

# MANO521

Thin Mini-ITX SBC with LGA1151 9th/8th Gen Intel® Core™ i7/i5/i3 Processor, DisplayPort++, HDMI, LVDS, VGA, USB 3.0, M.2, and Dual GbE LAN

## Features

- LGA1151 9th/8th gen Intel® Core™ i7/i5/i3 processor
- Intel® H310 chipset (Intel® Q370 optional)
- 2 DDR4 SO-DIMM for up to 32GB of memory
- 4 USB 3.0 and 4 USB 2.0 ports
- 2 COM ports
- 2 SATA-600, mSATA and M.2 Key M (NVMe)
- PCIe x4, M.2 Key E, and PCI Express Mini Card slots

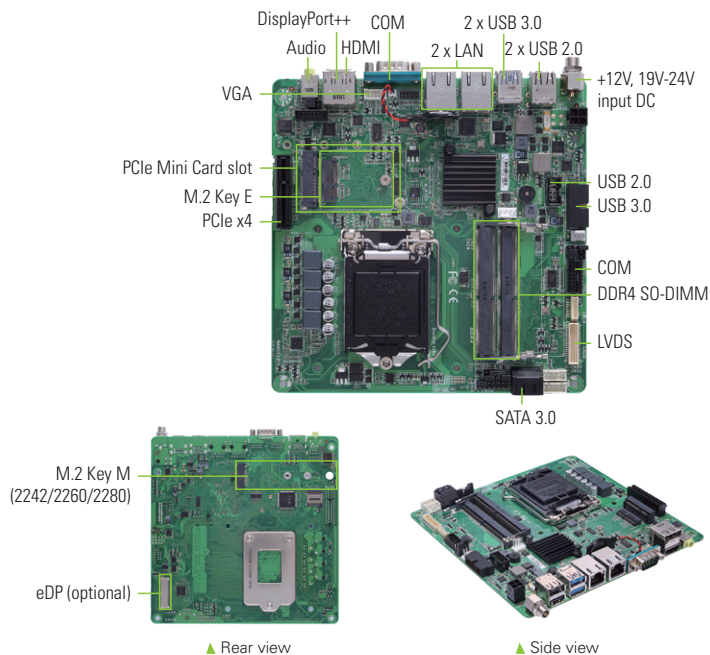


### Core System

CPU	LGA1151 9th/8th gen Intel® Core™ i7/i5/i3, Intel® Pentium® processors Gold/Celeron® processors (up to 65W)
System Memory	2 x 260-pin DDR4-2666/2400 SO-DIMM, up to 32GB
Chipset	Intel® H310 Intel® Q370 (optional)
BIOS	AMI
SSD	1 x mSATA 1 x M.2 Key M (22 x 42/22 x 60/22 x 80); supports NVMe
Watchdog Timer	255 levels, 1 to 255 sec.
Expansion Interface	1 x PCIe x4 1 x M.2 Key E (22 x 30) 1 x Full-size PCI Express Mini Card slot
Battery Lithium	Lithium 3V/220mAh
Power Input	DC Power Jack connector ATX 2 x 2-pin vertical/horizontal(optional) connector support 12V, 19 to 24 VDC input AT Auto Power On function supported
Dimensions	170 x 170 mm
Board Thickness	1.6 mm
Operating Temperature	0°C to +60°C (+32°F to +140°F)
Humidity	10% - 95% relative humidity, non-condensing

### I/O

SATA	2 x SATA-600
Hardware Monitoring	Detect CPU/system temperature, voltage and fan speed
Ethernet	1 x 10/100/1000 Mbps Ethernet with Intel® i211-AT; supports Wake-on-LAN, PXE Boot ROM 1 x 10/100/1000 Mbps Ethernet with Intel® i219-V (LM); supports Wake-on-LAN, PXE Boot ROM
Audio	HD Codec audio as MIC-in/Line-in/Line-out with Realtek ALC662
USB	4 x USB 3.0 4 x USB 2.0
Serial	1 x RS-232/422/485 1 x RS-232
PS/2 Combo Port	N/A
TPM	Infineon SLB9665TT2.0 with TPM 2.0 compliant
SMBus	N/A
Digital I/O	8-channel in/out programmed



### Display

Chipset	Intel® integrated Gfx graphic engine
Memory Size	Share system memory
Display Interface	1 x DisplayPort++ 1 x HDMI 1.4b (3840 x 2160 @30Hz) 1 x LVDS; 18/24-bit single/dual channel 1 x VGA (Wafer connector) 1 x eDP (optional)

\*\*H310: dual-view/Q370: triple-view

### Packing List

#### Standard

I/O bracket

### Ordering Information

#### Standard

MANO521PHGGA-H310 (P/N: E38M521100)	Mini-ITX SBC with LGA1151 9th/8th gen Intel® Core™ processor, Intel® H310, DisplayPort++, HDMI, LVDS, VGA, 2 COM, USB 3.0, M.2, mSATA, PCI Express Mini Card, 2 GbE LAN and HD audio
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#### Optional

MANO521PHGGA-Q370	Mini-ITX SBC with LGA1151 8th gen Intel® Core™ processor, Intel® Q370, DisplayPort++, HDMI, LVDS, VGA, 2 COM, USB 3.0, M.2, mSATA, PCI Express Mini Card, 2 GbE LAN and HD audio
5938A808010E	2 x USB 2.0 cable with bracket, 10P-Key
594N5002800E	USB 3.0 cable 20P/2 x USB A-Type/FE, L=22 cm
59382620000E	COM port with bracket, P=2 mm
59406260610E	SATA Power 15P to housing-2.54P, L=10 cm
59384500100E	SBC84500 audio cable with bracket, P=2.0 mm, L=420 mm
5095AD24000E	Adapter 19V 120W w/screw FSP
713PL76A000E	LGA1156 1.5U cooler
71070403010E	LGA1156 low profile cooler 15 mm height
710G3118000E	LGA1156 low profile cooler 15 mm height
594K2382000E	VGA D-Sub 15P to PHD2.0,2x5P, L=8 cm

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