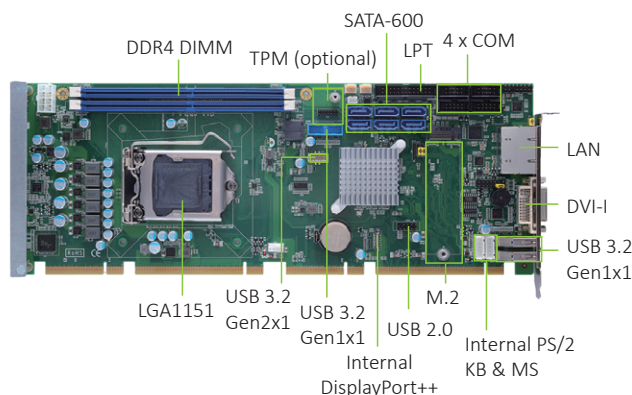


# SHB150R

PICMG 1.3 Full-size CPU Card with LGA1151 Socket 9th/8th Gen Intel® Core™ i7/i5/i3, Xeon® E, Pentium® or Celeron® Processor, Intel® C246/Q370/H310, SATA 3.0, USB 3.2 Gen1/Gen2, Dual LAN, and DVI-I



## Features

- LGA1151 Socket 9th/8th gen Intel® Core™ i7/i5/i3, Xeon® E (Intel® C246), Pentium® or Celeron® processor (up to 95W)
- Intel® C246/Q370/H310 chipset
- 2 DDR4-2666/2400 Long-DIMM for up to 64GB of memory
- Supports Intel® AMT and vPro (Intel® C246/Q370)
- Supports TPM 2.0 (optional)
- Supports M.2 Key M (Intel® C246/Q370)



## Specifications

### Core System

|                     |                                                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU                 | LGA1151 9th/8th gen Intel® Core™ i7/i5/i3, Xeon® E (Intel® C246), Pentium® or Celeron® processor (up to 95W)                                                                                          |
| System Memory       | Intel® C246: 2 x 288-pin 2666/2400 with ECC un-buffered Long-DIMM (Intel® Core™ i7/i5 only supports non-ECC), up to 64GB<br>Intel® Q370/H310: 2 x 288-pin 2666/2400 un-buffered Long-DIMM, up to 64GB |
| Chipset             | Intel® C246/Q370 (with Intel® vPro supported)<br>Intel® H310                                                                                                                                          |
| BIOS                | AMI UEFI BIOS                                                                                                                                                                                         |
| SSD                 | M.2 Key M 2280, PCIe x4 signal (Intel® C246/Q370)                                                                                                                                                     |
| Watchdog Timer      | 225 levels, 1 to 255 sec.                                                                                                                                                                             |
| Expansion Interface | 1 x PCIe x16 Gen3<br>1 x PCIe x4 or 4 x PCIe x1 Gen3<br>4 x 32-bit PCI bus masters                                                                                                                    |
| Battery             | Lithium 3V/220 mAh                                                                                                                                                                                    |
| Power Consumption   | Intel® Core™ i7-9700TE with 32GB 2 x DDR4-2666<br>+12V @ 2.8A, +5V @ 2.4A, +3.3V @ 1.3A                                                                                                               |

### Display

|                   |                                                  |
|-------------------|--------------------------------------------------|
| Graphic           | Intel® HD Graphic                                |
| Memory Size       | Share system memory                              |
| Display Interface | 1 x DVI-I<br>1 x DisplayPort++ (internal header) |

### I/O

|                     |                                                                                                                                                                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SATA                | Intel® C246/Q370: 6 x SATA-600, support RAID 0/1/5/10<br>Intel® H310: 4 x SATA-600                                                                                                                                                                |
| Hardware Monitoring | Detect CPU/system temperature, voltage and fan speed                                                                                                                                                                                              |
| Ethernet            | 1 x 10/100/1000 Mbps Ethernet with Intel® I219-LM; supports Wake-on-LAN, RPL/PXE Boot ROM, Intel® AMT<br>1 x 10/100/1000 Mbps Ethernet with Intel® I211-AT; supports Wake-on-LAN, RPL/PXE Boot ROM                                                |
| Audio               | HD Codec audio as MIC-in/Line-in/Line-out/Speaker-out with audio kit AX93242 (optional)                                                                                                                                                           |
| USB                 | Intel® C246/Q370: 2 x USB 3.2 Gen2x1, 4 x USB 3.2 Gen1x1 & 6 x USB 2.0 (2 ports onboard, 4 ports on SHB connector-C golden fingers)<br>Intel® H310: 4 x USB 3.2 Gen1x1 & 6 x USB 2.0 (2 ports onboard, 4 ports on SHB connector-C golden fingers) |
| Serial              | 2 x RS-232<br>2 x RS-232/422/485, mode selection by SW                                                                                                                                                                                            |
| PS/2 Combo Port     | 1 x PS/2 keyboard internal connector<br>1 x PS/2 mouse internal connector                                                                                                                                                                         |
| TPM                 | TPM 2.0 module (optional)                                                                                                                                                                                                                         |
| Others              | 1 x LPT<br>1 x Smart CPU fan<br>1 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)               |
| Humidity              | 10% to 95% relative humidity, non-condensing |

## Packing List

#### Standard

|              |                           |
|--------------|---------------------------|
| CPU card     |                           |
| 59380402010E | COM cable with bracket    |
| 59415318000E | SATA signal cable, 460 mm |

## Ordering Information

#### Standard

|                                      |                                                                                              |
|--------------------------------------|----------------------------------------------------------------------------------------------|
| SHB150RDGG-Q370<br>(P/N: E38C150106) | PICMG 1.3 full-size CPU card with LGA1151 socket, Intel® Q370, DVI-I, 2 GbE LAN, and PCIe x4 |
| SHB150RDGG-Q370<br>(P/N: E38C150107) | PICMG 1.3 full-size CPU card with LGA1151 socket, Intel® Q370, DVI-I, 2 GbE LAN, and PCIe x1 |
| SHB150RDGG-H310<br>(P/N: E38C150108) | PICMG 1.3 full-size CPU card with LGA1151 socket, Intel® H310, DVI-I, 2 GbE LAN, and PCIe x4 |
| SHB150RDGG-H310<br>(P/N: E38C150109) | PICMG 1.3 full-size CPU card with LGA1151 socket, Intel® H310, DVI-I, 2 GbE LAN, and PCIe x1 |
| SHB150RDGG-C246<br>(P/N: E38C150110) | PICMG 1.3 full-size CPU card with LGA1151 socket, Intel® C246, DVI-I, 2 GbE LAN, and PCIe x4 |
| SHB150RDGG-C246<br>(P/N: E38C150111) | PICMG 1.3 full-size CPU card with LGA1151 socket, Intel® C246, DVI-I, 2 GbE LAN, and PCIe x1 |

#### Optional

|              |                                                        |
|--------------|--------------------------------------------------------|
| 5938A808010E | 2 x USB 2.0 cable with bracket, P=2.54 mm, L=190 mm    |
| 5948C122800E | 1 x Dual USB 3.2 (Gen1x1) cable with bracket, L=400 mm |
| 59401502800E | 1 x Dual USB 3.2 (Gen2x1) cable with bracket, L=400 mm |
| 59380000290E | PS/2 keyboard & mouse cable with bracket               |
| 593826A0000E | SATA signal cable/red, L=500mm                         |
| 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)                               |
| 83987091000E | DisplayPort++ kit with bracket                         |

## Processor List

| CPU                                   | Speed   | Cache | Cores | TDP  |
|---------------------------------------|---------|-------|-------|------|
| Intel® Core™ i7-9700TE Processor      | 1.8 GHz | 12 MB | 8     | 35 W |
| Intel® Core™ i7-8700K Processor       | 3.7 GHz | 12 MB | 6     | 95 W |
| Intel® Core™ i7-8700 Processor        | 3.2 GHz | 12 MB | 6     | 65 W |
| Intel® Core™ i7-8700T Processor       | 2.4 GHz | 12 MB | 6     | 65 W |
| Intel® Core™ i5-9500E Processor       | 3.0 GHz | 9 MB  | 6     | 65 W |
| Intel® Core™ i5-9500TE Processor      | 2.2 GHz | 9 MB  | 6     | 35 W |
| Intel® Core™ i5-9400 Processor        | 2.9 GHz | 9 MB  | 6     | 65 W |
| Intel® Core™ i5-8400 Processor        | 2.8 GHz | 9 MB  | 6     | 65 W |
| Intel® Core™ i5-8500T Processor       | 2.1 GHz | 9 MB  | 6     | 35 W |
| Intel® Core™ i3-9100 Processor        | 3.6 GHz | 6 MB  | 4     | 65 W |
| Intel® Core™ i3-9100E Processor       | 3.1 GHz | 6 MB  | 4     | 65 W |
| Intel® Core™ i3-9100TE Processor      | 2.2 GHz | 6 MB  | 4     | 35 W |
| Intel® Core™ i3-8100 Processor        | 3.6 GHz | 6 MB  | 4     | 65 W |
| Intel® Core™ i3-8100T Processor       | 3.1 GHz | 6 MB  | 4     | 35 W |
| Intel® Xeon® E-2176G Processor*       | 3.7 GHz | 12 MB | 6     | 80 W |
| Intel® Xeon® E-2278GE Processor*      | 3.3 GHz | 16 MB | 8     | 80 W |
| Intel® Pentium® Gold G5400T Processor | 3.1 GHz | 4 MB  | 2     | 35 W |
| Intel® Celeron® G4900T Processor      | 2.9 GHz | 2 MB  | 2     | 35 W |

\* C246 use only