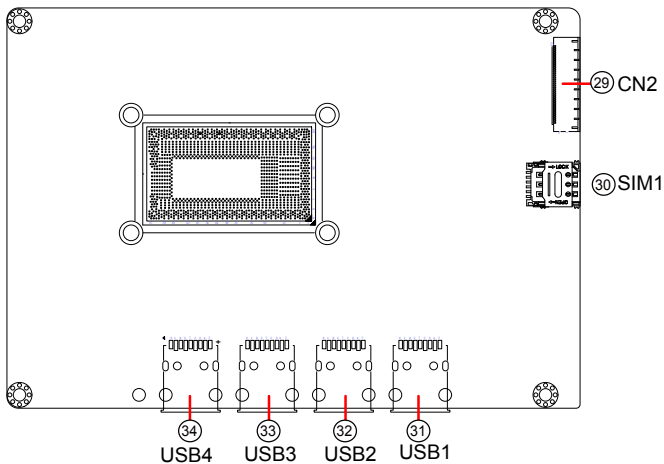
Connector	Description
① FAN1	CPU fan connector
② WIFI1	M.2 E-Key socket
③ SSD1	M.2 B-Key socket
④~⑦ COM1-4	Serial port connectors
⑧ SMB1	SMBus connector
⑨ BAT1	Battery connector
⑩ SYSLED1	Power button & power on indicator
⑪ CN1	DisplayPort & HDMI connector
⑫~⑮ POE1~4	PoE connectors
⑯ LAN1	GgE connector
⑰ PADP1	9-36V DC power input connector (Option 1)
⑱ PWR2	9-36V DC power input connector (Option 2)
⑲ SATA1	Serial ATA connector
⑳ PWROUT1	SATA power connector
㉑ AUDIO1	Audio connector
㉒ LPC1	Low pin count connector (for internal test)
㉓㉔ USB5, 6	USB 2.0 connectors
㉕ INV1	LCD inverter connector
㉖ LVDS1	LVDS LCD panel connector
㉗ JFRT1	Front-panel connector
㉘ DIO1	Digital I/O connector
㉙ CN2	1x PCIe x4 or 4 x PCIe x1 FPC connector (OEM request)
㉚ SIM1	NANO SIM card socket
㉛~㉜ USB1~4	USB 3.0 connectors

Jumper & Connector Locations

Board Top



Board Bottom



Jumpers

① SW1: Power mode selection

Caution: When setting this jumper, make sure the motherboard is disconnected from the power.

Mode	Description
Pin 1	Input & LVDS inverter power selection
On	15~36V power input When JINV1 = 1-2, INV1 Pin 1, 2 = 12V
Off	9~15V power input (default) When JINV1 = 1-2, INV1 Pin 1, 2 = 6.8V
Pin 2	AT/ATX power mode selection
On	AT mode
Off	ATX mode (default)



② JINV1: LCD inverter voltage selection

Jumper type: 2.00mm pitch 1x3-pin header

Pin	Description
1-2	+12V, when SW1 Pin1 = On (default) +6.8V, when SW1 Pin1 = Off
2-3	+5V



③ JVLCD1: LCD panel voltage selection

Jumper type: 2.00mm pitch 1x3-pin header

Pin	Description
1-2	+5V
2-3	+3.3V (default)



Connectors

① FAN1: CPU Fan Connector

Connector type: 1.25mm pitch 1x3-pin wafer connector.

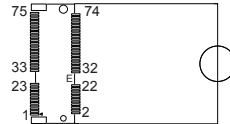
Pin	Description
1	GND
2	VCC
3	RPM



② WIFI1: M.2 E-Key socket

Connector Type: M.2 socket for E-Key 22x30 type to support WiFi module

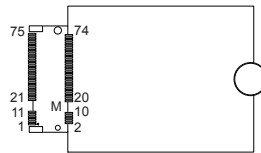
The pin assignments conform to the industry standard.



③ SSD1: M.2 B-Key socket

Connector Type: M.2 socket for B-Key 22x42 type to support SATA SSD or LTE depending on module

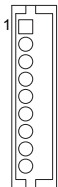
The pin assignments conform to the industry standard.



④ ⑤ ⑥ ⑦ COM1-4: RS-232/422/485 Serial port connectors (mode selection via BIOS)

Connector type: 1.25mm pitch 1x9-pin wafer connector

Pin	Description		
	RS-232	RS-422	RS-485
1	XDCD#	TX-	Data-
2	XDSR#		
3	XRXD	TX+	Data+
4	XRTS#		
5	XTXD	RX+	
6	XCTS#		
7	XDTR#	RX-	
8	XRI#		
9	GND		



⑧SMB1: SMBus Connector

Connector type: 1.25mm pitch 1x3-pin wafer connector

Pin	Description
1	SM_CLK
2	SM_DATA
3	GND



⑨BAT1: Battery connector

Connector type: 1.25mm pitch 1x2 pin wafer connector

Pin	Description
1	GND
2	Battery Power



⑩SYSLED1: Power button & power on indicator

⑪CN1A: DisplayPort Connector

Connect the display device to the DisplayPort Connector

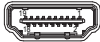
The pin assignments conform to the industry standard.



CN1B: HDMI 1.4 connector

Connector Type: 19-pin HDMI connector with flange

The pin assignments conform to the industry standard.



⑫~⑮POE1~4: PoE connector

Connector type: 10/100/1000Mbps fast Ethernet RJ-45 connector, supporting PoE, 802.3af

The pin assignments conform to the industry standard.



⑯LAN1: GbE connector

Connector type: 10/100/1000Mbps fast Ethernet RJ-45 connector

The pin assignments conform to the industry standard.

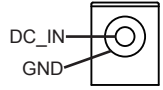


⑰PADP1: 9-36V DC power input connector

(Option 1)

Connector type: DC power jack connector.

Pin	Description
1	DC_IN
2	GND

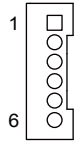


Caution: PADP1 and PWR2 cannot be used simultaneously.

⑱ PWR2: 9-36V DC power input connector (Option 2)

Connector type: 2.5mm pitch 1x6 pin header

Pin	Description
1	DCIN
2	DCIN
3	DCIN
4	GND
5	GND
6	GND

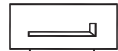


Caution: PADP1 and PWR2 cannot be used simultaneously.

⑲ SATA1: Serial ATA connector

Connector type: SATA connector

The pin assignments conform to the industry standard.



⑳ PWROUT1: SATA power connector

Connector type: 2.00mm pitch 1x2-pin wafer connector

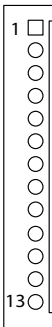
Pin	Description
1	+5VS
2	GND



⑳ AUDIO1: Audio connector

Connector type: 1.25mm pitch 1x13-pin wafer connector


Pin	Description
1	LINL
2	LINR
3	LIN_JD
4	AGND
5	MICL
6	MICR
7	MIC_JD
8	AGND
9	LOUT-L
10	LOUT-R
11	FRONT_JD
12	AGND
13	NC



㉑ INV1: LCD inverter connector

Connector type: 1.25mm pitch 1x6-pin box wafer connector

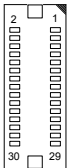
Pin	Description
1	LVDS1_INV
2	LVDS1_INV
3	LVDS1_BKLT_EN
4	LVDS1_BKLT_CTRL
5	GND
6	GND



㉒ LVDS1: LVDS LCD panel connector

Connector type: ACES 1.25mm 87209-3040-06 Connector that supports 24-bit dual channels.

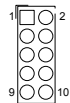
Pin	Description	Pin	Description
2	VDD	1	VDD
4	TX2_CLK+	3	TX1_CLK+
6	TX2_CLK-	5	TX1_CLK-
8	GND	7	GND
10	TX2_D0+	9	TX1_D0+
12	TX2_D0-	11	TX1_D0-
14	GND	13	GND
16	TX2_D1+	15	TX1_D1+
18	TX2_D1-	17	TX1_D1-
20	GND	19	GND
22	TX2_D2+	21	TX1_D2+
24	TX2_D2-	23	TX1_D2-
26	GND	25	GND
28	TX2_D3+	27	TX1_D3+
30	TX2_D3-	29	TX1_D3-



㉓ LPC1: Low Pin Count Connector (for internal test)

Connector type: Onboard 2.00mm pitch 2x5 female pin header

Pin	Desc.	Pin	Desc.
1	CLK_LPC	2	GND
3	LPC_FRAME#	4	LPC_AD0
5	PLTRST#_BUFF	6	NC
7	LPC_AD3	8	LPC_AD2
9	+3.3VS	10	LPC_AD1

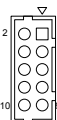


㉔⑳ USB5, 6: USB 2.0 connectors

Connector type: 2.00mm pitch 2x5-pin wafer connector

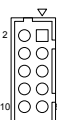
USB5

Pin	Description	Pin	Description
2	+5V_USB56	1	+5V_USB56
4	USBN6N	3	USBN5N
6	USBN6P	5	USBN5P
8	GND	7	GND
10	GND	9	GND



USB6

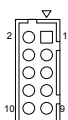
Pin	Description	Pin	Description
2	+5V_USB56	1	+5V_USB56
4	USBN8N	3	USBN7N
6	USBN8P	5	USBN7P
8	GND	7	GND
10	GND	9	GND



㉕ JFRT1: Front-panel connector

Connector type: 2.00mm pitch 2x5-pin wafer connector

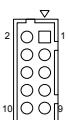
Pin	Desc.	Pin	Desc.
2	HDD+	1	PWRLED+
4	HDD-	3	PWRLED-
6	GND	5	EC_PWRBTN_IN#
8	RSTBTNDB	7	GND
10	EX_SPKOUT+	9	EX_SPKOUT#



㉖ DIO1: Digital I/O Connector

Connector type: 2.00mm pitch 2x5-pin wafer connector

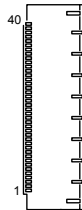
Pin	Desc.	Pin	Desc.
2	DIO1	1	DIO0
4	DIO3	3	DIO2
6	DIO5	5	DIO4
8	DIO7	7	DIO6
10	GND	9	+V5S



29 CN2: 1x PCIe x4 or 4 x PCIe x1 FPC Connector (OEM Request)

Connector type: FFC/FPC 1x 40P-pin connector

Pin	Description	Pin	Description
1	GND	21	PCIE_TXP12
2	PCIE_TXN9	22	GND
3	PCIE_TXP9	23	PCIE_RXN12
4	GND	24	PCIE_RXP12
5	PCIE_RXN9	25	GND
6	PCIE_RXP9	26	CLKOUT_PCIE_N4
7	GND	27	CLKOUT_PCIE_P4
8	PCIE_TXN10	28	GND
9	PCIE_TXP10	29	SMB_DATA_RE-SUME
10	GND	30	SMB_CLK_RE-SUME
11	PCIE_RXN10	31	GPP_C22_DIO_INT
12	PCIE_RXP10	32	+V5A
13	GND	33	PWRON_CTRL
14	PCIE_TXN11	34	CB_RESET#
15	PCIE_TXP11	35	RSTBTNDB
16	GND	36	EX_PWRBN_IN#
17	PCIE_RXN11	37	PCH_WAKE#
18	PCIE_RXP11	38	+5VA
19	GND	39	+5VA
20	PCIE_TXN12	40	GND



30 SIM1: NANO SIM socket

Connector type: SMD,6P,1.27mm,H1.5 socket

Pin	Desc.	Pin	Desc.
C1	VCC	C2	RST
C3	CLK	C5	GND
C6	VPP	C7	I/O



31 ~ 34 USB1~4: USB 3.0 connector

Connector type: USB 3.0/2.0 type-A connectors

The pin assignments conform to the industry standard.

