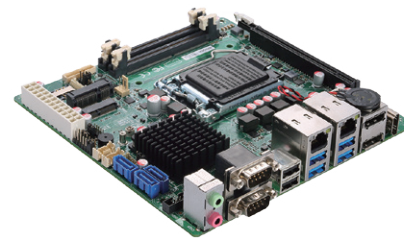
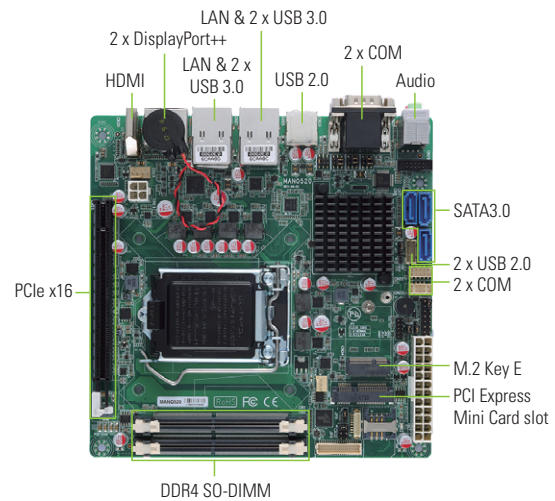


MANO520

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

Features

- LGA1151 9th/8th gen Intel® Core™ i7/i5/i3 processor
- Intel® H310 chipset (Q370 optional)
- 2 DDR4 SO-DIMM for up to 32GB of memory
- 4 USB 3.0 and 4 USB 2.0
- 4 COM ports
- 3 SATA-600 and 1 mSATA
- PCIe x16 and M.2 Key E



▲ Side view



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
Watchdog Timer	255 levels, 1 to 255 sec.
Expansion Interface	1 x PCIe x16 1 x M.2 Key E 22 x 30
Battery Lithium	Lithium 3V/220mAh
Power Input	Standard 12V ATX power 24+4 pin ATX connector AT Mode Auto Power 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	3 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-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 (with +5V/+12V power) 3 x RS-232
PS/2 Combo Port	N/A
TPM	Onboard TPM 2.0 (optional)
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	2 x DisplayPort++ 1 x HDMI 1 x LVDS; 18/24-bit single/dual channel

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

Packing List

Standard	User's Manual/Utility CD and I/O bracket
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Ordering Information

Standard	
MANO520PHGGA-H310 (P/N: E38M520100)	Mini-ITX SBC with LGA1151 9th/8th gen Intel® Core™ processor, Intel® H310, DisplayPort++, HDMI, LVDS, 2 GbE LAN and HD Audio
Optional	
MANO520PHGGA-Q370	Mini-ITX SBC with LGA1151 8th gen Intel® Core™ processor, Intel® Q370, DisplayPort++, HDMI, LVDS, 2 GbE LAN and HD audio
594M5002100E	2 x COM port, P=2.0 mm, L=300 mm
594E8422800E	2 x USB 2.0 wafer cable with bracket, P=2.0 L=180 mm
59384500100E	SBC84500 audio cable with bracket, P=2.0 mm, L=420 mm