MA-X1

Product Manual

1 Product Introduction

1.1 Appearance

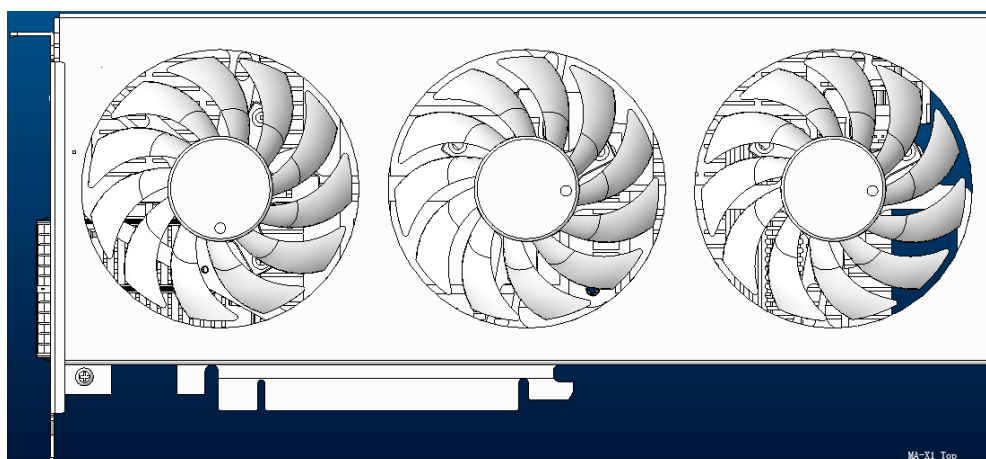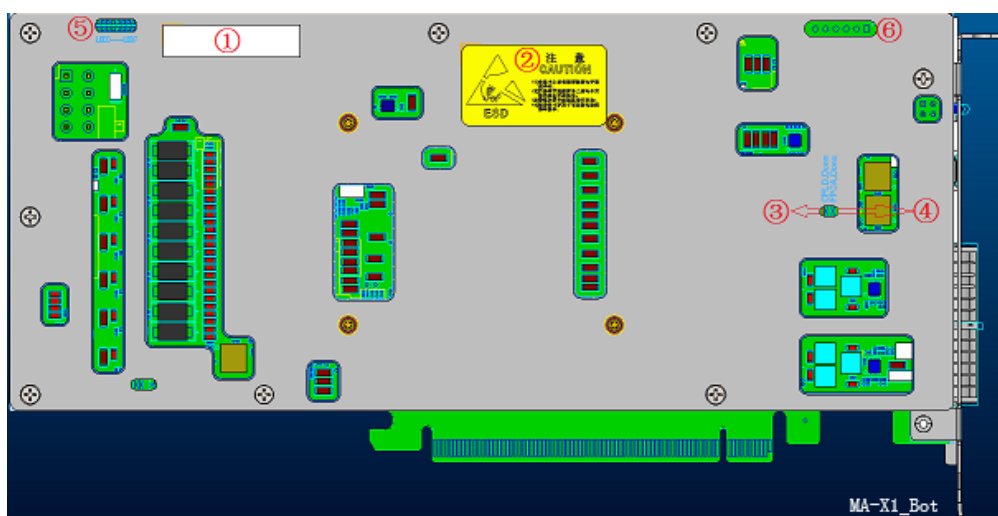Figure 1-1: Product Top View (Active Cooling Edition)

Figure 1-2: Product Bottom View
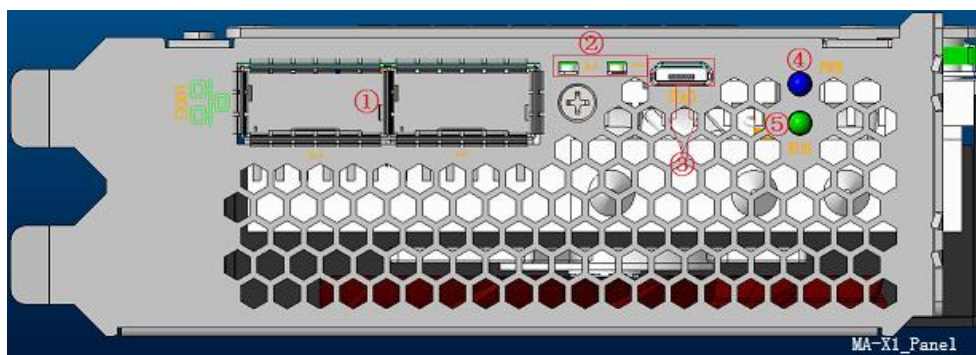

- ① : Finished product barcode label.

- **SN:98060410-1806105282**

- ②：Electrostatic discharge (ESD) warning label.

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- ③：CPLD_Done – A flashing green LED indicates that the CPLD has loaded successfully.

- ④：FPGA_Done – A solid green LED indicates that the FPGA has loaded successfully.

- ⑤：8 Test LEDs (LED0 – LED7) can be programmed for debugging and testing via FPGA custom logic.
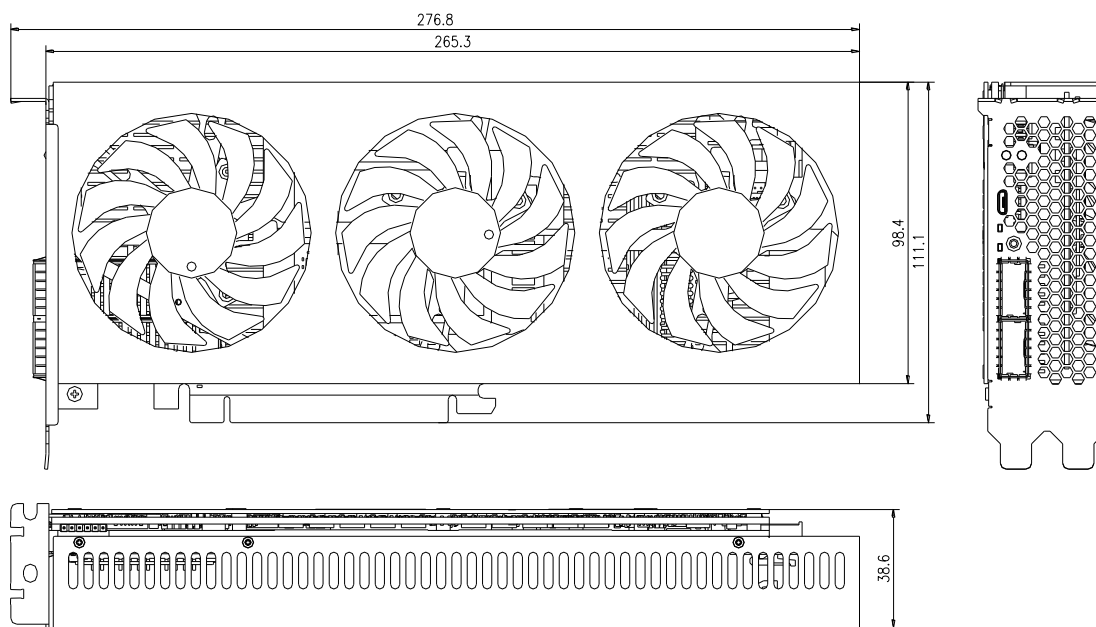
- ⑥：CPLD_JTAG – JTAG interface is in use for CPLD loading.

Figure 1-3: Product Panel View

- ①：2x 100G QSPF28 optical interface with MPO connector.

- ②：Optical interface link indicator LEDs – LED1 for port 1 and LED2 for port 2. Solid green LED indicates link established; flashing yellow LED indicates transmission is in output state.

- ③：USB_JTAG interface with micro-USB connector for JTAG programming support.

- ④：Power indicator LED – solid blue LED indicates that the power supply is operating normally.

- ⑤：RUN indicator LED – flashing green LED indicates that the product is operating normally.

1.2 Product Dimensions

Dual-Slot Active Cooling Edition (in mm)

1.3 Product Serial Number Identification

Material Code	Product Description	Corresponding Product Serial Number	Remaks
98060410	MA-X1 dual-slot standard product with active cooling, VU9P FPGA chip @ 300W power draw, 2x 100GE QSFP28 optical interface and 4x4GB DDR4 RAM	**98060410-xxxxxxxxxx**	

2 Product Specifications

2.1 产品规格

Part	Description
Dimensions	**Active Cooling Edition (Dual-Slot)** Size (mm): 276.8 x 111.1 x 38.6（±0.4）General linear dimensional tolerances are in compliance with GB1804-M standards
Main Processing Unit	Xilinx XCVU9P (full package name: XCVU9P-2LFLGB2104E) Vccint=0.72V (factory default) Supports variable Vccint adjustment between 0.72V-0.85V
PCIe Interface	PCIe Gen3 x16
RAM	4x DDR4 packages (each unit 4GB) Maximum speed 400Mbps 72-bit bit width (64-bit data and 8-bit ECC)
Flash	SPI NOR Flash，capacity to store 2 binary images (4x 2Gb)
EEPROM	64Kbit
Optical Interface	QSFP28, compatible with 100GE/4x 25GE (100GE QSFP28 MPO maximum line rate of 103.1 Gbps (wavelength 1310nm/850nm)
Power Supply	8-pin EPS-12V external power supply connector (up to 300W power draw)
SMBUS	SMBUS support for in-band and out-of-band management, independent power supply via CPLD (XC3S200AN-4FTG256C)
Clock	System clock 100MHz and 400MHz, other clocks are arranged by custom circuit logic design
Heat Dissipation	Active cooling via fans (dual-slot)
Debug Interface	The board provides a 6-pin JTAG interface and a micro-USB to JTGA interface for debugging
Operating Environment	Operating temperature: 5°C - 35°C Storage temperature: -20°C - 70°C

3 Installation and Removal Guide

3.1 Installation

Step 1: Wear anti-static gloves or anti-static wrist strap.

Step 2: Power off the workstation and disconnect the power supply to the workstation to ensure the workstation chassis is grounded.

Step 3: Open the workstation chassis according to workstation's operating manual, insert the MA-X1 into the PCIe x16 slot and connect the card's external power supply interface to the workstation's power supply unit.

Step 4: Secure the card to the chassis with screws (where available).

Step 5: Reconnect the power supply to the workstation and observe the Power and RUN indicator LEDs on the card's panel.

- If the power indicator LED is solid blue and the RUN indicator LED is flashing green, the board is operating normally.

- If either or both the power and RUN indicator LEDs are off, the board might be malfunctioning. Please safely power off the workstation, remove the board and contact technical support.

3.2 Removal

Step 1: Wear anti-static gloves or anti-static wrist strap.

Step 2: Power off the workstation and disconnect the power supply to the workstation to ensure the workstation chassis is grounded.

Step 3: Open the workstation chassis according to workstation's operating manual, remove the screws securing the card to the chassis (if used) and slowly pull the card straight out.

Step 4: Place the card in the anti-static packaging and replace the workstation chassis cover.