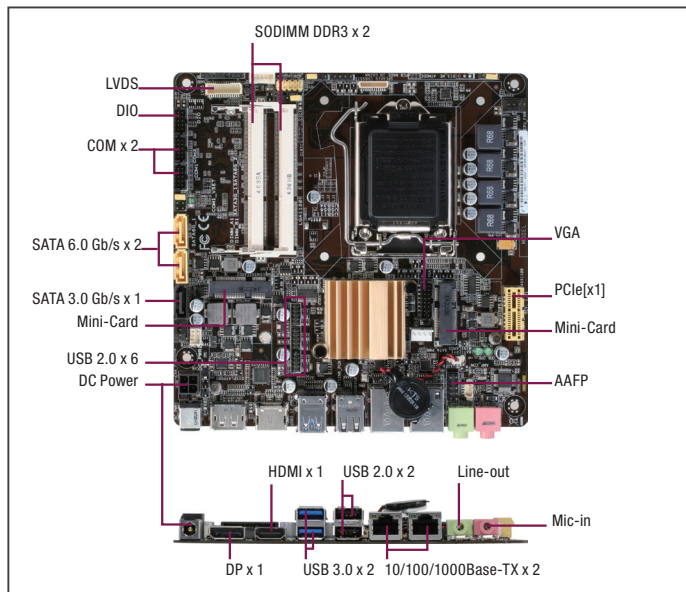


Thin Mini-ITX Embedded Motherboard with 4th Generation Intel® Core™ i Series Processor, 12V~24V Wide Range Power Input



## Specifications

System	
Processor	4th Generation Intel® Core™ i Series 22nm LGA1150 socket Processor, Max. 65W, TDPs
Chipset	Intel® H81
Memory	DDR3 1333/1600 MHz SODIMM x 2, Up to 16GB, Non-ECC, Dual-channel memory architecture (flat type)
I/O Chipset	NCT6791D
Ethernet	Realtek® PCIe Gb LAN 8111G x 2
Audio	Realtek® ALC887
TPM	Infineon SLB9635 TT 1.2
Expansion Slots	PCIe [x1] x 1, Full-size Mini-Card (mSATA default) (PCIe+USB optional)x 1, Half-size Mini-Card (PCIe+USB) x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, VGA+DP, VGA+LVDS, HDMI+DP, HDMI+LVDS, DP+LVDS
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio
LVDS	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12-24V DC (wide rage:12V-5%~ 24V+10%)
Operating Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operating Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	288,850
Rear Panel I/O Ports	
USB	USB 3.0 x 2, USB 2.0 x 2
Display I/O	HDMI x 1, DP x 1
Audio I/O	Mic-in x 1, Line-out x 1

## Features

- 4th Generation Intel® Core™ i Series 22nm Processor
- Intel® H81
- DDR3 1333/1600 MHz SODIMM x 2, Up to 16 GB
- Dual Independent Display: LVDS, VGA, HDMI, DP
- SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 1
- USB 3.0 x 2, USB 2.0 x 6
- PCI-E2.0 [x1] x 1, Full-size Mini-Card (mSATA) x 1, Half-size Mini-Card x 1
- 12V~24V DC Wide Range Voltage Power Input
- Low Profile



LAN I/O	LAN (RJ-45) port x 2
Serial Port	—
PS/2 Port	—
Others	DC Jack x 1
Internal I/O Connectors	
Storage	SATA3 (6.0Gb/s) x 2, SATA2 (3.0Gb/s) x 1, SATA power connector x 1, Full Size Mini-Card (mSATA) x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 6 USB (2 colay with Mini-Card)
Display I/O	VGA x 1, LVDS connector x 1, LVDS 3.3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	AAFP x 1, Speaker x 1
Serial Port	Boxer header for COM (RS-232) x 1, Boxer header for COM (RS-232/422/485) x 1
PS/2 Port	PS/2 Keyboard Mouse 6 PIN Connector x 1
Parallel Port	—
DIO	Digital I/O header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard (pin header) x 1, CMOS jumper x 1
OS	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Linux Fedora

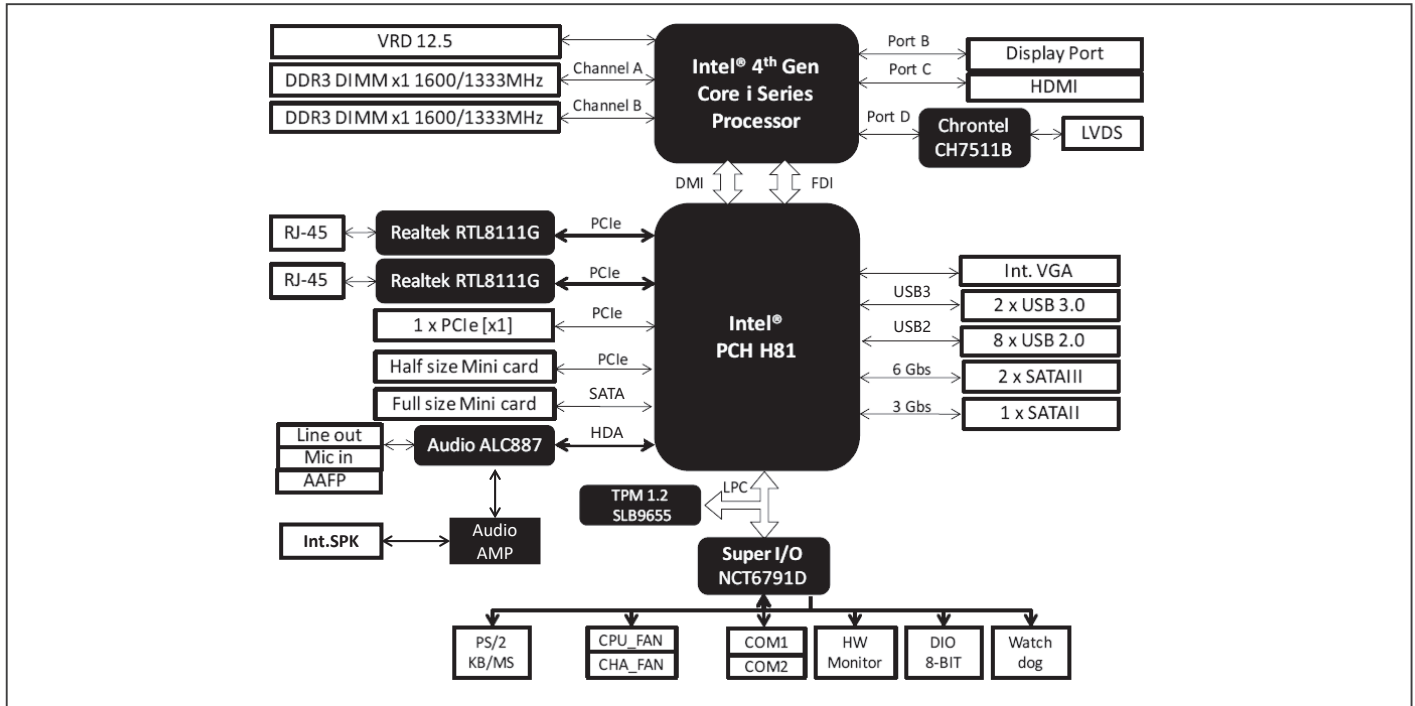
## Packing List

- SATA Cable
- SATA Power Cable
- I/O Shield
- Product DVD
- EMB-H81B

## Optional Accessories

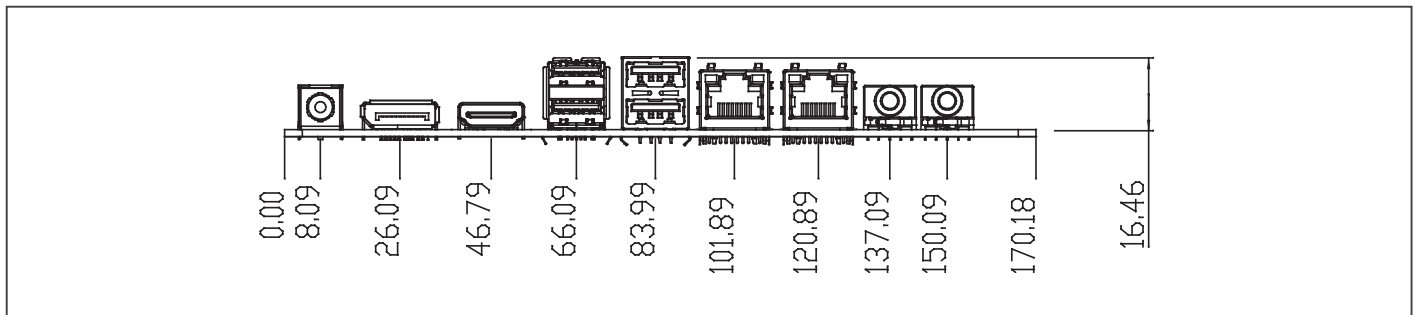
Part Number	Description
1709100201	USB 2.0 Cable (10P, 200mm, p=2.00mm) (with I/O BKT)
1759200172	CPU Cooler (2-Ball, Screw with Retention Plate)
175921156B	CPU Cooler (2-Ball, Push-pin Type)
1701100206	COM Cable (200mm, p=2.00mm)(w/o I/O BKT)
1700060152	PS/2 Cable with KB/MS (150mm, p=2.00mm)(w/o I/O BKT)
COOLER-65W-01	CPU Cooler, 1U, 12V, 65W, 4P
17592AM901	CPU Cooler LGA1155/1156, 1U, 4P, 12V
1702150300	SATA Power Cable 4P, 2.54mm
1255901201	Power Adapter, 19V/120W
1255900846	Power Adapter, 12V/84W
1700100491	USB2.0 Cable (10P, 490mm, P=2.00mm)

## Block Diagram



## Dimension

Unit: mm



## Order Information

Part Number	CPU	RAM	Fan/Fanless	Display	Storage	LVDS	LAN	USB	RS-232	RS-232/422/485	Expansion Slot	Power	TPM	Temp.
EMB-H81B-B10	Socket	SODIMM x 2	Fan	VGA, HDMI, DP, LVDS	SATA3 x 2, SATA2 x 1, Full-Size Mini-Card x 1 (mSATA)	Dual Channel 18/24-bit	GbE x 2	USB 3.0 x 2, USB 2.0 x 6	1	1	PCI-E [x1] x 1, Half size Mini-Card (PCIe+USB) x 1	12V ~ 24VDC	TPM1.2 Onboard	32°F ~ 140°F (0°C ~ 60°C)