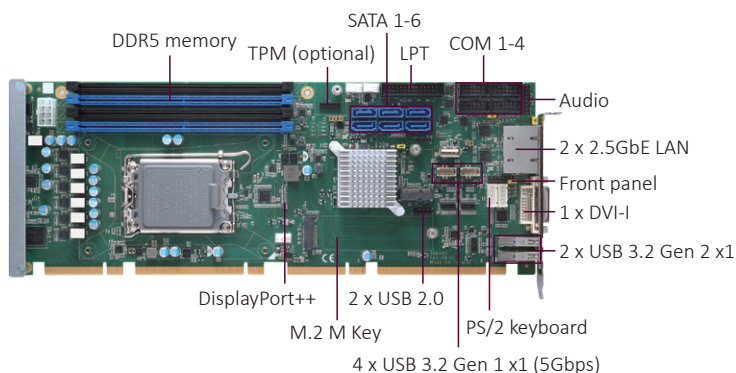


# SHB160 NEW

PICMG 1.3 Full-size CPU Card with LGA1700 14th/13th/12th Gen Intel® Core™ i7/i5/i3, Pentium® or Celeron® Processor, Intel® R680E/H610E, SATA 3.0, M.2 Key E/M, USB 3.2 Gen 1/Gen 2, Dual 2.5GbE LAN, and DVI-I



## Features

- LGA1700 14th/13th/12th Gen Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor (up to 125W)
- Intel® R680E/H610E chipset
- DDR5-4400 ECC (for R680E)/non-ECC U-DIMM, up to 192GB
- Supports Intel® AMT and vPro (R680E)
- Supports TPM 2.0 (optional)
- Supports dual 2.5GbE LAN
- Supports LPT port
- Supports M.2 Key M and Key E
  - \*H610E supports only Key E
- Supports PCIe 4.0 via the gold fingers

## Specifications

### Core System

|                     |                                                                                                                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU                 | LGA1700 14th/13th/12th Gen Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor (up to 125W)                                                                                                 |
| System Memory       | 4 x DDR5-4400 ECC or non-ECC U-DIMM, up to 192GB (R680E)<br>2 x DDR5-4400 non-ECC U-DIMM, up to 64GB (H610E)<br>*1DPC 2R up to 4400 MHz<br>*2DPC 1R up to 4000 MHz<br>*2DPC 2R up to 3600 MHz |
| Chipset             | Intel® R680E/H610E                                                                                                                                                                            |
| BIOS                | AMI UEFI BIOS                                                                                                                                                                                 |
| Storage             | M.2 Key M 2280 with PCIe 4.0 x4 support (R680E only)                                                                                                                                          |
| Watchdog Timer      | 225 levels, 1 to 255 sec.                                                                                                                                                                     |
| Expansion Interface | 1 x PCIe Gen 4 x16<br>1 x PCIe Gen 3 x4 or 4 x PCIe Gen 3 x1<br>4 x 32-bit PCI bus master<br>1 x M.2 Key E 2230                                                                               |

## Specifications

### Core System

|                          |                                                                                                                           |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Battery Lithium          | Lithium 3V/220 mAH                                                                                                        |
| Power Input              | 8-pin ATX connector support                                                                                               |
| Power Consumption (Max.) | Intel® Core™ i5-12400 with 32GB (4 x DDR5-4400)<br>Power requirements:<br>+12V_CPU @ 5.2A<br>+5V @ 4.64A<br>+3.3V @ 1.76A |

### Display

|                   |                                                                       |
|-------------------|-----------------------------------------------------------------------|
| Graphic           | Intel® UHD Graphic                                                    |
| Display Interface | 1 x DVI-I (colay VGA by project)<br>1 x DisplayPort (internal header) |

### I/O

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| External | 1 x 2.5GbE with Intel® I226-LM, supporting Wake-on-LAN, PXE Boot ROM, TSN, and Intel® AMT with Intel vPro®<br>1 x 2.5GbE with Intel® I226-V, supporting Wake-on-LAN and PXE Boot ROM<br>2 x USB 3.2 Gen 2 x1 (rear I/O)                                                                                                                                                                                                                                                                                                                                          |
| Internal | 6 x SATA-600, supporting RAID 0/1/5/10 (R680E)<br>4 x SATA-600 (H610E)<br>1 x HD Codec audio as Mic-in/Line-in/Line-out/Speaker-out with audio kit AX93242 (optional)<br>4 x USB 3.2 Gen 1 x1 (internal box header; H610E supports only 2)<br>3 x USB 2.0 (2 via internal pin headers, 1 via 180D Type-A connector; 180D Type-A not available on H610E)<br>4 x USB 2.0 via SHB connector-C golden fingers<br>2 x RS-232<br>2 x RS-232/422/485 with mode selection controlled via software<br>1 x PS/2 keyboard internal connector<br>1 x PS/2 internal connector |

### Key Benefits

|                     |                                                       |
|---------------------|-------------------------------------------------------|
| TPM                 | TPM 2.0 (optional)                                    |
| Hardware Monitoring | Detect CPU/system temperature, voltage, and fan speed |
| Others              | 1 x LPT<br>1 x smart CPU fan<br>2 x smart system fan  |

### Mechanical and Environmental

|                       |                                              |
|-----------------------|----------------------------------------------|
| Dimensions            | 338 x 126 mm                                 |
| Board Thickness       | 1.6 mm                                       |
| Operating Temperature | 0°C to +60°C (+32°F to +140°F)               |
| Relative Humidity     | 10% to 95% relative humidity, non-condensing |

## Ordering Information

### Standard

|                                                  |                                                                                                                                 |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| SHB160-R680E-DGG<br>PCIe x4<br>(P/N: E38C160100) | PICMG 1.3 full-size CPU card with 14th/13th/12th LGA1700 socket, Intel® R680E, ECC, DVI-I, 2.5GbE LAN, 6 SATA, and PCIe x4 BIOS |
| SHB160-H610E-DGG<br>PCIe x4<br>(P/N: E38C160101) | PICMG 1.3 full-size CPU card with 14th/13th/12th LGA1700 socket, Intel® H610E, DVI-I, 2.5GbE LAN, 4 SATA, and PCIe x4 BIOS      |
| SHB160-R680E-DGG<br>PCIe x1<br>(P/N: E38C160102) | PICMG 1.3 full-size CPU card with 14th/13th/12th LGA1700 socket, Intel® R680E, ECC, DVI-I, 2.5GbE LAN, 6 SATA, and PCIe x1 BIOS |
| SHB160-H610E-DGG<br>PCIe x1<br>(P/N: E38C160103) | PICMG 1.3 full-size CPU card with 14th/13th/12th LGA1700 socket, Intel® H610E, DVI-I, 2.5GbE LAN, 4 SATA, and PCIe x1 BIOS      |

### Optional

|              |                                                          |
|--------------|----------------------------------------------------------|
| 5938A808010E | 2 x USB 2.0 cable with bracket, P=2.54 mm, L=190 mm      |
| 59401502800E | 1 x dual USB 3.2 (Gen 2 x1) cable with bracket, L=400 mm |
| 59380000290E | PS/2 keyboard & mouse cable with bracket                 |
| 593826A0000E | SATA signal cable/red, L=500 mm                          |
| E393242100   | AX93242-RC HD audio converter kit                        |
| 59380402010E | 1 x COM port cable with bracket, P=2.54 mm, L=300 mm     |
| 59380703000E | 2 x COM port cable with bracket, P=2.54 mm, L=300 mm     |
| 594826A0010E | DVI-I to DVI-D+VGA Y cable                               |
| 83935151000E | TPM 2.0 module (AX93515)                                 |
| E398709102   | DisplayPort kit with 15 cm cable                         |
| 711000001500 | 2U special cooler kit for SHB160, compatible, 125W       |
| 711000001400 | 1U special cooler kit for SHB160, compatible, 65W        |
| 711000003800 | 1U special cooler with blower fan for SHB160             |

\* All SHB160 series models require specially designed coolers. Please order the complete set from our optional items: the 2U cooler (711000001500) for CPUs with a 125W TDP or the 1U cooler (711000001400 and 711000003800) for CPUs with a 65W TDP.

## Packing List

### Standard

|               |                             |
|---------------|-----------------------------|
| User's manual |                             |
| 59380402010E  | COM cable with bracket      |
| 594G5208000E  | SATA 3.0 cable 180D, 500 mm |

# Block Diagram

