

# EMS-EHL-PSE

**Intel® Elkhart Lake Atom®/Celeron®  
Processor Fanless Rugged Embedded System,  
w\_PoE IET Module**



## Product Features

- Intel® Celeron®/Atom™ J6413/x6425E SoC BGA Processor
- Rich I/O, 4-USB3.2, 2-USB2.0, 1-DP, 1-HDMI, 2-COM, 2-LAN, 4-PoE(af/at), 1-8bit GPIO
- Fanless operation temperature from -40°C ~ 70°C (WT) / 0°C ~ 65°C (ST)
- Wide range DC power input from +9~36V
- Support IET modules
- 1 x 260-pin SODIMM socket Max. up to 32GB DDR4 3200MT/s
- Support 5G (Sub-6G) module, HDMI 2.0b (4K @ 60Hz), LAN 2.5G Base-Tx GbE
- CE, FCC Class B, LVD 62368-1, IP50
- Support HW TPM 2.0

## Specification

### System Information

|                           |                                                                                                                                                            |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Processor</b>          | Intel® Celeron® Processor J6413 (1.5M Cache, up to 3.00Ghz), ST, Tj=105°C<br>Intel® Atom® Processor x6425E(1.5M Cache, up to 3.00Ghz), WT, Tj=-40°C ~105°C |
| <b>System Memory</b>      | 1 x 260-pin SODIMM socket Max. Up to 32GB DDR4 3200 MT/s                                                                                                   |
| <b>Watchdog Timer</b>     | H/W Reset, 1sec. ~ 65535sec.                                                                                                                               |
| <b>H/W Status Monitor</b> | CPU & system temperature monitoring and Voltages monitoring                                                                                                |
| <b>TPM</b>                | TPM 2.0                                                                                                                                                    |
| <b>SBC</b>                | EBM-EHLS                                                                                                                                                   |

### Expansion

|            |                                                                                                                                                                                                                       |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>M.2</b> | 1 x M.2 Key-B 2242/3042/3052 support SATA3/ PCIe III/ USB3.2 Gen.1 and SIM slot1 (internal), default support 3.3V, jumper setting to adjust 3.3V/ 3.8V<br>1 x M.2 Key-E 2230 for Wi-Fi & BT Module (USB2.0/ PCIe III) |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Storage

|            |                                                              |
|------------|--------------------------------------------------------------|
| <b>M.2</b> | 1 x M.2 Key-B 2242/2280, support SATA                        |
|            | 1 x M.2 Key-B 2242, support SATA (share with expansion slot) |

## Front I/O

|                                  |                                                                                                                                            |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power Button</b>              | 1 x Push Button for Power on/off                                                                                                           |
| <b>Reset Button</b>              | 1 x Push Button for Reset                                                                                                                  |
| <b>LED Indicator</b>             | 1 x Power LED (Blue)<br>1 x Storage LED (Yellow)- M.2 B-key SATA<br>1 x LTE LED (Green)- M.2 B-key PCIe<br>1 x Wifi LED (Green)- M.2 E key |
| <b>COM Port</b>                  | 2 x COM RS232/422/485 (select via BIOS, auto flow control via HW)                                                                          |
| <b>Digital I/O</b>               | 1 x 8-bit GPIO (DB9)                                                                                                                       |
| <b>Audio</b>                     | 1 x Mic-In, 1 x Line-Out                                                                                                                   |
| <b>Wire-Control Power On/Off</b> | 1 x 2-Pin Terminal Block for wire-control power on/off                                                                                     |
| <b>Antenna</b>                   | 2 x Antenna with dust cover                                                                                                                |

## Rear I/O

|                 |                                                                                                                        |
|-----------------|------------------------------------------------------------------------------------------------------------------------|
| <b>USB</b>      | 2 x USB 2.0<br>2 x USB 3.1 Gen.2 (10Gbp/s)<br>2 x USB 3.1 Gen.1 (5Gbp/s), via USB Hub                                  |
| <b>LAN Port</b> | EMS-EHL-PSEBF<br>6 x RJ45, support 4 ports IEEE 802.3af<br><br>EMS-EHL-PSEBT<br>4 x RJ45, support 2 ports IEEE 802.3at |
| <b>Audio</b>    | 1 x Mic-In, 1 x Line-Out                                                                                               |
| <b>DP</b>       | 1 x DP 1.4                                                                                                             |
| <b>HDMI</b>     | 1 x HDMI 2.0b                                                                                                          |
| <b>Antenna</b>  | 2 x Antenna with dust cover                                                                                            |

## Right I/O

|                |                             |
|----------------|-----------------------------|
| <b>Antenna</b> | 2 x Antenna with dust cover |
|----------------|-----------------------------|

## Left I/O

|                |                             |
|----------------|-----------------------------|
| <b>Antenna</b> | 2 x Antenna with dust cover |
|----------------|-----------------------------|

## Display

|                        |                                                    |
|------------------------|----------------------------------------------------|
| <b>Graphic Chipset</b> | Intel® UHD Graphics for 10th Gen Intel® Processors |
|------------------------|----------------------------------------------------|

|                                       |  |                                                                                                                                                                                                                                                        |
|---------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Resolution</b>                     |  | DP++ 1.4: 4096x2304 @ 60Hz<br>HDMI 2.0b : Max. resolution 4096x2304 @ 60Hz                                                                                                                                                                             |
| <b>Audio</b>                          |  |                                                                                                                                                                                                                                                        |
| <b>Audio Codec</b>                    |  | Realtek ALC888S (co-lay with ALC897) HD codec                                                                                                                                                                                                          |
| <b>Ethernet</b>                       |  |                                                                                                                                                                                                                                                        |
| <b>LAN Chipset</b>                    |  | EMS-EHL-PSEBF<br>2 x Intel® I226-IT<br>4 x Intel® I210-IT<br><br>EMS-EHL-PSEBT<br>2 x Intel® I226-IT<br>2 x Intel® I210-IT                                                                                                                             |
| <b>Specification</b>                  |  | EMS-EHL-PSEBF<br>2 x 10/100/1000/2.5G Base-Tx GbE compatible<br>4 x 10/100/1000Base-Tx GbE compatible<br><br>EMS-EHL-PSEBT<br>2 x 10/100/1000/2.5G Base-Tx GbE compatible<br>2 x 10/100/1000Base-Tx GbE compatible                                     |
| <b>Power Requirement</b>              |  |                                                                                                                                                                                                                                                        |
| <b>ACPI</b>                           |  | Single power ATX Support S0,S3, S4, S5<br>ACPI 5.0 Compliant                                                                                                                                                                                           |
| <b>Power Mode</b>                     |  | AT/ATX (ATX is default setting)                                                                                                                                                                                                                        |
| <b>Software Support</b>               |  |                                                                                                                                                                                                                                                        |
| <b>OS</b>                             |  | Win 10 64bit / Win 11 64 bit/ Linux                                                                                                                                                                                                                    |
| <b>Certification</b>                  |  |                                                                                                                                                                                                                                                        |
| <b>Certification Information</b>      |  | CE, FCC Class B, LVD 62368-1                                                                                                                                                                                                                           |
| <b>Mechanical &amp; Environmental</b> |  |                                                                                                                                                                                                                                                        |
| <b>Operating Temp.</b>                |  | -40°C ~ 70°C (w/SSD) ambient w/ 0.5 air flow, WT sku, x6425E<br>-40°C ~ 60°C (w/SSD) ambient w/ 0.2 air flow, WT sku, x6425E<br>0°C ~ 65°C (w/SSD) ambient w/ 0.5 air flow, ST sku, J6413<br>0°C ~ 55°C (w/SSD) ambient w/ 0.2 air flow, ST sku, J6413 |
| <b>Storage Temp.</b>                  |  | -30°C ~ 70°C (-22°F ~ 158°F)                                                                                                                                                                                                                           |
| <b>Operating Humidity</b>             |  | 40°C @ 95% Relative Humidity, Non-condensing                                                                                                                                                                                                           |
| <b>Dimension (W x L x H)</b>          |  | 240mm x 150mm x 64 mm (w/ IET module)                                                                                                                                                                                                                  |
| <b>Weight</b>                         |  | 1.9 kg (System)<br>2.7 kg (w_Package)                                                                                                                                                                                                                  |
| <b>Vibration Test</b>                 |  | With SSD : 5Grms, IEC 60068-2-64, Random, 5 ~ 500Hz, 1hr/axis                                                                                                                                                                                          |
| <b>Shock Test</b>                     |  | With SSD : 55Grms, IEC 60068-2-27, Half Sine, 11ms                                                                                                                                                                                                     |

|                      |                                                                                                                                                                                                                                                                                             |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP Rating            | IP 50                                                                                                                                                                                                                                                                                       |
| Mounting Kit         | Wall mount kit (standard)<br>DIN RAIL (optional)                                                                                                                                                                                                                                            |
| Ordering Information |                                                                                                                                                                                                                                                                                             |
| Ordering Information | Intel® Elkhart Lake Atom®/Celeron® Processor Fanless Rugged Embedded System, w_PoE IET Module<br><br>Support 4 ports IEEE 802.3af<br>EMS-EHL-J64-A1-DR (J6413)<br>EMS-EHL-X64-A1-DR (x6425E)<br><br>Support 2 ports IEEE 802.3at<br>EMS-EHL-J64-A1-ER (J6413)<br>EMS-EHL-X64-A1-ER (x6425E) |