

**Pico-ITX SBC Supports Intel® Celeron® J6412/N6210 on-board SoC  
with 4GB LPDDR4x, HDMI, iDPM, 2.5GbE LAN, M.2, PCIe x4 Slot,  
iSATA 6Gb/s, COM, USB 3.2 Gen 2, and RoHS**

# **HYPER-EHL**

## **Quick Installation Guide**

**Version 1.0**

May 16, 2023

### **Package List**

HYPER-EHL package includes the following items:

- 1 x HYPER-EHL single board computer
- 1 x iSATA cable
- 1 x QIG



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## Specifications

- CPU:  
Onboard Intel® Atom® x6000 series / Pentium® / Celeron® processor (Elkhart Lake platform)  
Intel® Celeron® J6412 on-board SoC  
(up to 2.6GHz, quad-core, 1.5M cache, TDP=10W)  
Intel® Celeron® N6210 on-board SoC  
(up to 2.6GHz, dual-core, 1.5M cache, TDP=6.5W)
- Memory:  
On-board 4GB 3200 MHz LPDDR4X (system max. 8GB)
- BIOS:  
AMI UEFI BIOS
- Graphics Engine:  
Intel® UHD Graphics (Gen11)
- Display Output:  
Dual independent display  
1 x HDMI 1.4 (up to 4096 x 2160 @ 30Hz)  
1 x IEI iDPM 3040 slot (only for IEI eDP/LVDS/VGA module)
- Ethernet:  
1 x 2.5GbE via Intel® I225V controller
- External I/O Interface:  
2 x USB 3.2 Gen 2x1 Type-A (10Gb/s)
- Internal I/O Interface:  
1 x iSATA 6Gb/s  
2 x USB 2.0 (2x4 pin, p=2.0)  
1 x RS-232/422/485 (1x9 pin, p=1.25)
- Front Panel:  
1 x Power button connector (1x2 pin, p=1.25)  
1 x Reset button connector (1x2 pin, p=1.25)
- Expansions:  
1 x M.2 2242 M key (PCIe x2 & USB 2.0)  
1 x PCIe x4 slot (PCIe Gen3 x4 signal, x4 or x2+x2 or 1+x1+x1+x1)
- Digital I/O:  
1 x 8-bit digital I/O (1x10 pin, p=1.25)

- I<sup>2</sup>C/SMBus:  
1 x SMBus (1x4 pin, p=1.25)
- Power Supply:  
12V DC power supply  
Support AT/ATX mode
- Power Consumption:  
12V@ 2.07A  
(Intel® Celeron® J6412 CPU with 4 GB 3200 MHz LPDDR4x memory, max. loading, EuP mode enabled)
- Watchdog Timer:  
Software programmable support 1–255 sec. system reset
- Operation Temperature: 0°C – 60°C
- Storage Temperature: -30°C – 70°C
- Operation Humidity: 5% – 95%, non-condensing
- Dimensions: 100 mm x 72 mm
- Weight: GW:600 g / NW:250 g

## Ordering Information

- **HYPER-EHLJ6412B-R10:**  
Pico-ITX SBC supports Intel® Celeron® J6412 quad-core 2.0GHz on-board SoC with 4GB on-board LPDDR4x memory, HDMI, iDPM, M.2 M key, USB 3.2, SATA 6GB/s, COM, PCIe x4 for riser card and RoHS
- **HYPER-EHL-N6210B-R10:**  
Pico-ITX SBC supports Intel® Celeron® N6210 dual-core 1.2GHz on-board SoC with 4GB on-board LPDDR4x memory, HDMI, iDPM, M.2 M key, USB 3.2, SATA 6GB/s, COM, PCIe x4 for riser card and RoHS
- **CB-USB02A-RS:**  
Dual-port USB cable with bracket, 300mm, p=2.0
- **32102-000100-200-RS:**  
SATA power cable, MOLEX 5264-4P to SATA15P

- **32205-008000-100-RS:**  
RS-232/422/485 cable, 250mm, 1x9 pin, p=1.25
- **HPR-L2S-R10:**  
PCIe x4 to two PCIe x2 riser card for HYPER on the left side
- **HPR-L4S-R10:**  
PCIe x4 to four PCIe x1 riser card for HYPER on the left side
- **HPR-R2S-R10:**  
PCIe x4 to two PCIe x2 riser card for HYPER on the right side
- **HPR-R4S-R10:**  
PCIe x4 to four PCIe x1 riser card for HYPER on the right side
- **iDPM-eDP-R10:**  
eDP to eDP converter board (for IEI iDPM slot)
- **iDPM-LVDS-R10:**  
eDP to LVDS converter board (for IEI iDPM slot)

All the drivers and utility for the HYPER-EHL are available on IEI Resource Download Center. Type HYPER-EHL and press Enter to find all the relevant software, utilities, and documentation. To install software from the downloaded ISO file, mount the file as a virtual drive to view its content.

IEI Resource Download Center

<https://download.ieiworld.com>



## Jumpers Setting and Connectors

LABEL	FUNCTION
J_CMOS1	Clear CMOS button
J_ATX_AT1	AT/ATX power mode setting switch
BAT2	Battery connector
SP1	Buzzer connector
DIO1	Digital I/O connector
JBIOS1	Flash SPI ROM connector
I2C1	I <sup>2</sup> C connector
ISATA	iSATA 6Gb/s connector
PWR_BTN1	Power button connector
RST_BTN1	Reset button connector
COM1	RS-232/422/485 serial port connector
USB2-1	Internal USB 2.0 connector
M2_1	M.2 M-key slot
IP2EHL_XC	PCIe Gen3 x4 slot
IDPM	IEI iDPM slot
DCIN1	External 12V DC input jack
LAN1	External 2.5GbE connector
HDMI1	External HDMI connector
USB1	External dual USB 10Gb/s connector

<b>J_CMOS1: Clear CMOS Button</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
NC (default)	Keep CMOS Setup (Normal Operation)
Press button	Clear CMOS Setup

<b>J_ATX_AT1: AT/ATX Power Mode Setting Switch</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
Short A - B	ATX Power Mode (default)
Short B - C	AT Power Mode

<b>BAT2: RTC Battery Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	VBATT	2	GND

<b>SP1: Buzzer Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	+5V	2	PC_BEEP

<b>DIO1: Digital Input/Output Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+5V	6	DOUT0
2	DIN0	7	DOUT1
3	DIN1	8	DOUT2
4	DIN2	9	DOUT3
5	DIN3	10	GND

<b>JBIO1: Flash SPI ROM Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+3.3V	4	SPI_CLK
2	SPI_CS#	5	SPI_SI
3	SPI_SO	6	GND

<b>I2C1: I<sup>2</sup>C Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	3	I2C_CLK
2	I2C_DATA	4	+5V

<b>ISATA: iSATA 6Gb/s Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	11	+5V
2	GND	12	N/C
3	GND	13	N/C
4	GND	14	GND
5	GND	15	SATA_RX+
6	GND	16	SATA_RX-
7	+5V	17	GND
8	+5V	18	SATA_TX-
9	+5V	19	SATA_TX+
10	+5V	20	GND

<b>PWR_BTN1: Power Button Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	PWR_BTN+	2	PWR_BTN-

<b>RST_BTN1: Reset Button Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	RST_BTN+	2	RST_BTN-

<b>COM1: RS-232/422/485 Serial Port Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	DCD	6	CTS
2	DSR	7	DTR
3	SIN	8	RI
4	RTS	9	GND
5	SOUT		

<b>USB2-1: Internal USB 2.0 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	2	GND
3	USB_DATA-	4	USB_DATA+
5	USB_DATA+	6	USB_DATA-
7	GND	8	VCC

<b>M2_1: M.2 M-key Slot</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	+V3.3A
3	GND	4	+V3.3A
5	NC	6	NC
7	NC	8	NC
9	GND	10	+V3.3A
11	NC	12	+V3.3A
13	NC	14	+V3.3A
15	GND	16	+V3.3A
17	NC	18	+V3.3A
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	PCIE_RX7-	30	NC
31	PCIE_RX7+	32	NC
33	GND	34	USB+
35	PCIE_TX7-	36	USB-
37	PCIE_TX7+	38	MKEY_SSD_SLP
39	GND	40	M2_I2C_CLK
41	PCIE_RX6-	42	M2_I2C_DATA
43	PCIE_RX6+	44	NC
45	GND	46	NC
47	PCIE_TX6-	48	NC
49	PCIE_TX6+	50	BUF_PLT_RST



51	GND	52	NC
53	CLK_M2_B-	54	PCIE_WAKE#
55	CLK_M2_B+	56	NC
57	GND	58	NC
59	Module Key	60	Module Key
61	Module Key	62	Module Key
63	Module Key	64	Module Key
65	Module Key	66	Module Key
67	NC	68	NC
69	+V3.3A	70	+V3.3A
71	GND	72	+V3.3A
73	GND	74	+V3.3A
75	GND		

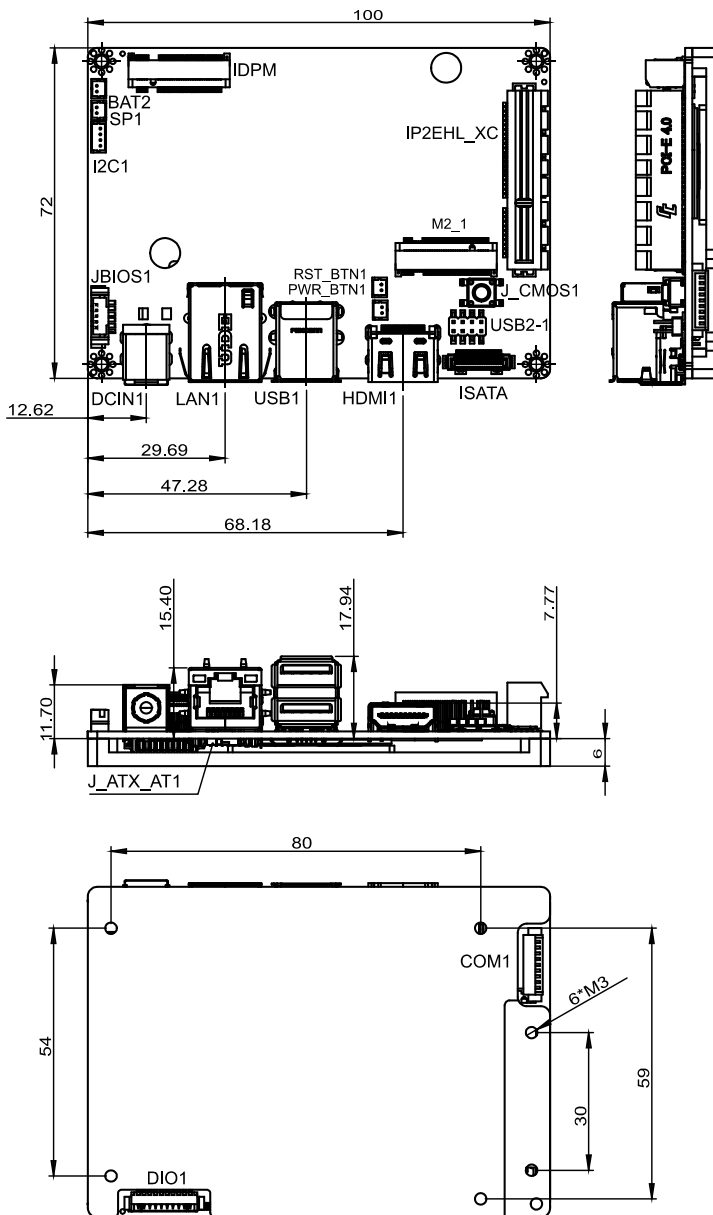
<b>DCIN1: External 12V DC Input Jack</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+12V	3	GND
2	GND		

<b>LAN1: 2.5GbE RJ-45 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	LAN1_MDI0P	5	LAN1_MDI2P
2	LAN1_MDI0N	6	LAN1_MDI2N
3	LAN1_MDI1P	7	LAN1_MDI3P
4	LAN1_MDI1N	8	LAN1_MDI3N

<b>HDMI1: External HDMI Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	HDMI2_DATA2	2	GND
3	HDMI2_DATA2#	4	HDMI2_DATA1
5	GND	6	HDMI2_DATA1#
7	HDMI2_DATA0	8	GND
9	HDMI2_DATA0#	10	HDMI2_CLK
11	GND	12	HDMI2_CLK#
13	N/C	14	N/C
15	HDMI2_SCL	16	HDMI2_SDA
17	GND	18	+5V
19	HDMI2_HPD		

<b>USB1: External Dual USB 3.2 Gen 2 (10Gb/s) Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

# Board Layout: Jumper and Connector Locations



(Unit: mm)

