Agent200

Robust Din-rail Fanless Embedded System

Hardware User's Manual

AXIOMTEK

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Safety Precautions

Before getting started, please read the following important safety precautions.

1. Be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.

2. Disconnect the power cord from the Agent200 before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the Agent200 is properly grounded.

3. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

4. Turn OFF the system power before cleaning. Clean the system using a cloth only. Do not spray any liquid cleaner directly onto the screen.

5. Do not leave this equipment in an uncontrolled environment where the storage temperature is below -45°C or above 85°C. It may damage the equipment.

6. Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

   ▪ Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on a human body.

   ▪ When handling boards and components, wear a grounding wrist strap, available from most electronic component stores.

Classification

1. Degree of production against electric shock: not classified
2. Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitros oxide.
3. Mode of operation: Continuous
4. Type of protection against electric shock: Class I equipment

General Cleaning Tips

You may need to take the following precautions before you begin to clean the computer. When you clean any single part or component for the computer, please read and understand the details below fully.

When you need to clean the device, please rub it with a piece of dry cloth.

1. Be cautious of the tiny removable components when you use a vacuum cleaner to absorb the dirt on the floor.
2. Turn the system off before you start to clean up the component or computer.
3. Never drop the components inside the computer or get circuit board damp or wet.
4. Be cautious of all kinds of cleaning solvents or chemicals when you use it for the sake of cleaning. Some individuals may be allergic to the ingredients.
5. Try not to put any food, drink or cigarette around the computer.

Cleaning Tools

Although many companies have created products to help improve the process of cleaning your computer and peripherals users can also use household items to clean their computers and peripherals. Below is a listing of items you may need or want to use while cleaning your computer or computer peripherals.

Keep in mind that some components in your computer may only be cleaned using a product designed for cleaning the same types of components. Please read the instructions that come with a cleaning product to avoid misusage.

- Cloth: A piece of cloth is the best tool to use when rubbing up a component. Although paper towels or tissues can be used on most hardware as well, we still recommend you to rub it with a piece of cloth.

- Water or rubbing alcohol: You may moisten a piece of cloth a bit with some water or rubbing alcohol and rub it on the computer. Unknown solvents may be harmful to the plastics parts.

- Vacuum cleaner: Absorb the dust, dirt, hair, cigarette particles, and other particles out of a computer can be one of the best methods of cleaning a computer. Over time these items can restrict the airflow in a computer and cause circuitry to corrode.

- Cotton swabs: Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas in your keyboard, mouse, and other locations.

- Foam swabs: Whenever possible it is better to use lint free swabs such as foam swabs.

> **Note**
>
> ***We strongly recommend that you should shut down the system before you start to clean any components.***

Please follow the steps below:

1. Close all application programs
2. Close operating software
3. Turn off power
4. Remove all devices
5. Pull out the power cable

Scrap Computer Recycling

Please inform the nearest Axiomtek distributor as soon as possible for suitable solutions in case computers require maintenance or repair; or for recycling in case computers are out of order or no longer in use.

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Table of Contents

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SECTION 1
INTRODUCTION

This chapter contains general information and detailed specifications of the Agent200. Chapter 1 includes the following sections:

- General Description
- System Specification
- Dimensions
- I/O Outlets
- Packing List

1.1   General Description

The Agent200 din-rail fanless embedded system features a low power RISC-based module (i.MX 6Ultralite) processor and is designed to withstand temperatures ranging from -40°C to +70°C for using in extreme operating environment and industrial automation applications.

The Agent200 features 1 RS-232/422/485 serial port with console debug port, 1 CAN bus 1 LAN, 1 DIO Port (4-In/4-Out), 1 USB, 1 eMMC of 4GB onboard and 1 microSD socket for easy storage expansion and access in a compact, industrial-strength robust case. Its vertical din-rail form factor makes it easy to install the system in a small cabinet. Thanks to the RISC-based architecture, Agent200 will not generate a lot of heat during operation. The ready-to-run Agent200 is specially designed for industrial machines, automatic parking lots, traffic cabinets and more.

- **Features**
    - Fanless
    - Wide operating temperature of -40°C - +70°C
    - Low power RISC-based module (i.MX 6Ultralite), 528MHz Processor
    - 1 10/100Mbps Ethernets with magnetic isolation protection
    - 1 COM Port (RS-232/422/485) non isolation.
    - 1 Console Port for user setting with debug (change DB9 connector function via switch)
    - 1 CAN bus 2.0B non isolation.
    - 1 USB 2.0 with power distribution control and over current protection
    - 1 DIO Port 4-In with Dry/Wet and 4-Out Sink type contacts non isolation
    - 1 External Drive Magnetic Buzzer
    - 1 Watchdog Timer
    - TPM2.0
    - LED Indicators (status, USB power, COM, User programming)
    - Support 2 Wireless (Standard SIM Card 3G/4G or Wifi)
    - SNMP V1/V2c

■ Storage:

Supports one eMMC of 4GB onboard (for boot disk)

Supports one micro SD Card (easy-to-access, for store only)

■ 1 power path with terminal block and 9–48VDC

■ Din-rail mounting

1.2   System Specifications

1.2.1   CPU

● Low power RISC-based module i.MX 6Utralite, ARM® Cortex®-A7 core RISC-based 528MHz Processor

1.2.2   System Memory

● 1 x 256MB DDR3L SDRAM onboard

1.2.3   COM with Console Port

● COM1 (RS-232/422/485)

● For user debug settings (change DB9 connector function via switch)

1.2.4   CAN BUS

● CAN bus 2.0B protocol-compatible Controller Area Network (CAN).

1.2.5   LAN

● 10/100Mbps LAN w/ magnetic isolation protection 1.5KV

1.2.6   Storage

● 1 x eMMC of 4GB onboard (for boot disk)

● 1 x microSD slot (easy-to- access, for storage only)

1.2.7   USB

● 1 x USB2.0 Type-A port

1.2.8   WatchDog Timer (WDT)

● 0.5 to 128 seconds with a time resolution of 0.5 seconds

1.2.9   Buzzer

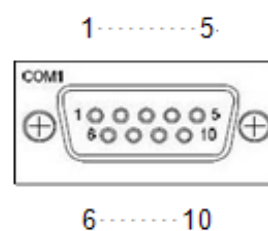● Software Support

1.2.10   TPM 2.0 FW7.85

● Software Support

1.2.11   COM

● DB9 Pin define

● non isolation protection

● RS232/RS422/RS485 (COM1)

● COM 1 with TX/RX/RTS/CTS signals

● RS-232/422/485 interface selected by software

COM1

Pin	RS-232	RS-422	RS-485
1		TX-	Data-
2	RX	TX+	Data+
3	TX	RX+	--
4		RX-	--
5	Ground	Ground	Ground
6		--	--
7	RTS	--	--
8	CTS	--	--
9		--	--

1.2.12   CAN bus (Optional)

● 1 CAN bus 2.0 B Ports

● DB9 connector

● CAN bus Design Specification

These are standard 9-pin D-Sub connectors for interfacing to CAN network.
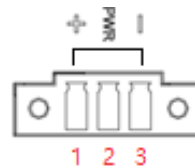
Pin	Signal
1	N.C.
2	CAN1_L
3	GND
4	N.C.
5	N.C.
6	N.C.
7	CAN1_H
8	N.C.
9	N.C.
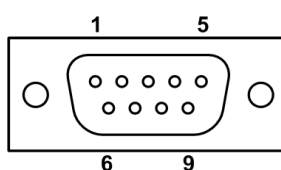
1.2.13 Power

- DC input range 9~48V
- DC Input has UVP/Reverse protection.

  UVP (Under voltage protection)

  Reserve protection
- Power consumption 9~48VDC, 0.46A~0.11A
  - 0.46A@9V
  - 0.35A@12V
  - 0.11A@48V
- DC Terminal Block

| Pin	DC Signal Name
1	Power+
2	-
3	Power-

1.2.14 Digital I/O Connector and Pin Definition

- 4 DI/ 2 DO non isolation
- DI: Wet/Dry
- DO: Sink Type
- DIO Design Specification

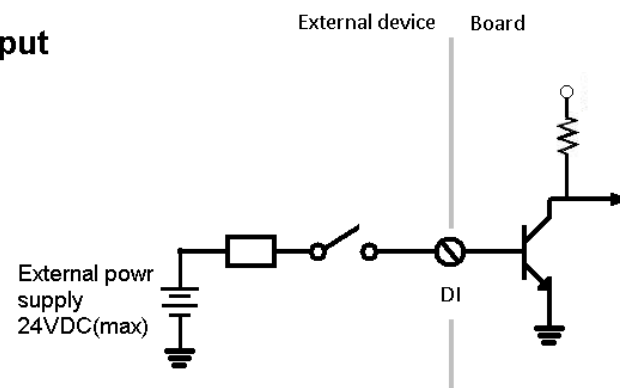| Digital Input	
Input Channels	4,Source type
Input Voltage	0 to 24VDC
Digital Input Levels for Dry Contacts	Logic level 0:Close to GND Logic level 1:Open
Digital Input Levels for Wet Contacts	Logic level 0:+10V to +24V (DI To COM-) Logic level 1:+3V max.
Digital Output	
Output Channels	4,Sink type
Over Current Protection	Max. 200 mA per channel
On-state Voltage	24VDC nominal, open collector to 30V

● DIO 4-IN/4-OUT of TB10 Female
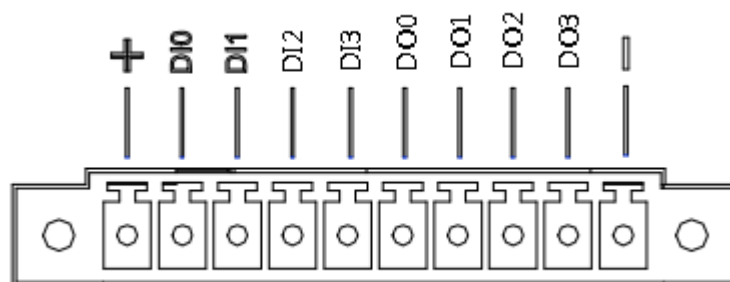
Agent200 DIO Terminal Block

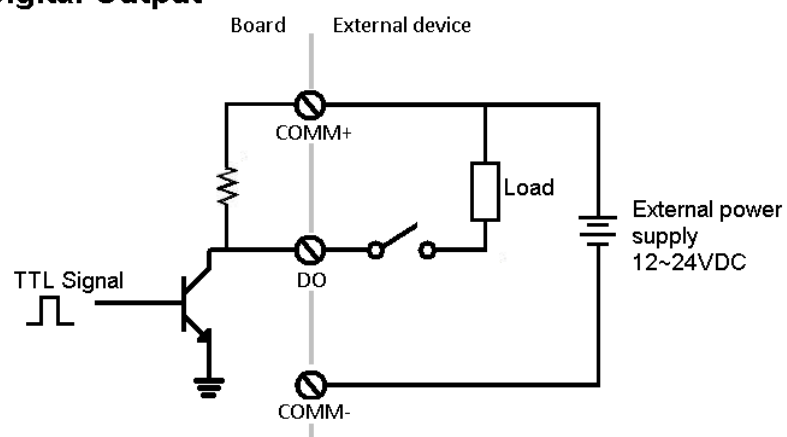| TB18 Pin No.	Signal name	Meaning
1	COM+	Plus Common for DIO
2	DI0	Digital Input
3	DI1	
4	DI2	
5	DI3	
6	DO0	Digital Output
7	DO1	
8	DO2	
9	DO3	
10	COM-	Minus Common for DIO

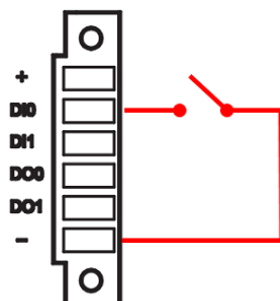● DIO operation schematic diagram

Input Circuit

Digital Input

External device   Board

External powr
supply
24VDC(max)

DI

Output Circuit

Digital Output

Board   External device

COMM+

Load

External power
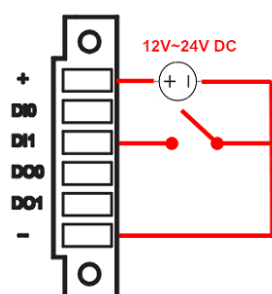supply
12~24VDC

TTL Signal

DO
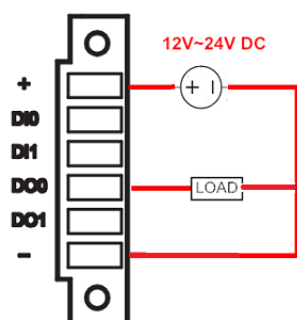
COMM-

● Digital Input Wiring

Dry Contact

Wet Contact

📝 **If you are using wet contacts, you must connect COM to power.**
Note

● Digital Output Wiring

1.2.15 System LED

LED Name	Description	Color
Status	The LED helps users judge whether boot is finished and the OS can work normally or not. When the boot has finished system configuration, the LED will turn ON. - The LED is blinking: Bootloader or Linux kernel loading. - The LED is always ON: The system is ready.	Green
USB Power (⚡)	On –USB Power is on. Off –USB Power is off.	Green
User programming (NO.1、2、3、4、5)	GPIO LED for user configuration. Factory Default always ON	Green
LAN	RJ-45 Up Green(Link) / Down Yellow Blinking(ACT)	Green/Yellow
COM	The LED is Blinking –Working in console mode The LED always On –Working in UART mode	Green
COM TX	When COM1 is transmitting data, the LED will turn on.	Green
COM RX	When COM1 is receiving data, the LED will turn on.	Green

1.2.16   Wireless (3G/GPRS or WiFi)

● 1 x Mini card socket 0 (supports USB interface) with 1 x Standard SIM Card Socket by outside

● 1 x Mini card socket 1 (supports USB interface)

● Support WiFi or 3G/4G

Mini Card 1   Mini Card 0 with outside SIM Card
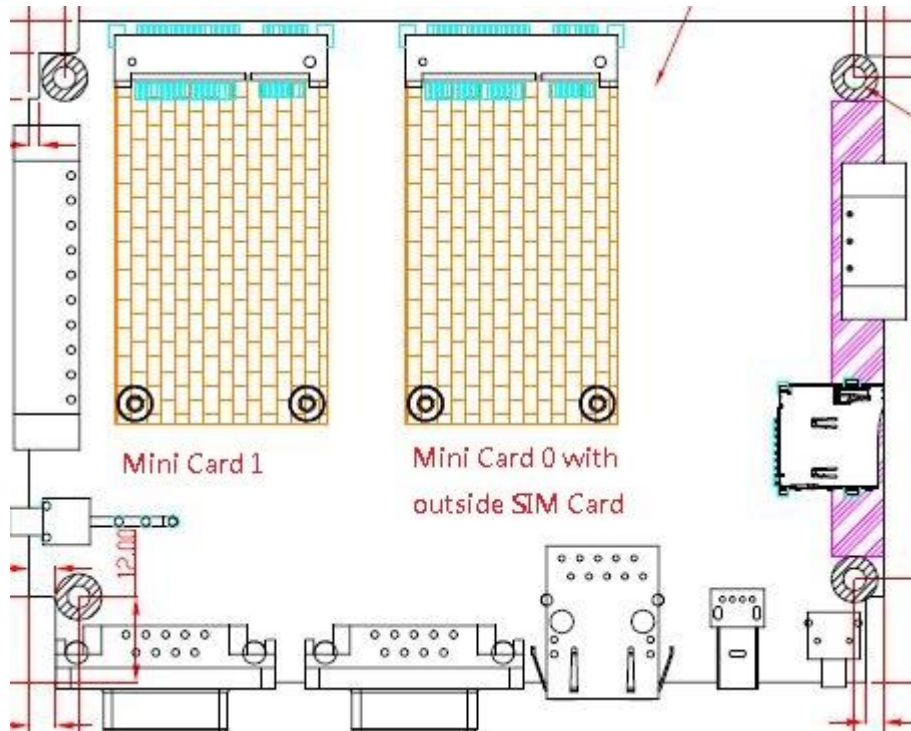
1.2.17   Reset Button

● 1 x Reset button

1.2.18   Operation Temperature

● -40°C ~ +70°C (-40 ºF ~ +158ºF)

1.2.19   Storage Temperature

● -45°C ~ +85°C (-49 ºF ~ +185ºF)

1.2.20   Humidity

● 10% ~ 95% (non-condensation)

1.2.21   Weight

● 1kg

1.2.22 Dimensions

● 31mm(W) x 100mm(D) x 125mm(H)

1.2.23 System I/O Outlet

● 1 9-pin D-Sub male connectors (COM1 port or Console Port)

● 1 DIP Switch COM1 or Console Port Select

● 1 10/100Mbps Ethernets with magnetic isolation protection

● 1 USB 2.0 Type-A with power distribution control and over current protection

● 1 DIO Port 4-In with Dry/Wet and 4-Out Sink type non isolation

● 1 DC Power Input with terminal block
● 1 CAN bus 2.0B 9-pin D-Sub male connectors
● 1 Micro SD slot
● 1 Standard SIM Card slot
● 3 Antenna Hole

1.3   Jumper setting

1.3.1   JP2 (BOOT SELECT)

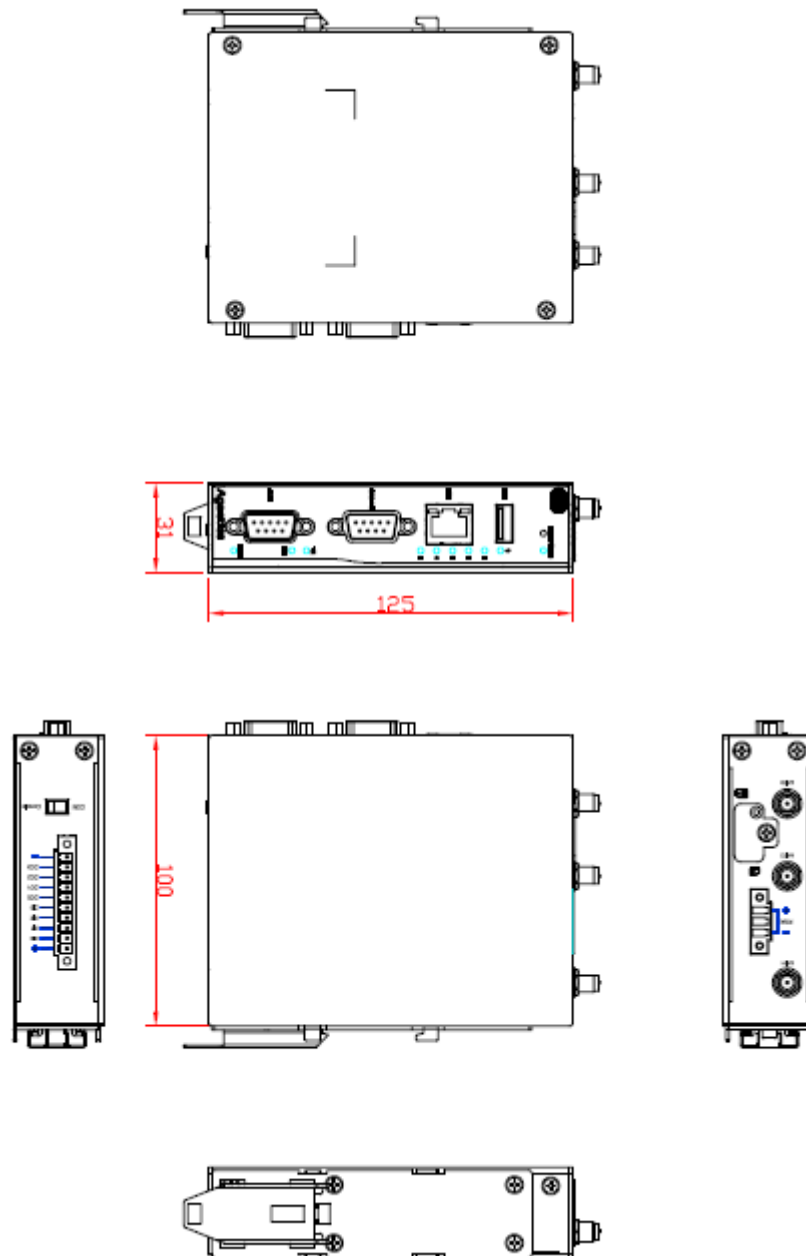| Function	Setting
Boot to OS (eMMC) (Default)	JP2 3-4,5-6 Close JP2 7-8, 11-12 Close
Boot to OS (SD Card)	JP2 3-4, 9-10 Close
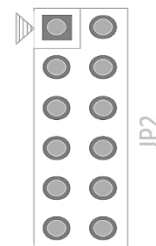
Note *All specifications and images are subject to change without notice.*
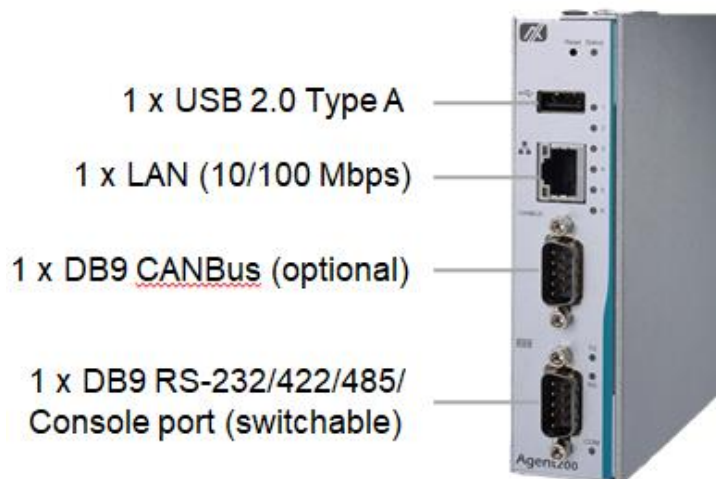
1.4   Dimensions

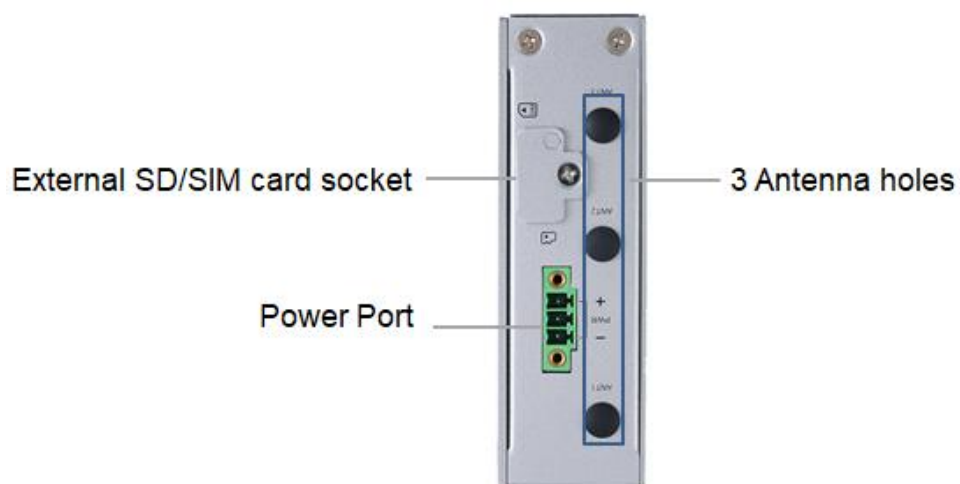The following diagrams show the dimensions and outlines of the Agent200

1.5   I/O Outlets

The following figures help you locate the I/O outlets on the front, top and bottom of the Agent200.
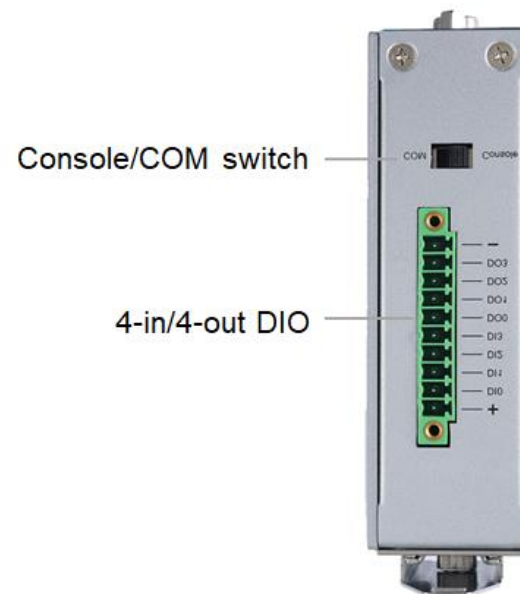
● **Front View**

● **Top View**

● **Bottom View**

1.6   Packing List

The package bundled with your Agent200 should contain the following items:

- Agent200 System Unit x 1

- Agent200 Quick Installation Guide x 1

- Screw x 4

- Din-rail Kit x1

- Power 3pin terminal block x 1

- DIO 10pin terminal block x 1

> **Note**
>
> ***Please download the latest BSP or the latest Web_AP for Agent200 from Axiomtek's website as below list if you have the demand.***
> **https://www.axiomtek.com/Default.aspx?MenuId=Products&FunctionId=DownloadSearch**
>
> ***Please contact an Axiomtek distributor if any of the above-mentioned items is damaged or missing.***

SECTION 2
HARDWARE INSTALLATION

2.1 Installing Din-rail Mounting

The Agent200 provides a Din-rail mount that customers can install as below:

Prepare the Din-rail mount assembling components (Four screws and a bracket) ready.