NP-6125 Series user manual

2.0.0

2025-4-23

Automation PC

- NP-6125
- NP-6125-H1
- NP-6125-JH2
- NP-6125-H1B
- NP-6125-JH2B
- NP-6125-JH3
- NP-6125-JH4
- NP-6125-8POE
- NP-6125-L2
- NP-6125-CAN2
- NP-6125-H7
- NP-6125-H1BP
- NP-6125-H7B
- NP-6125-JH5

Distribution list:

Name/ Group	Company
EA	NODKA

Reviews/Approvals:

	Name / Function / Company	Signature
Author:	EA	
Reviewed by:		

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➢ 1、1、Adjust the direction or position of the receiving antenna；

➢ 2、Increase the distance between this device and the receiver；

> 3、Insert the power connector of this device into a power socket that uses a different circuit from the receiver;

> 4、If you need technical support, please consult your dealer or experienced radio technician;

Technical Support and Services

1. For the latest information and documentation about this product, please visit the official website of Nodka at www.nodka.com.

2. If users need technical support, please contact the local distributor, sales representative, and customer service center. Before conducting technical consultation, users must collect complete product information for the following items:
   - Product Name and Serial Number;
   - Description of peripheral additional devices;
   - User software description（Operating system, version, application software, etc）;
   - A complete description of the problems that occurred with the product;
   - The complete content of each error message;
   -

Safety instructions

1. Before installing, wiring, operating, and inspecting this product, carefully read this manual and the related manuals introduced in the manual, and operate correctly while paying full attention to safety.

2. Please keep this user manual properly for future reference.

3. Before cleaning the equipment with a damp cloth, please unplug the power cord from the socket. Do not use liquids or decontamination sprays to clean the equipment.

4. For devices that use power cords, there must be easily accessible power sockets around the device.

5. Please ensure that the equipment is placed on a reliable surface before installation, as accidental drops may cause damage to the equipment.

6. Before connecting the device to the power outlet, please confirm whether the voltage of the power outlet meets the requirements.

7. Please arrange the power cord in a location that is not easily accessible to people and do not cover any debris on the power cord.

8. Please pay attention to all warnings and caution signs on the device.

9. If the device is not used for a long time, please disconnect it from the power outlet to avoid damage from excessive voltage fluctuations.

10. Please do not allow any liquid to flow into the equipment to avoid causing a fire or short circuit.

11. Please do not open the device by yourself. To ensure your safety, before turning on the device, all external power supplies used by the system must be disconnected before performing the operation, and the device must be turned on by a certified professional engineer with sufficient electrical knowledge.
    If the following situations occur, please have professional personnel repair them：
    ● Damaged power cord or plug；
    ● There is liquid flowing into the device inside；
    ● The device is not functioning properly, or you are unable to make it work properly through the user manual；
    ● Equipment falling or damaged；
    ● The equipment has obvious appearance damage；

12. Please do not store the device in an environment that exceeds our recommended temperature range, that is, not below -30°C or above 80°C, as it may damage the device.

13. Please clean up the dust or replace the fan regularly.

History:

Version	Date	Anthor	Description
1.0.0	2024-8-27	EA	First release.
2.0.0	2025-4-15	EA	Update fonts and minor corrections, append H7B andJH5
2.0.1	2025-4-17	EA	Jh5 and H1BP minor corrections

Table of Contents:

1 Introduction

This chapter provides necessary information of the product such as the features and manuals before actual use.

1.1 Releated Manuals

The manuals releated to the product are listed below, please read them as necessary along with this document before acutual use.

Name	Purpose	Contents	How to get
User manual	Must read when operating the product.	Descrbes the hardware features and settings	Download from Nodka website.
SDK user manual	Must read when developing the IO functions	Describes the API functions and useage	Download from Nodka website.

1.2 Safety Information

This document provides safety information using the following symbols to prevent accidents resulting in injury or death and the destruction of equipment and resources. Undersand the meanings of these symbols to operate the equipment safely.

Symbol	Description
⚠	**WARNING** WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠	**DANGER** DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
ⓘ	**NOTE** NOTE provide the reader with additional information or refer to detailed sources of information.

1.3 Production Description

This product is a high-performance book embedded industrial control machine for automation, machine vision and other industries, supporting Intel ® Core ™ 10 generation, 11 generation i3, i5, i7 CPU. The product adopts solid aluminum alloy profile structure, aluminum profile embedded fan to assist heat dissipation, to ensure excellent heat dissipation and robustness, fully enclosed design to prevent dust intrusion, but also fully consider the ergonomic structural design.

The hardware structure of the product adopts modular design. The product is composed of CPU core module, carrier board and customizable extension board. The mature modular circuit and devices can better ensure the stability of the product.

➢ The independent CPU core module is convenient for users to replace and upgrade according to the actual needs, which can better control the cost.

➢ The carrier board provides rich interfaces, providing two independent Intel Gigabit network cards, VGA and HDMI video display interfaces, 4 USB3.0 interfaces, two RS-232 / RS-485 (optional) interfaces, dual power terminals with flow pressure and anti-back connection, etc. All external interfaces are located at the front end of the product, which is more convenient for user wiring and maintenance. Internal provides a built-in USB2.0 interface, convenient for customers to install USB encryption hardware dog, miniPCIe convenient for customers to expand Wifi and 4G wireless function modules, reserved remote switch power interface, convenient for customers remote switch.

➢ Customized function extension board, convenient to build the industry dedicated system hardware platform.

NP-6125 series products are a high-performance processor industrial controller in visual applications, and a perfect vision system platform with high computing power, high real-time performance and versatility. Can be widely used in 3C manufacturing, pharmaceutical, packaging, mechanical testing equipment, robots, motion control, intelligent transportation and other fields.

2 Product Introduction

This chapter describes product component and their functions, pin assignment of each connector in detail.

2.1 NP-6125

The NP-6125 is a basic model which supports Intel the 6th/7th/8th Generation core i3/i5/i7 LGA11511 socket type desktop high performance processors, two Intel Gigabit LAN onboard, two DB9 serial ports, four USB ports, and are widely used in vision control, robot control, motion control, intelliGent gateway and other automation control fields.

2.1.1 Key Features

◆ 2 x Intel GbE LAN controller

◆ 4 x USB 3.0, 1x USB 2.0 Type-A onboard for dongle

◆ 2 x RS-232/485, RS-485 supports automatic data flow control

◆ VGA and HDMI dual display ports

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment

2.1.2 Product Dimension

Unit: mm
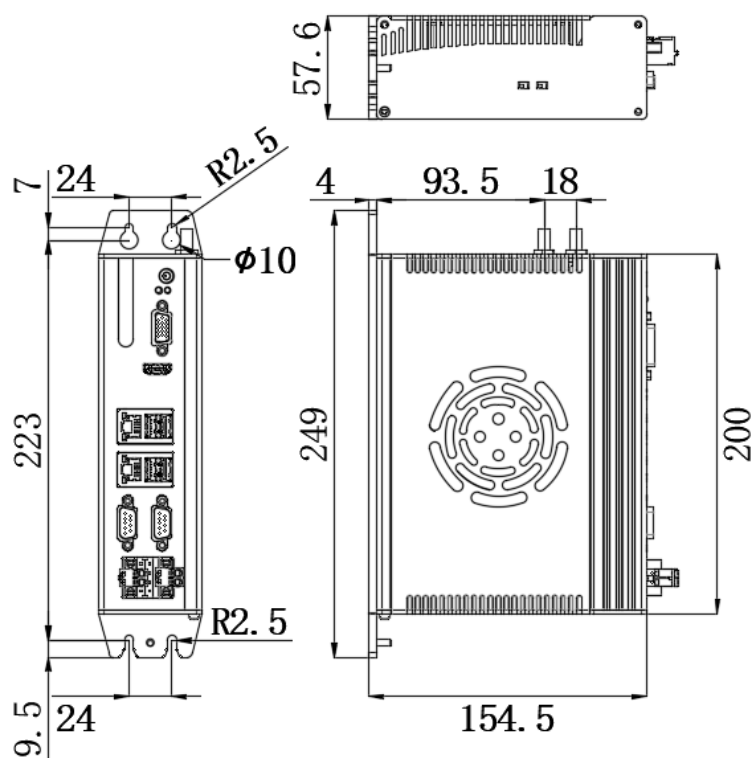
Figure 2-1 Dimension of NP-6125

2.1.3 Product Specifications

Model Name		NP-6125
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max.65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
	Ethernet	2 x Intel GbE LAN controller
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection
	Power Consumption	Max.120W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)57.6mm
	Net Weight	1.9Kg
Environment	Work Temperature	-20ºC ~ 60ºC (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40ºC ~ 80ºC (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.1.4 Description of Interfaces

No.	Definition
1	Switch button (PWR)
2	PWR, hard drive status indicators
3	VGA
4	HDMI
5	USB
6	LAN
7	USB
8	COM
9	Power connector (DC IN)
10	Remote switch
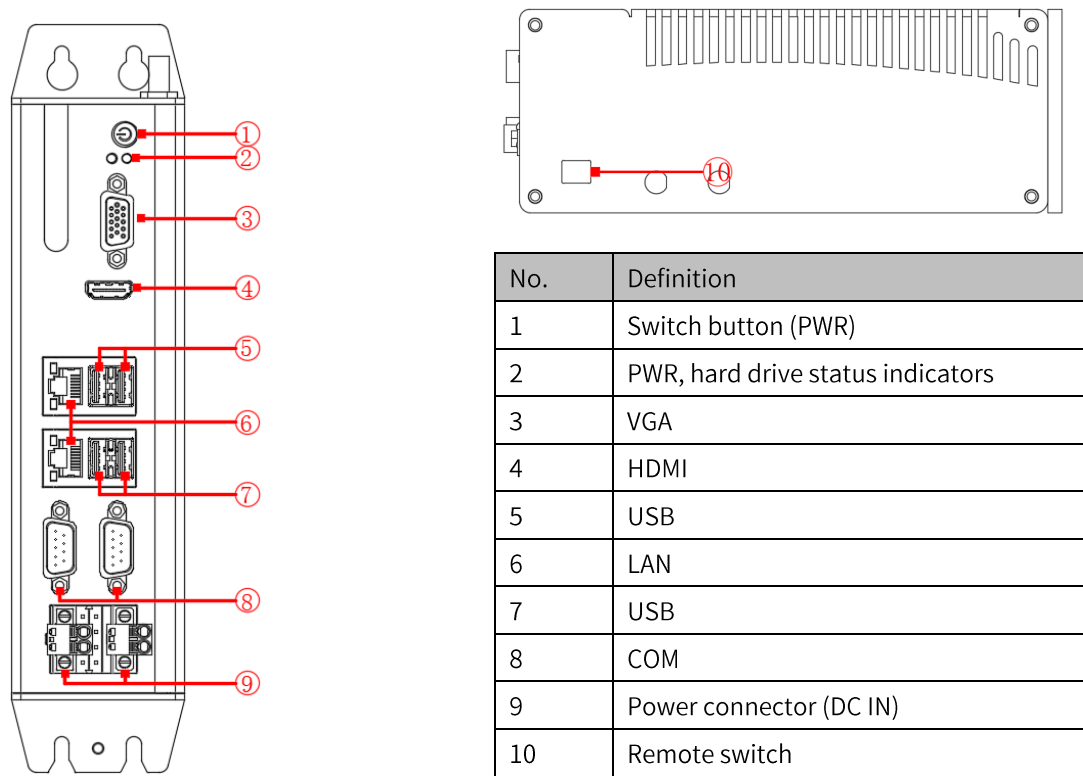
Figure 2-2 Interfaces of NP-6125

2.1.4.1 Power button

The product provides a power button with power led on the front, which can be used to turn on or turn off the PC in the case of power supply is connected.

2.1.4.2 Status Leds
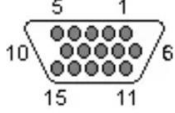
The product provides two status leds on the front to indicate the status of the power and the storage disk operation.

LED	Status	Description
Power Led	off	The product is power off
	on(Green)	The product is power on
Disk Led	blink(Orange)	The disk is reading or writing

2.1.4.3 Display ports
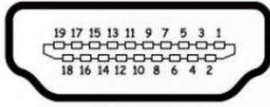
2.1.4.3.1 VGA

■ Pin definition of VGA connector:

DB-15 Connector			
Pin No.	Signal	Pin No.	Signal
1	RED	2	GREEN
3	BLUE	4	N.C.
5	GND	6	RGND
7	GGND	8	BGND
9	+5V	10	GND
11	N.C.	12	SDA
13	H SYNC	14	V SYNC
15	SCL		

2.1.4.3.2 HDMI

■ Pin definition of HDMI connector:
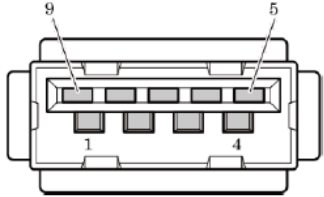
HDMI TYPE-A Connector			
Pin No.	Signal name	Pin No.	Signal name
1	TMDS DATA 2+	11	TMDS CLOCK SHIELD
2	TMDS DATA 2 SHIELD	12	TMDS CLOCK-
3	TMDS DATA 2-	13	CEC
4	TMDS DATA 1+	14	N.C.
5	TMDS DATA 1 SHIELD	15	DDC CLOCK
6	TMDS DATA 1-	16	DDC DATA
7	TMDS DATA 0+	17	GND
8	TMDS DATA 0 SHIELD	18	+5V PWR
9	TMDS DATA 0-	19	HOT PLUG DETECT
10	TMDS CLOCK+		

2.1.4.4 USB

The product provides four USB TYPE-A ports on the front and one USB TYPE-A port on the board can be used to install USB dongle.

2.1.4.4.1 USB on the front

■   Pin definition of USB3.0 port:

Pin No.	Signals	Pin No.	Signals
1	VCC5	6	SSRX+
2	DATA-	7	GND
3	DATA+	8	SSTX-
4	GND	9	SSTX+
5	SSRX-		

Current	Max. 1 A per USB
Cable length	Max.3 m (without hub)

2.1.4.4.2 USB2.0on board

The product provides a USB2.0 on board which can be used for USB dongle. When installing the dongle, you need to open the fan cover according to the following instructions.
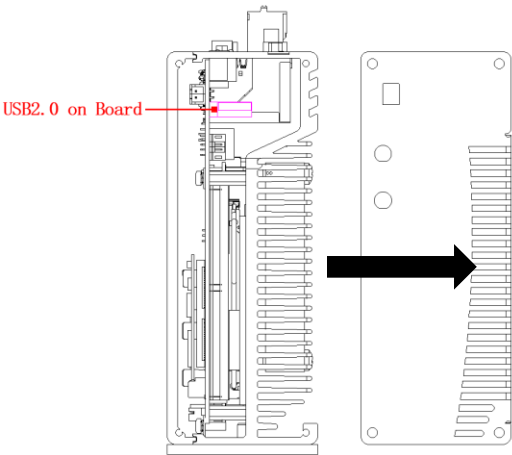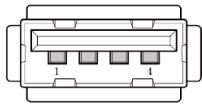
Figure 2-3 NP-6125 USB2.0 on board
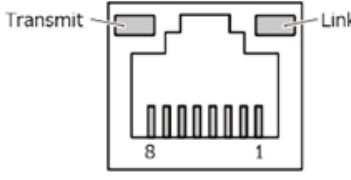
■   Pin definition of USB2.0 port on board:

Pin No.	Signals	Pin No.	Signals
1	VCC5	3	DATA+
2	DATA-	4	GND

2.1.4.5 Ethernet

The product provides two GbE Lan controllers using standard RJ45 connectors, they are LAN1, LAN2.

■ Pin definition of RJ45 connector:

Pin No.	Signals	
	100BASE-TX	1000BASE-T
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)

LED "Link"	On	Active
Orange(light)	Link(a connection to an Ethernet network exists)	Blinking(data be-ing transferred)

LED "Transmit"	On	Off
Green(light)	100Mbps	10Mbps
Orange(light)	1000Mbps	

*There are two status leds in the RJ45 connector indicate the status of the link and transmit separately. Link led is blinking when linking successfully, and when the network is working in the 1000Mbps, the transmit led is on in orange color, and when the network is working in the 100Mbps, the transmit led is on in green color, and in green color when working in the other speed.

Items	Parameters
Network type	1000BASE-T/100BASE-TX/10BASE-T
Transmission speed*	1000M/100M/10M bps
Max. network path length	100m/segment
NIC type	Intel® i210-AT Ethernet Controller

*Operation at 1000Mbps requires a category 5e or greater cable

2.1.4.6 COM Ports

NP-6125 has two COM ports (DB9 male terminal) on the front, they are COM 1 and COM 2. Both COMs can support RS-232 or RS-485 (selected through the DIP switch).
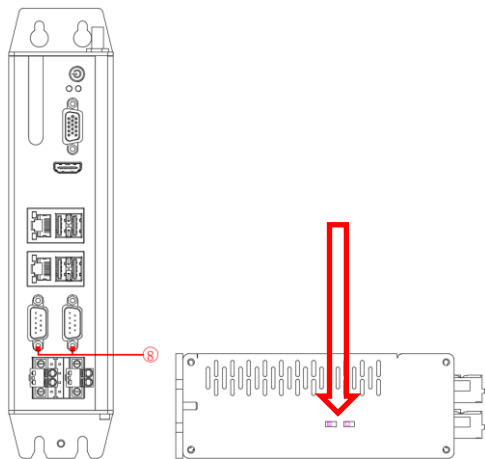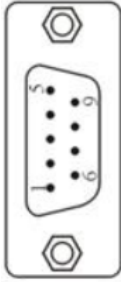
Figure 2-4 NP-6125 COM Ports and RS-232/485 DIP switch

■ COM1 and COM2 are the standard DB9 male terminal, the definitions are as follows:
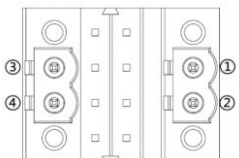
	Pin No.	Signal	
		RS-232	RS-485
	1	N.C.	B
	2	RXD	A
	3	TXD	N.C.
	4	N.C.	N.C.
	5	GND	GND
DB9 Male	6	N.C.	N.C.
Terminal	7	RTS	N.C.
	8	CTS	N.C.
	9	N.C.	N.C.
Transfer rate	Max. 115.2kbit/s		

* The maximum bus length of RS-232 is 15m.

2.1.4.7 Power

There are two 2-pin power input terminals on the front. Both of them connect to the power DC input internally. It supports DC12V-24V input.

■ Pin definition of DC IN connector:

	Pin No.	Signal	Pin No.	Signal
	1	DC 12~24V	3	DC 12~24V
	2	GND	4	GND

*On the motherboard pin1 and pin3 are shorted, pin2 and pin4 are shorted and the maximum allowable current for a single terminal is 8A, and If the current exceeds the rated current, connect another connect to supply power at the same time.
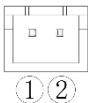
*Maximun possible current consumption at 12V or 24V with 100 W. This may vary depending on the configuration (see Product Specification). The inrush current must also be taken into account when selecting the power supply.

	1. Must check whither the voltage output of the power supply matches the PC DC input before connecting to the PC.
	2. Must check the positive and negative pole marks on the housing before connecting to the power.
:	3. Must turn off the power before inserting or removing the boards or cables.
	4. PE should be well grounded when operating.
	5. Must do not connect AC power supply to the PC directly.

2.1.4.8 Remote switch

The side provides a remote on-off interface through which the machine can be powered on or off remotely.

	Pin No.	Signal
	1	GND
①②	2	Power_ON

2.2 NP-6125-H1 （old）

NP-6125-H1 is a functional industrial computer in the NP-6125 series for machine vision industry applications. It can be equipped with Intel the 6th/7th/8th Generation core i3/i5/i7 LGA11511 socket type desktop high performance processors, and integrates PoE Gigabit network card, light source control, DI/DO integrated, widely used in machine vision inspection, defect detection, image recognition, material sorting and other fields.

2.2.1 Key Features

◆ 2 x Intel GbE LAN controller

◆ 4 x Intel GbE PoE LAN controller

◆ 4 x USB 3.0, 1x USB 2.0 Type-A onboard for dongle

◆ 2 x RS-232/485, RS-485 supports automatic data flow control

◆ 16 x isolated DIO(8 x DI, 8 x DO)

◆ 4 x PWM light control support external trigger input

◆ VGA and HDMI dual display ports

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment

2.2.2 Product Dimension

Unit: mm
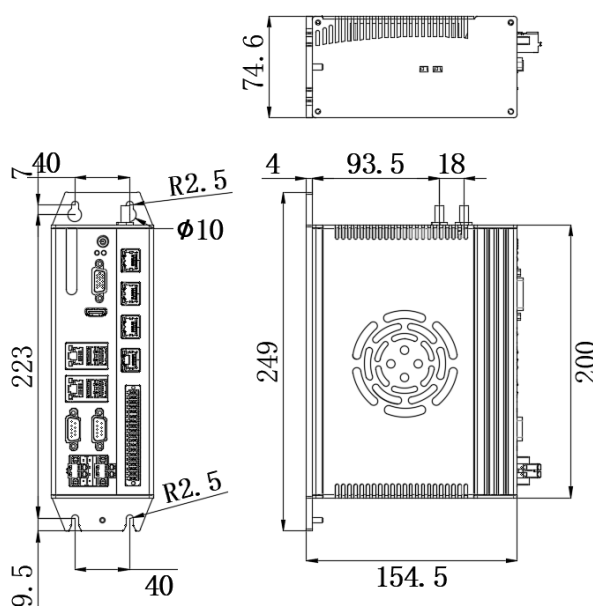
Figure 2-5 Dimension of NP-6125-H1

2.2.3 Product Specifications

Model Name		NP-6125-H1
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
	Ethernet	2 x Intel GbE LAN controller
	PoE	4 x Intel GbE PoE LAN controller, max. 15W per channel
	DI	8 x DI NPN/PNP，isolated 3750 Vrms
	DO	8 x DO, Transistor output, Imax:0.5A per channel，isolated 3750 Vrms
	Light Control	4 x PWM Light power control with external trigger input, Imax: 1A per channel
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection, (Must be DC24V when using Light Control)
	Power Consumption	Max. 350W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.4Kg
Environment	Work Temperature	-20°C ~ 60°C (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40°C ~ 80°C (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.2.4 Description of Interfaces
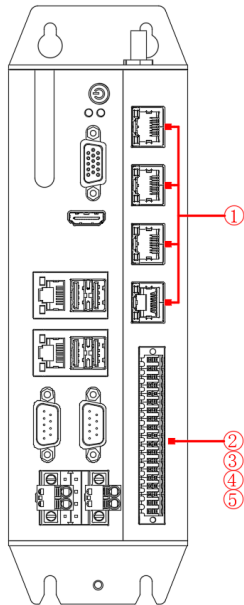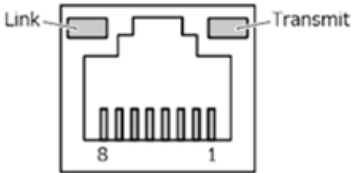
No.	Definition
1	PoE LAN
2	DI
3	DO
4	PWM Light control output
5	PWM Light control trigger Input

Figure 2-6 Interfaces of NP-6125-H1

2.2.4.1 PoE LAN

There are four PoE Gigabit Ethernet ports: LAN3, LAN4, LAN5, and LAN6. The maximum power of each channel is 15W.

■ Pin definition of PoE LAN connector:

Pin No.	Signals	
	100BASE-TX	1000BASE-T
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)

LED "Link"	On	Active
Orange(light)	Link(a connection to an Ethernet network exists)	Blinking(data be-ing transferred)

LED "Transmit"	On	Off
Green(light)	100Mbps	10Mbps
Orange(light)	1000Mbps	

*There are two status leds in the RJ45 connector indicate the status of the link and transmit separately. Link led is blinking when linking successfully, and when the network is working in the 1000Mbps, the transmit led is on in orange color, and when the network is working in the 100Mbps, the transmit led is on in green color, and in green color when working in the other speed.

Type	Parameters
Network Type	1000BASE-T/100BASE-TX/10BASE-T
Transmission Speed*	1000M/100M/10Mbps
Maximum Cable Distance	100m/segment (min. Cat 5e)
NIC Type	Intel® i210-AT Ethernet Controller
PoE Standard	IEEE 802.3af

*When the transmission speed is 1000Mbps, a network cable of at least CAT 5e is required.

⚠️ :	1. PoE LAN cable 1-2 are positive, 3-6 are negative and cannot be shorted; 2. No crossover PoE LAN cable allowed; 3. CAT-6 or higher PoE LAN cable recommended.

2.2.4.2 DIO

The H1 add-on board provides 8 channels of isolated DI, 8 channels of isolated DO, 4 channels of light PWM control outputs (Support external hard trigger input).

■ Pin definition of the DIO connector:

Pin No.	Signal	Description	Pin No.	Signal	Description
38	DI0	Digital input channel 0	37	DO0	Digital output channel 0
36	DI1	Digital input channel 1	35	DO1	Digital output channel 1
34	DI2	Digital input channel 2	33	DO2	Digital output channel 2
32	DI3	Digital input channel 3	31	DO3	Digital output channel 3
30	DI4	Digital input channel 4	29	DO4	Digital output channel 4
28	DI5	Digital input channel 5	27	DO5	Digital output channel 5
26	DI6	Digital input channel 6	25	DO6	Digital output channel 6
24	DI7	Digital input channel 7	23	DO7	Digital output channel 7
22	①V+	Power output positive	21	DGND	DO GND
20	Com1	Common end of digital input channel	19	DGND	DO GND
18	①V-	Power output negative	17	L24V	Reserved
16	CH1+	Light control channel 1 output positive	15	L0V	Reserved
14	CH1-	Light control channel 1 output negative	13	FS	Reserved
12	CH2+	Light control channel 2	11	②GND	GND

		output positive			
10	CH2-	Light control channel 2 output negative	9	LCom	Common end of Light control trigger input
8	CH3+	Light control channel 3 output positive	7	TR1	Light control channel 1 trigger input
6	CH3-	Light control channel 3 output negative	5	TR2	Light control channel 2 trigger input
4	CH4+	Light control channel 4 output positive	3	TR3	Light control channel 3 trigger input
2	CH4-	Light control channel 4 output negative	1	TR4	Light control channel 4 trigger input

Note：①. V+ and V-are internally isolated power supply outputs, 24V, max. current 40mA, only for Input signal by dry contact power supply;

②. GND is the common ground terminal where the light controller input signal is a dry contact, not available for wet contact.

2.2.4.2.1 DI

The H1 add-on board provides 8 isolated digital inputs (isolation voltage 3750Vrms), the maximum allowable voltage cannot be exceeded DC30V. Because of the internal circuit adopts bidirectional optocoupler isolation, it is compatible with PNP and NPN wiring solution. The reference wiring diagrams are as follows:

➢ NPN connection in wet contact way：
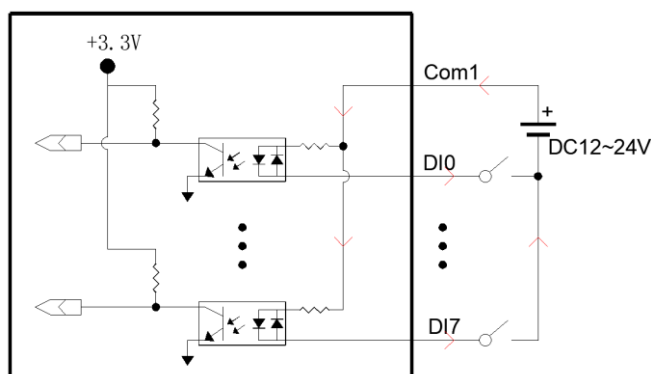
Figure 2-7 H1 DI NPN wiring solution

➢ PNP connection in wet contact way：
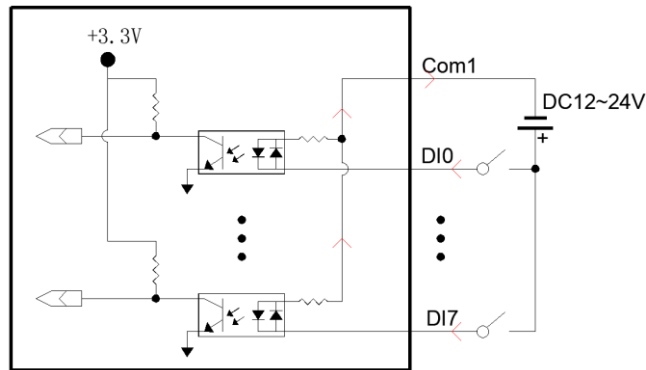
Figure 2-8 H1 DI PNP wiring solution

➢ NPN connection in dry contact way(It is necessary to use the internally provided signal power supply V+/V-)：
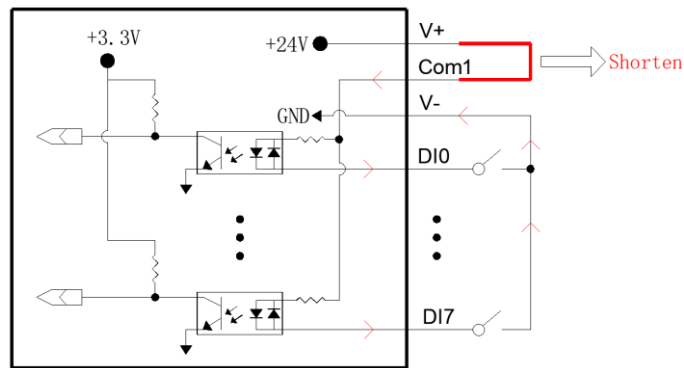
Figure 2-9 H1 DI NPN wiring solution

➢ PNP connection in dry contact way(It is necessary to use the internally provided signal power supply V+/V-)：
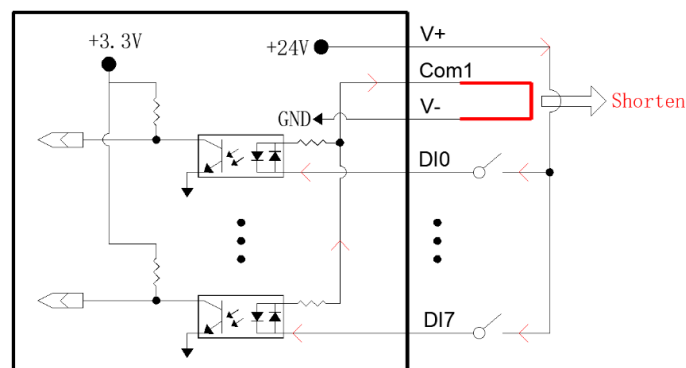
Figure 2-10 H1 DI PNP wiring solution

2.2.4.2.2 DO

The H1 add-on board provides 8 Digital Output channels, transistor output, I_{max}: 500mA, V_{max}: 30V. Please remind that a diode should be connected in parallel for freewheeling when external inductive load is connected.
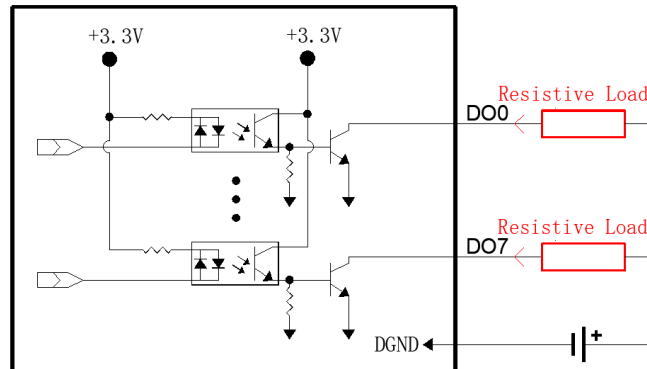
Figure 2-11 H1 Wiring of resistive load
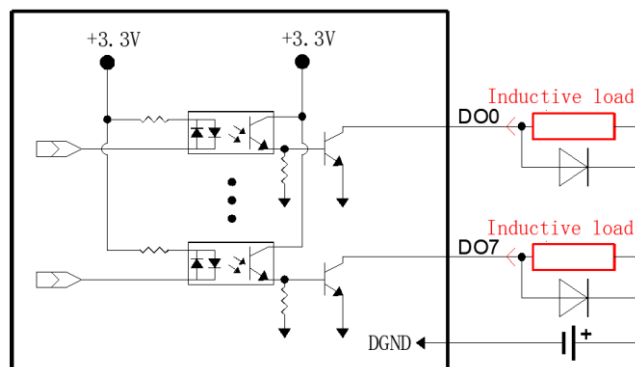
Figure 2-12 H1 Wiring of inductive load

1. DO output current <500mA;

2. DO load voltage <30VDC;

3. Connect a flywheel diode when connecting the external inductive load. Diodes can be IN4001 or similar;

4. Positive and negative power supply terminals cannot connect to the DO signal terminal and DOGND directly.

2.2.4.2.3 PWM Light Control

The H1 add-on board provides 4 channels of PWM light control, the maximum output current for per channel is 1A, and the dimming level is 100. Kindly pay attention to the PC power supply input must be DC24V when using light control function. Each channel has its own external hard trigger input. The reference wiring solutions are as follows:

1. PWM light control output：
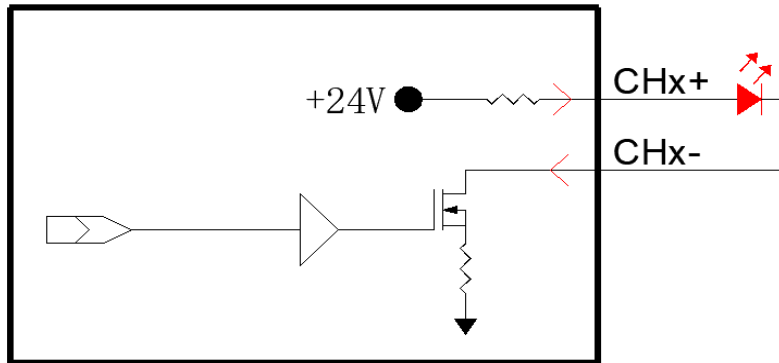
Figure 2-13 H1 Wiring of Light control output

	1. Must be use DC24V power supply when use PWN light control function;
⚠ ：	2. The power supply cannot be less than the total power consumption of the full load and the light;
	3. The positive and negative PWM output cannot be shorted.

2. Light control external trigger

➢ NPN connection in wet contact way
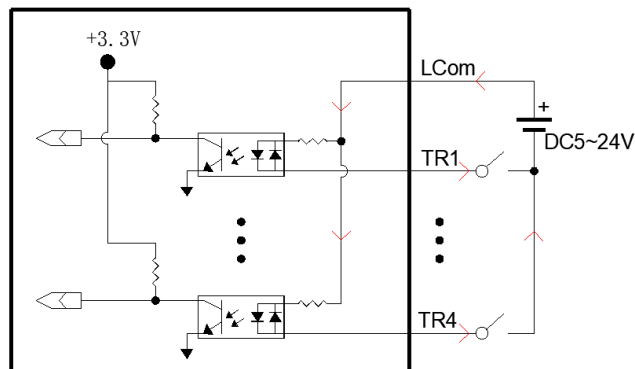
Figure 2-14 H1 NPN wiring solution

➢ PNP connection in wet contact way:
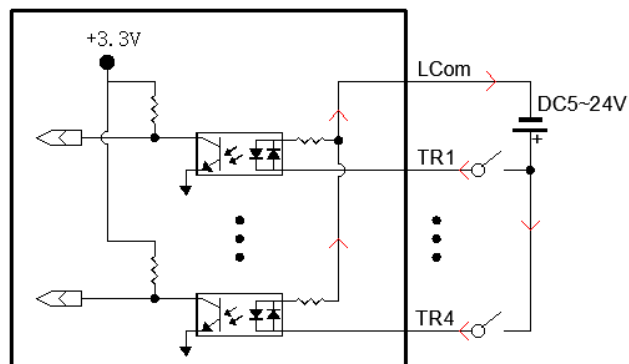
Figure 2-15 H1 PNP wiring solution

➢ NPN connection in dry contact way:
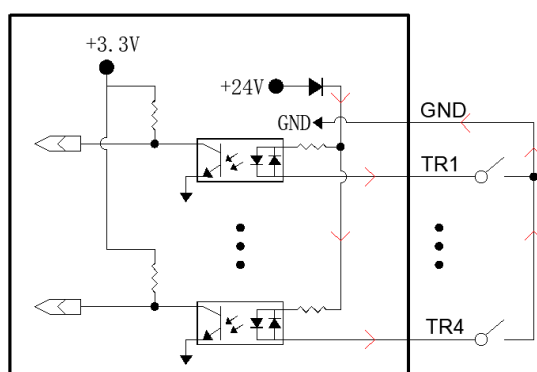
Figure 2-16 H1 NPN wiring solution

ℹ :	When using an external hard trigger signal for light control, the light controller needs to be set to hard trigger or hard switch mode in the software.

2.3 NP-6125-H1 （new）

NP-6125-H1 is a functional industrial computer in the NP-6125 series for machine vision industry applications. It can be equipped with Intel the 6th/7th/8th Generation core i3/i5/i7 LGA11511 socket type desktop high performance processors, and integrates PoE Gigabit network card, light source control, DI/DO integrated, widely used in machine vision inspection, defect detection, image recognition, material sorting and other fields.

2.3.1 Key Features

- 2 x Intel GbE LAN controller
- 4 x USB 3.0, 1x USB 2.0 Type-A onboard for dongle
- 2 x RS-232/485, RS-485 supports automatic data flow control
- 4 x Intel GbE PoE LAN controller
- 4 x PWM light control support external trigger input
- 16 x isolated DIO(8 x DI, 8 x DO)
- 1 x miniPCIe slot can be extended to Wifi, 3G/4G
- VGA and HDMI dual display ports
- Support Wall-mounted or DIN-Rail mounted
- -20 ~ 60℃ wide temperature environment

2.3.2 Product Dimension

Unit: mm
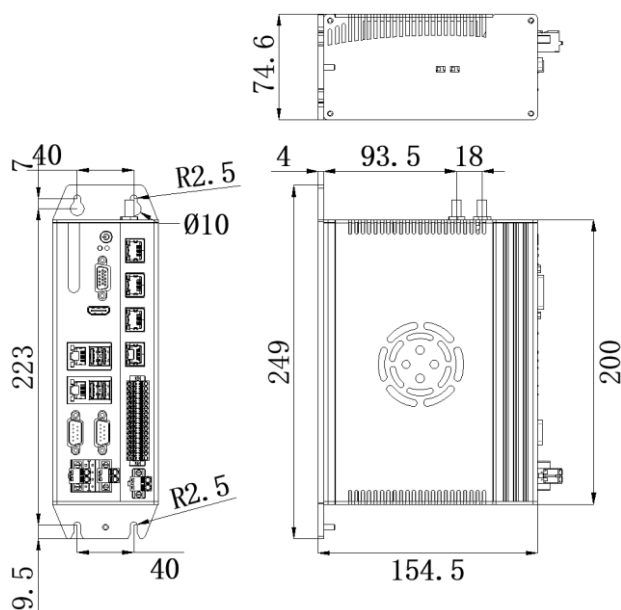
Figure 2-17 Interfaces of NP-6125-H1

2.3.3 Product Specifications

Model Name		NP-6125-H1
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
	Ethernet	2 x Intel GbE LAN controller
	PoE	4 x Intel GbE PoE LAN controller, max. 15W per channel
	DI	8 x DI NPN/PNP，isolated 3750 Vrms
	DO	8 x DO, Transistor output, Imax:0.5A per channel，isolated 3750 Vrms
	Light Control	4 x PWM Light power control with external trigger input，Imax: 1A per channel (Independent power supply)
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection,
	Power Consumption	Max.200W; (Non-Light source power)
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.4Kg
Environment	Work Temperature	-20ºC ~ 60ºC (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40ºC ~ 80ºC (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.3.4 Description of Interfaces
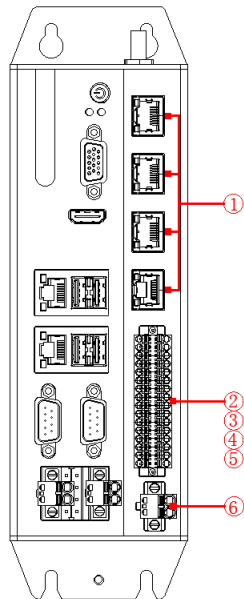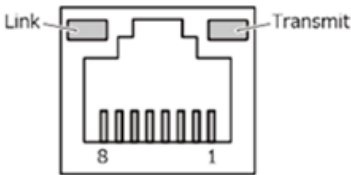
No.	Definition
1	PoE LAN
2	DI
3	DO
4	PWM Light control output
5	PWM Light control trigger Input
6	Light source power supply

Figure 2-18 Interfaces of NP-6125-H1

2.3.4.1 PoE LAN

There are four PoE Gigabit Ethernet ports: LAN3, LAN4, LAN5, and LAN6. The maximum power of each channel is 15W.

- Pin definition of PoE LAN connector:

Pin No.	Signals	
	100BASE-TX	1000BASE-T
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)
LED "Link"	On	Active
Orange(light)	Link(a connection to an Ethernet network exists)	Blinking(data be-ing transferred)
LED "Transmit"	On	Off
Green(light)	100Mbps	10Mbps
Orange(light)	1000Mbps	

*There are two status leds in the RJ45 connector indicate the status of the link and transmit separately. Link led is blinking when link successfully, and when the network is working in the 1000Mbps, the transmit led is on in orange color, and when the network is working in the 100Mbps, the transmit led is on in green color, and in green color when working in the other speed.

Type	Parameters
Network Type	1000BASE-T/100BASE-TX/10BASE-T
Transmission Speed*	1000M/100M/10Mbps
Maximum Cable Distance	100m/segment (min. Cat 5e)
NIC Type	Intel® i210-AT Ethernet Controller
PoE Standard	IEEE 802.3af

*When the transmission speed is 1000Mbps, a network cable of at least CAT 5e is required.

:
1. PoE LAN cable 1-2 are positive, 3-6 are negative and cannot be shorted;
2. No crossover PoE LAN cable allowed;
3. CAT-6 or higher PoE LAN cable recommended.

2.3.4.2 DIO

The H1 add-on board provides 8 channels of isolated DI, 8 channels of isolated DO, 4 channels of light PWM control outputs(Support external hard trigger input).

■ Pin definition of PoE LAN connector:

Pin No.	Signal	Description	Pin No.	Signal	Description
32	DI0	Digital input channel 0	31	DO0	Digital output channel 0
30	DI1	Digital input channel 1	29	DO1	Digital output channel 1
28	DI2	Digital input channel 2	27	DO2	Digital output channel 2
26	DI3	Digital input channel 3	25	DO3	Digital output channel 3
24	DI4	Digital input channel 4	23	DO4	Digital output channel 4
22	DI5	Digital input channel 5	21	DO5	Digital output channel 5
20	DI6	Digital input channel 6	19	DO6	Digital output channel 6
18	DI7	Digital input channel 7	17	DO7	Digital output channel 7
16	DICOM	Common end of digital input channel	15	DGND	DO GND
14	LCOM	Common end of Light control trigger input	13	DGND	DO GND
12	TR1	Light control channel 1 trigger input	11	TR2	Light control channel 2 trigger input
10	TR3	Light control channel 3 trigger input	9	TR4	Light control channel 4 trigger input
8	CH1+	Light control channel 1 output positive	7	CH1-	Light control channel 1 output negative

6	CH2+	Light control channel 2 output positive	5	CH2-	Light control channel 2 output negative
4	CH3+	Light control channel 3 output positive	3	CH3-	Light control channel 3 output negative
2	CH4+	Light control channel 4 output positive	1	CH4-	Light control channel 4 output negative

2.3.4.2.1 DI

The H1 add-on board provides 8 isolated digital inputs (isolation voltage 3750Vrms), the maximum allowable voltage cannot be exceeded DC30V. Because of the internal circuit adopts bidirectional optocoupler isolation, it is compatible with PNP and NPN wiring solution. The reference wiring diagrams are as follows:

➢ NPN connection in wet contact way:
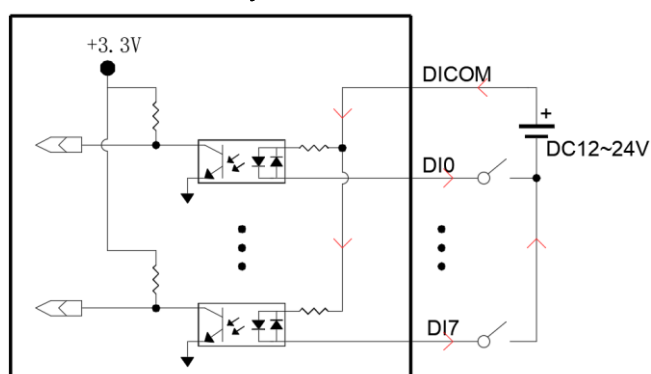
Figure 2-19 H1 DI NPN wiring solution

➢ PNP connection in wet contact way:
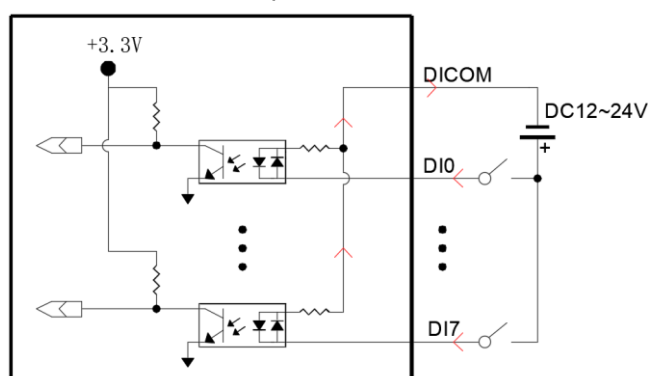
Figure 2-20 H1 DI PNP wiring solution

2.3.4.2.2 DO

The H1 add-on board provides 8 Digital Output channels, transistor output, I_{max}: 500mA, V_{max}: 30V. Please remind that a diode should be connected in parallel for freewheeling when external inductive load is connected.
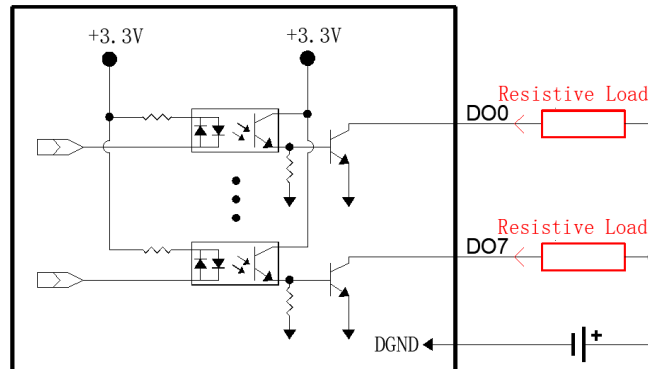
Figure 2-21 H1 Wiring of resistive load
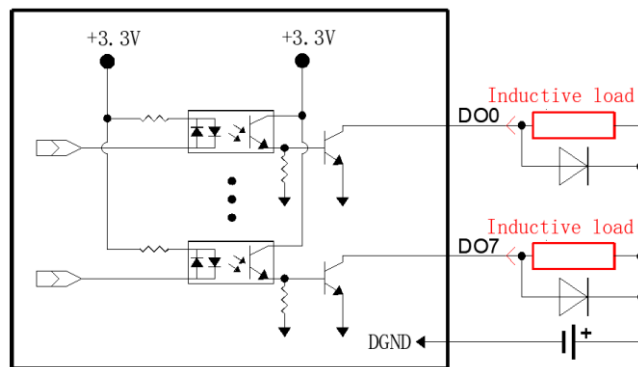
Figure 2-22 H1 Wiring of inductive load

1. DO output current <500 mA ;

2. DO load voltage <30VDC;

3. Connect a flywheel diode when connecting the external inductive load. Diodes can be IN4001 or similar;

4. Positive and negative power supply terminals cannot connect to the DO signal terminal and DOGND directly.

2.3.4.2.3 PWM Light Control

The H1 add-on board provides 4 channels of PWM light control, the maximum output current for per channel is 1A, and the dimming level is 100. Kindly pay attention to the PC power supply input must be DC24V when using light control function. Each channel has its own external hard trigger input. The reference wiring solutions are as follows:

1. PWM light control output :
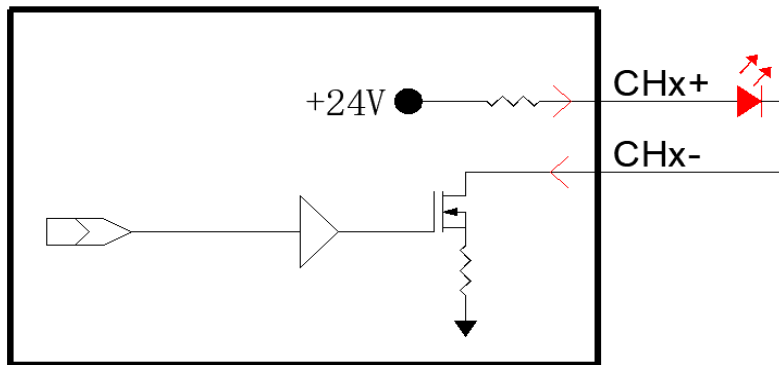
Figure 2-23 H1 Wiring of Light control output

	1. Must be use DC24V power supply when use PWN light control function; 2. The power supply cannot be less than the total power consumption of the full load and the light; 3. The positive and negative PWM output cannot be shorted.

2. Light control external trigger

➢ NPN connection in wet contact way：
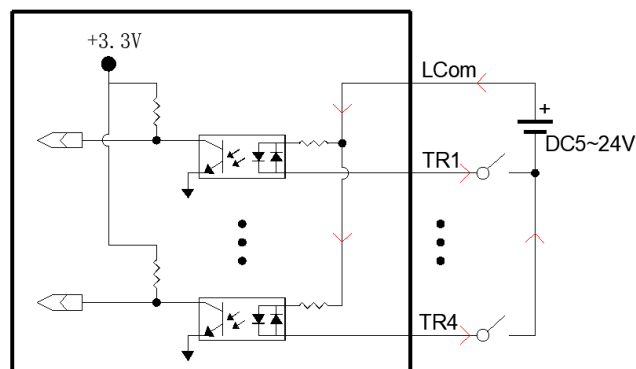
Figure 2-24 H1 NPN wiring solution

➢ PNP connection in wet contact way:
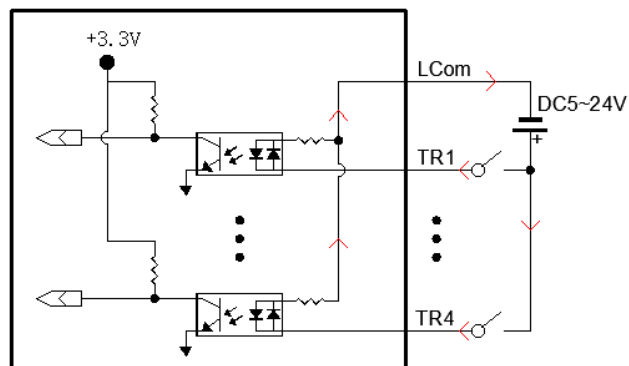
Figure 2-25 H1 PNP wiring solution
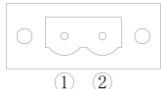
	When using an external hard trigger signal for light control, the light controller needs to be set to hard trigger or hard switch mode in the software.

2.3.4.2.4 Light soure power supply

When the light source is used, an external power supply is required, and the input voltage is DC24V. The specific power supply depends on the power of the external light source.

- Pin definition of the Light soure power connector:

	Pin No.	Signal	Pin No.	Signal
	1	GND	2	DC24V

*Maximun possible current consumption at 24V with 96 W. The inrush current must also be taken into account when selecting the power supply.

2.4 NP-6125-JH2 （old）

NP-6125-JH2 is a functional industrial computer in the NP-6125 series for machine vision industry applications. It can be equipped with Intel the 6th/7th/8th Generation core i3/i5/i7 LGA11511 socket type desktop high performance processors, and integrates PoE Gigabit network card, light source control, DI/DO integrated, widely used in machine vision inspection, defect detection, image recognition, material sorting and other fields.

2.4.1 Key Features

◆ 2 x Intel GbE LAN controller

◆ 4 x USB 3.0, 1x USB 2.0 Type-A onboard for dongle

◆ 2 x RS-232/485, RS-485 supports automatic data flow control

◆ 2 x Intel GbE PoE LAN controller

◆ 4 x PWM light control support external trigger input

◆ 16 x isolated DIO(8 x DI, 8 x DO)

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment

2.4.2 Product Dimension

Unit: mm
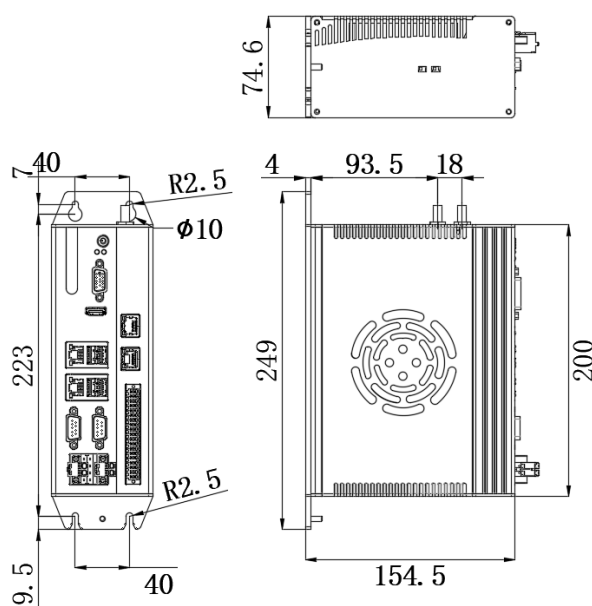
Figure 2-26 Dimension of NP-6125-JH2

2.4.3 Product Specifications

Model Name		NP-6125-JH2
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch
	Ethernet	2 x Intel GbE LAN controller
	PoE	2 x Intel GbE PoE LAN controller, max. 15W per channel
	DI	8 x DI NPN/PNP，isolated 3750 Vrms
	DO	8 x DO, Transistor output, Imax:0.5A per channel，isolated 3750 Vrms
	Light Control	4 x PWM Light power control with external trigger input,Imax: 1A per channel
	VGA	Support up to 1920 x 1200 @ 60Hz
	HDMI	Support up to 3840 x 2160 @ 30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection, (Must be DC24V when using Light Control)
	Power Consumption	Max. 250W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.4Kg
Environment	Work Temperature	-20℃ ~ 60℃ (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40℃ ~ 80℃ (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.4.4 Description of Interfaces
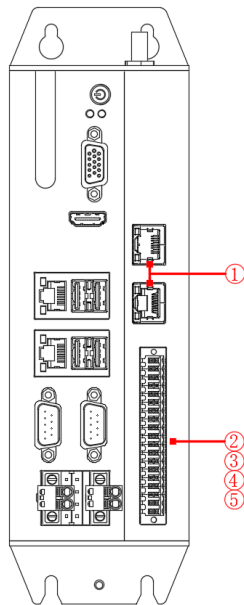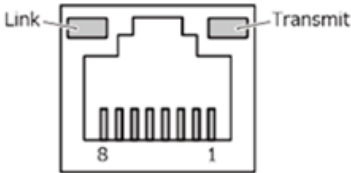
No.	Definition
1	PoE LAN
2	DI
3	DO
4	PWM Light source control output
5	PWM Light source control trigger Input

Figure 2-27 Interfaces of NP-6125-JH2

2.4.4.1 PoE LAN

There are two PoE Gigabit Ethernet ports: LAN3, LAN4. The maximum power of each channel is 15W.

- Pin definition of PoE LAN connector:

Pin No.	Signals	
	100BASE-TX	1000BASE-T
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)
LED "Link"	**On**	**Active**
Orange(light)	Link(a connection to an Ethernet network exists)	Blinking(data be-ing transferred)
LED "Transmit"	**On**	**Off**
Green(light)	100Mbps	10Mbps
Orange(light)	1000Mbps	

*There are two status leds in the RJ45 connector indicate the status of the link and transmit separately. Link led is blinking when link successfully, and when the network is working in the 1000Mbps, the transmit led is on in orange color, and when the network is working in the 100Mbps, the transmit led is on in green color, and in green color when working in the other speed.

Type	Parameters
Network Type	1000BASE-T/100BASE-TX/10BASE-T
Transmission Speed*	1000M/100M/10Mbps
Maximum Cable Distance	100m/segment (min. Cat 5e)
NIC Type	Intel® i210-AT Ethernet Controller
PoE Standard	IEEE 802.3af

*When the transmission speed is 1000Mbps, a network cable of at least CAT 5e is required.

:
1. PoE LAN cable 1-2 are positive, 3-6 are negative and cannot be shorted;
2. No crossover PoE LAN cable allowed;
3. CAT-6 or higher PoE LAN cable recommended.

2.4.4.2 DIO

The JH2 add-on board provides 8 channels of isolated DI, 8 channels of isolated DO, 4 channels of light PWM control outputs (Support external hard trigger input).

■ Pin definition of PoE LAN connector:

Pin No.	Signal	Description	Pin No.	Signal	Description
38	DI0	Digital input channel 0	31	DO0	Digital output channel 0
36	DI1	Digital input channel 1	29	DO1	Digital output channel 1
34	DI2	Digital input channel 2	27	DO2	Digital output channel 2
32	DI3	Digital input channel 3	25	DO3	Digital output channel 3
30	DI4	Digital input channel 4	23	DO4	Digital output channel 4
28	DI5	Digital input channel 5	21	DO5	Digital output channel 5
26	DI6	Digital input channel 6	19	DO6	Digital output channel 6
24	DI7	Digital input channel 7	17	DO7	Digital output channel 7
22	①V+	Power output positive	21	DGND	DO GND
20	Com1	Common end of digital input channel	19	DGND	DO GND
18	①V-	Power output negative	17	L24V	Reserved
16	CH1+	Light control channel 1 output positive	15	L0V	Reserved
14	CH1-	Light control channel 1 output negative	13	FS	Reserved
12	CH2+	Light control channel 2 output positive	11	②GND	GND

10	CH2-	Light control channel 2 output negative	9	LCom	Common end of Light control trigger input
8	CH3+	Light control channel 3 output positive	7	TR1	Light control channel 1 trigger input
6	CH3-	Light control channel 3 output negative	5	TR2	Light control channel 2 trigger input
4	CH4+	Light control channel 4 output positive	3	TR3	Light control channel 3 trigger input
2	CH4-	Light control channel 4 output negative	1	TR4	Light control channel 4 trigger input

NOTE:①. V+ and V-are internally isolated power supply outputs, 24V, max. current 40mA, only for Input signal by dry contact power supply;

②. GND is the common ground terminal where the light controller input signal is a dry contact, not available for wet contact.

2.4.4.2.1 DI

The JH2 add-on board provides 8 isolated digital inputs (isolation voltage 3750Vrms), the maximum allowable voltage cannot be exceeded DC30V. Because of the internal circuit adopts bidirectional optocoupler isolation, it is compatible with PNP and NPN wiring solution. The reference wiring diagrams are as follows:

➢ NPN connection in wet contact way:
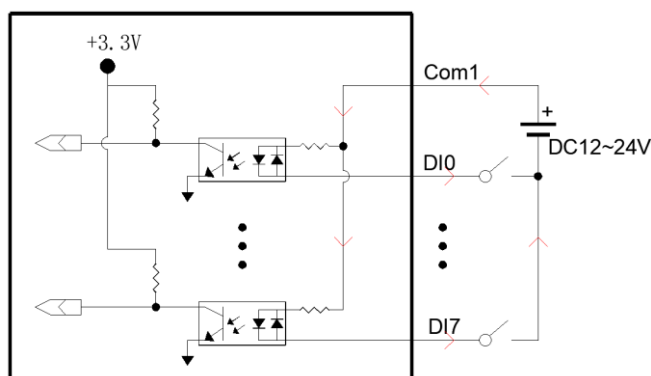
Figure 2-28 JH2 DI NPN wiring solution

➢ PNP connection in wet contact way:
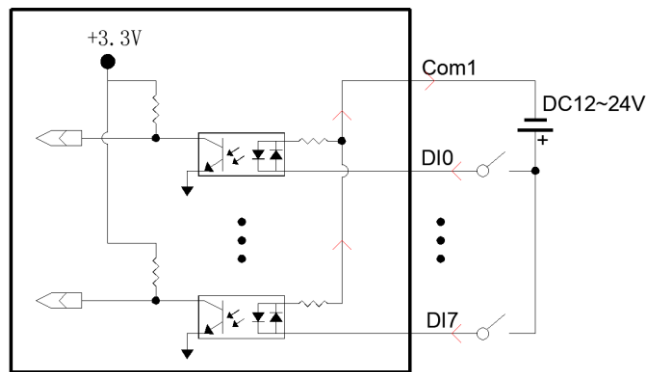
Figure 2-29 JH2 DI PNP wiring solution

➢ NPN connection in dry contact way:
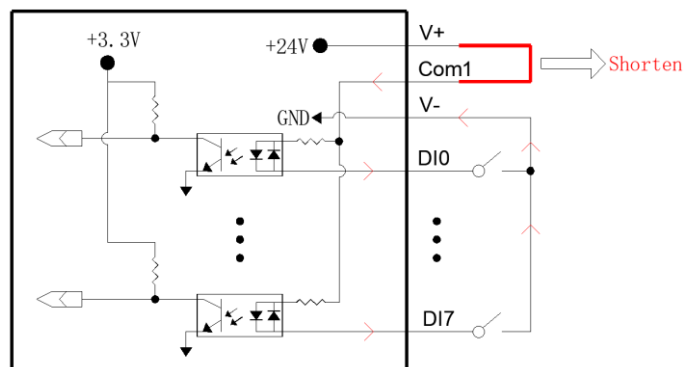
Figure 2-30 JH2 DI NPN wiring solution

➢ PNP connection in dry contact way:
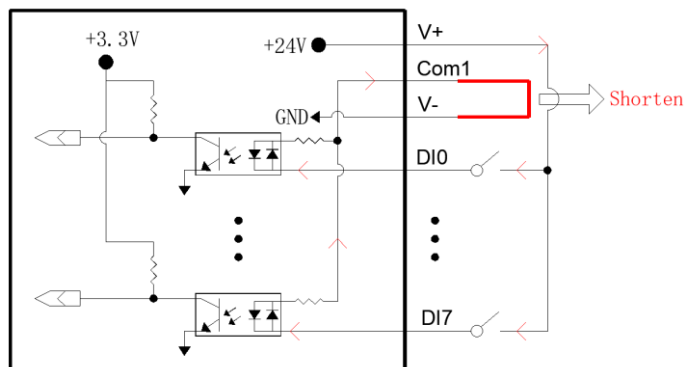
Figure 2-31 JH2 DI PNP wiring solution

2.4.4.2.2 DO

The JH2 add-on board provides 8 Digital Output channels, transistor output, I_{max}: 500mA, V_{max}: 30V. Please remind that a diode should be connected in parallel for freewheeling when external inductive load is connected.
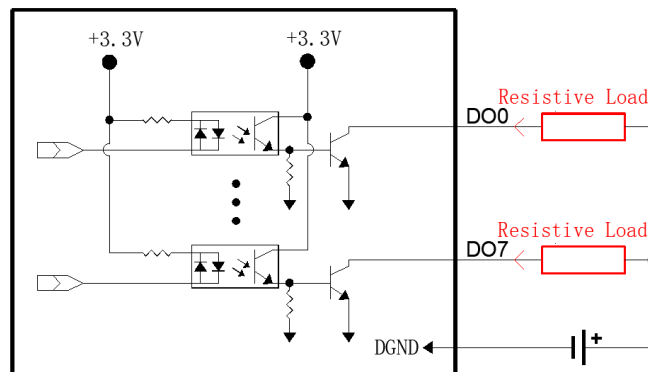
Figure 2-32 JH2 Wiring of resistive load
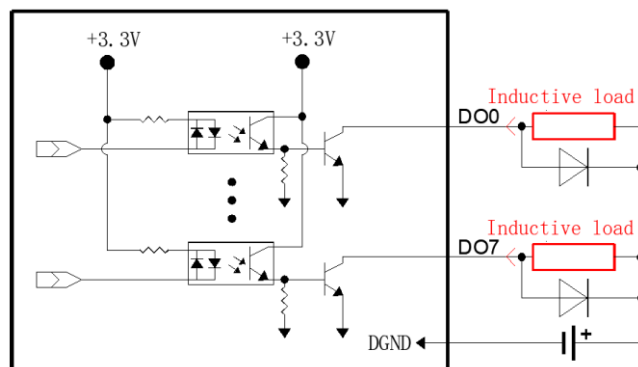
Figure 2-33 Wiring of inductive load

	1. DO output current <500mA; 2. DO load voltage <30VDC; 3. Connect a flywheel diode when connecting the external inductive load. Diodes can be IN4001 or similar; 4. Positive and negative power supply terminals cannot connect to the DO signal terminal and DOGND directly.

2.4.4.2.3 PWM Light Control

The JH2 add-on board provides 4 channels of PWM light control, the maximum output current for per channel is 1A, and the dimming level is 100. Kindly pay attention to the PC power supply input must be DC24V when using light control function. Each channel has its own external hard trigger input. The reference wiring solutions are as follows:

1. PWM light control output :
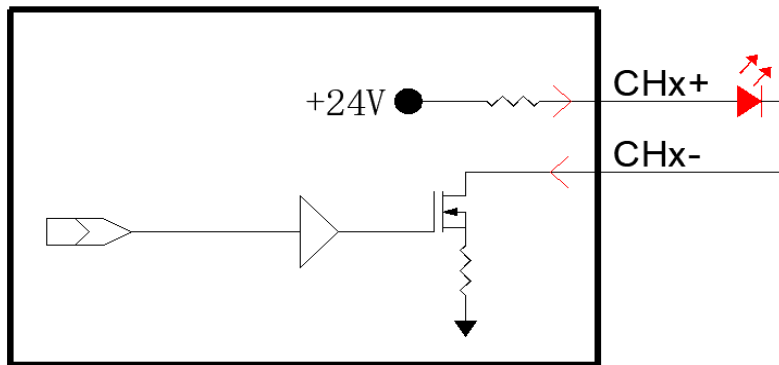
Figure 2-34 JH2 Wiring of Light source

:
1. Must be use DC24V power supply when use PWN light control function;

2. The power supply cannot be less than the total power consumption of the full load and the light source;

3. The positive and negative PWM outputs cannot be shorted.

2. Light source external trigger

➢ NPN connection in wet contact way:
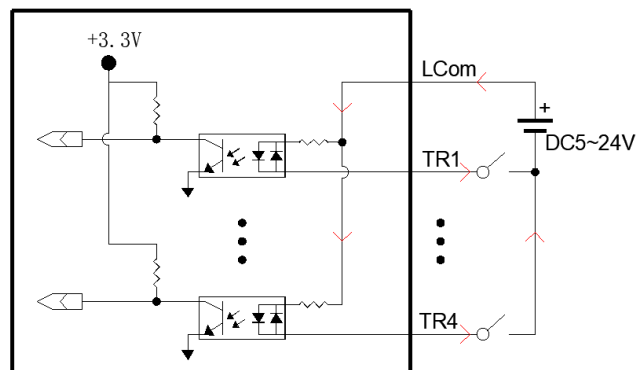
Figure 2-35 JH2 NPN wiring solution

➢ PNP connection in wet contact way:
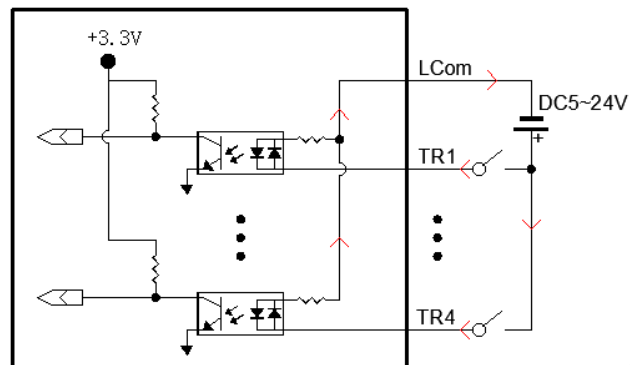
Figure 2-36 JH2 PNP wiring solution

➢ NPN connection in dry contact way:
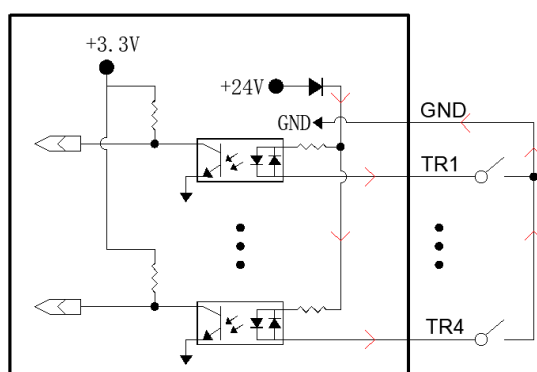
Figure 2-37 JH2 NPN wiring solution

	When using an external hard trigger signal for light control, the light controller needs to be set to hard trigger or hard switch mode in the software.

NP-6125-JH2（new）

NP-6125-JH2 is a functional industrial computer in the NP-6125 series for machine vision industry applications. It can be equipped with Intel the 6th/7th/8th Generation core i3/i5/i7 LGA11511 socket type desktop high performance processors, and integrates PoE Gigabit network card, light source control, DI/DO integrated, widely used in machine vision inspection, defect detection, image recognition, material sorting and other fields.

2.4.5 Key Features

◆ 2 x Intel GbE LAN controller

◆ 4 x USB 3.0, 1x USB 2.0 Type-A onboard for dongle

◆ 2 x RS-232/485, RS-485 supports automatic data flow control

◆ 2 x Intel GbE PoE LAN controller

◆ 4 x PWM light control support external trigger input

◆ 16 x isolated DIO(8 x DI, 8 x DO)

◆ VGA and HDMI dual display ports

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment

2.4.6 Product Dimension

Unit: mm
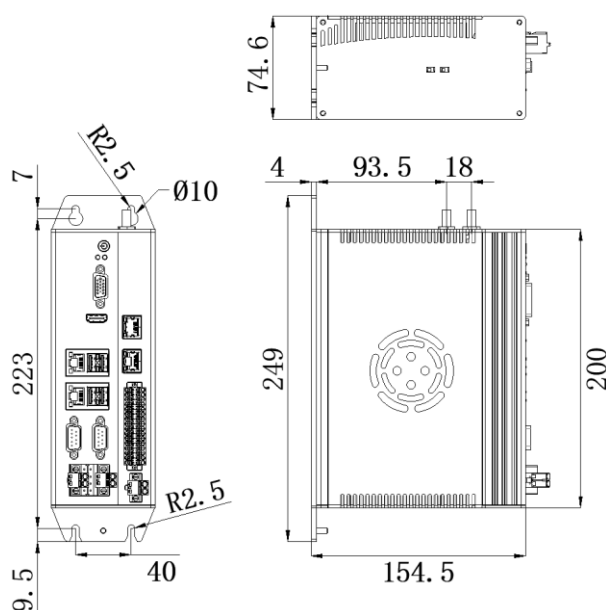
Figure 2-38 Dimension of NP-6125-JH2

2.4.7 Product Specifications

Model Name		NP-6125-JH2
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch
	Ethernet	2 x Intel GbE LAN controller
	PoE	2 x Intel GbE PoE LAN controller, max. 15W per channel
	DI	8 x DI NPN/PNP
	DO	8 x DO, Transistor output, Imax:0.5A per channel
	Light Control	4 x PWM Light power control with external trigger input，Imax: 1A per channel (Independent power supply)
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection
	Power Consumption	Max. 180W (Non-Light source power)
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.4Kg
Environment	Work Temperature	-20ºC ~ 60ºC (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40ºC ~ 80ºC (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% ((Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.4.8 Description of Interfaces
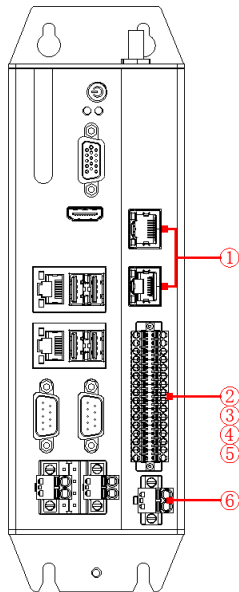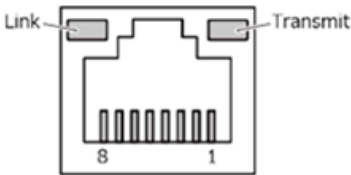
No.	Definition
1	PoE LAN
2	DI
3	DO
4	Light source control output
5	Light source control trigger Input
6	Light source power supply

Figure 2-39 Interfaces of NP-6125-JH2

2.4.8.1 PoE LAN

There are two PoE Gigabit Ethernet ports: LAN3, LAN4. The maximum power of each channel is 15W.

■ Pin definition of PoE LAN connector:

Pin No.	Signals	
	100BASE-TX	1000BASE-T
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)

LED "Link"	On	Active
Orange(light)	Link(a connection to an Ethernet network exists)	Blinking(data be-ing transferred)

LED "Transmit"	On	Off
Green(light)	100Mbps	10Mbps
Orange(light)	1000Mbps	

*There are two status leds in the RJ45 connector indicate the status of the link and transmit separately. Link led is blinking when link successfully, and when the network is working in the 1000Mbps, the transmit led is on in orange color, and when the network is working in the 100Mbps, the transmit led is on in green color, and in green color when working in the other speed.

Type	Parameters
Network Type	1000BASE-T/100BASE-TX/10BASE-T
Transmission Speed*	1000M/100M/10Mbps
Maximum Cable Distance	100m/segment (min. Cat 5e)
NIC Type	Intel® i210-AT Ethernet Controller
PoE Standard	IEEE 802.3af

*When the transmission speed is 1000Mbps, a network cable of at least CAT 5e is required.

1. PoE LAN cable 1-2 are positive, 3-6 are negative and cannot be shorted;
2. No crossover PoE LAN cable allowed;
3. CAT-6 or higher PoE LAN cable recommended.

2.4.8.2 DIO and Light Source

The JH2 add-on board provides 8 channels of isolated DI, 8 channels of isolated DO, 4 channels of light PWM control outputs (Support external hard trigger input).

■ Pin definition of the DIO connector:

Pin No.	Signal	Description	Pin No.	Signal	Description
32	DI0	Digital input channel 0	31	DO0	Digital output channel 0
30	DI1	Digital input channel 1	29	DO1	Digital output channel 1
28	DI2	Digital input channel 2	27	DO2	Digital output channel 2
26	DI3	Digital input channel 3	25	DO3	Digital output channel 3
24	DI4	Digital input channel 4	23	DO4	Digital output channel 4
22	DI5	Digital input channel 5	21	DO5	Digital output channel 5
20	DI6	Digital input channel 6	19	DO6	Digital output channel 6
18	DI7	Digital input channel 7	17	DO7	Digital output channel 7
16	DICOM	Common end of digital input channel	15	DGND	DO GND
14	LCOM	Common end of Light control trigger input	13	DGND	DO GND
12	TR1	Light control channel 1 trigger input	11	TR2	Light control channel 2 trigger input
10	TR3	Light control channel 3 trigger input	9	TR4	Light control channel 4 trigger input
8	CH1+	Light control channel 1 output	7	CH1-	Light control channel 1 output

		positive			negative
6	CH2+	Light control channel 2 output positive	5	CH2-	Light control channel 2 output negative
4	CH3+	Light control channel 3 output positive	3	CH3-	Light control channel 3 output negative
2	CH4+	Light control channel 4 output positive	1	CH4-	Light control channel 4 output negative

2.4.8.2.1 DI

The JH2 add-on board provides 8 isolated digital inputs (isolation voltage 3750Vrms), the maximum allowable voltage cannot be exceeded DC30V. Because of the internal circuit adopts bidirectional optocoupler isolation, it is compatible with PNP and NPN wiring solution. The reference wiring diagrams are as follows:

> ➢ NPN connection in wet contact way：
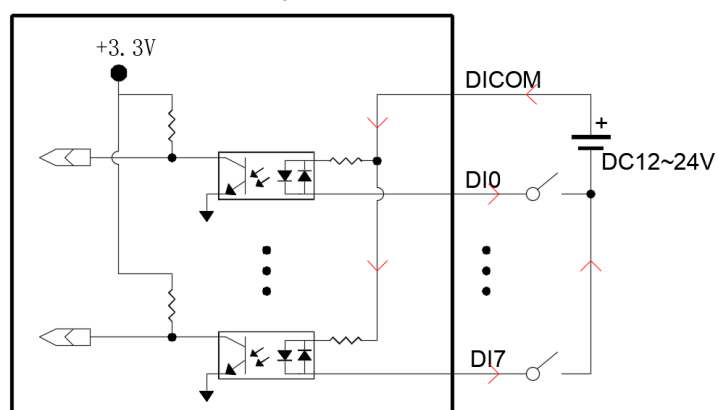
Figure 2-40 JH2 DI NPN wiring solution

> ➢ PNP connection in wet contact way：

Figure 2-41 JH2 DI PNP wiring solution

2.4.8.2.2 DO

The JH2 add-on board provides 8 Digital Output channels, transistor output, I_{max}: 500mA, V_{max}: 30V. Please remind that a diode should be connected in parallel for freewheeling when external inductive load is connected.
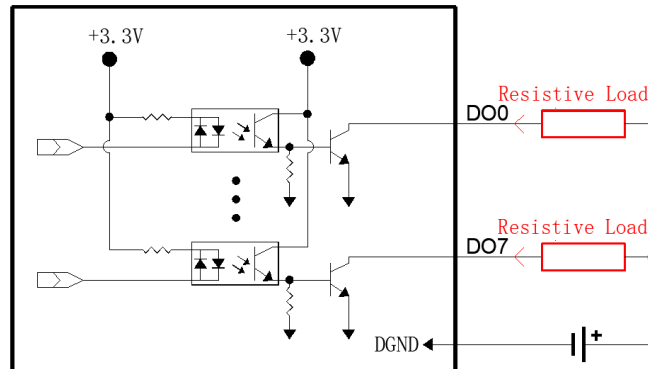
Figure 2-42 JH2 Wiring of resistive load
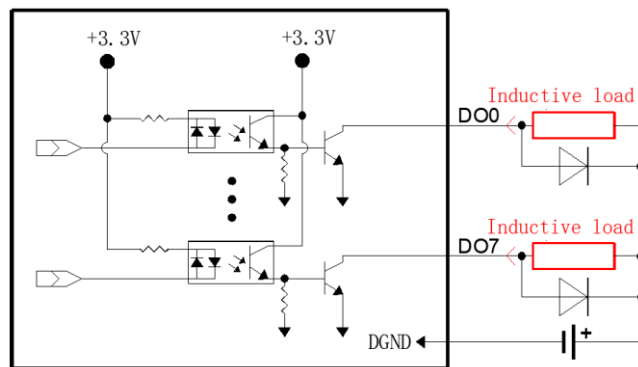
Figure 2-43 JH2 Wiring of inductive load

1. DO output current <500mA;

2. DO load voltage <30VDC;

3. Connect a flywheel diode when connecting the external inductive load. Diodes can be IN4001 or similar;

4. Positive and negative power supply terminals cannot connect to the DO signal terminal and DOGND directly.

2.4.8.2.3 PWM Light Control

The JH2 add-on board provides 4 channels of PWM light control, the maximum output current for per channel is 1A, and the dimming level is 100. Kindly pay attention to the PC power supply input must be DC24V when using light control function. Each channel has its own external hard trigger input. The reference wiring solutions are as follows:

1. PWM light control output :

Figure 2-44 JH2 Wiring of Light source

	1. Must be use DC24V power supply when use PWN light control function;
⚡ :	2. The power supply cannot be less than the total power consumption of the full load and the light source;
	3. The positive and negative PWM outputs cannot be shorted.

2. Light source external trigger

➢ NPN connection in wet contact way
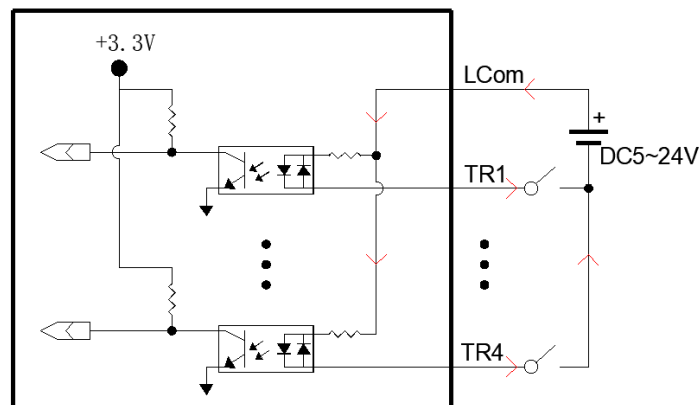
Figure 2-45 JH2 NPN wiring solution

➢ PNP connection in wet contact way:
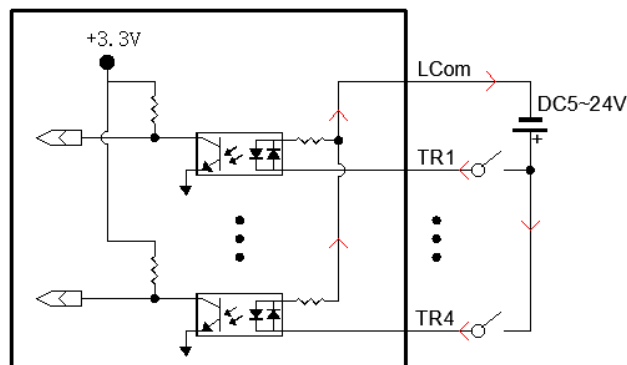
Figure 2-46 JH2 PNP wiring solution
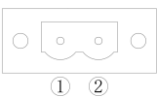
> **i** : When using an external hard trigger signal for light control, the light controller needs to be set to hard trigger or hard switch mode in the software.

2.4.8.2.4 Light soure power supply

When the light source is used, an external power supply is required, and the input voltage is DC24V. The specific power supply depends on the power of the external light source.

■ Pin definition of the Light soure power connector:

	Pin No.	Signal	Pin No.	Signal
① ②	1	GND	2	DC24V

*Maximun possible current consumption at 24V with 96 W. The inrush current must also be taken into account when selecting the power supply.

2.5 NP-6125-H1B

NP-6125-H1B is a functional industrial computer in the NP-6125 series for machine vision industry applications. It can be equipped with Intel the 6th/7th/8th Generation core i3/i5/i7 LGA11511 socket type desktop high performance processors, and integrates PoE Gigabit network card, DI/DO integrated, widely used in machine vision inspection, defect detection, image recognition, material sorting and other fields.

2.5.1 Key Features

◆ 2 x Intel GbE LAN controller

◆ 4 x USB 3.0, 1x USB 2.0 Type-A onboard for dongle

◆ 2 x RS-232/485, RS-485 supports automatic data flow control

◆ 4 x Intel GbE PoE LAN controller

◆ 32 x isolated DIO(16 x DI, 16 x DO)

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment

2.5.2 Product Dimension

Unit: mm
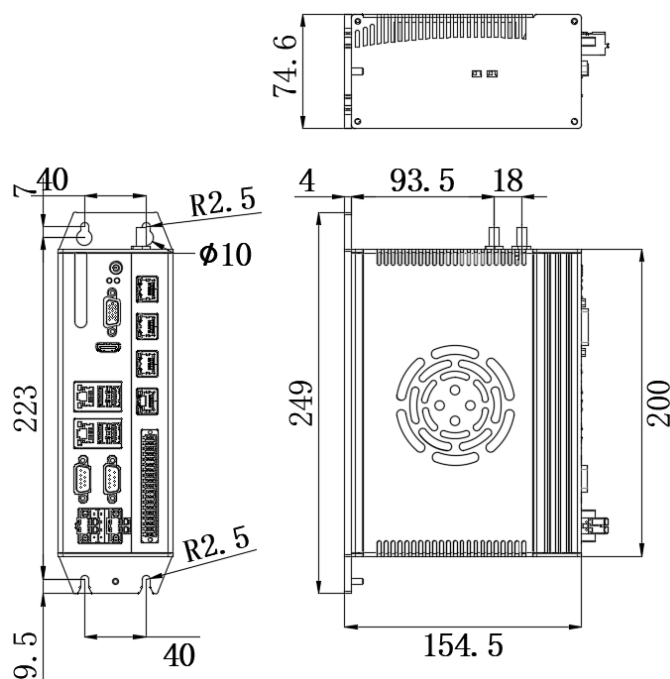
Figure 2-47 Dimension of NP-6125-H1B

2.5.3 Product Specifications

Model Name		NP-6125-H1B
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
	Ethernet	2 x Intel GbE LAN controller
	PoE	4 x Intel GbE PoE LAN controller, max. 15W per channel
	DI	16 x DI NPN/PNP，isolated 37500 Vrms
	DO	16 x DO, Transistor output, Imax:0.5A per channel，isolated 37500 Vrms
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection
	Power Consumption	Max. 200W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.4Kg
Environment	Work Temperature	-20ºC ~ 60ºC (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40ºC ~ 80ºC (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.5.4 Description of Interfaces
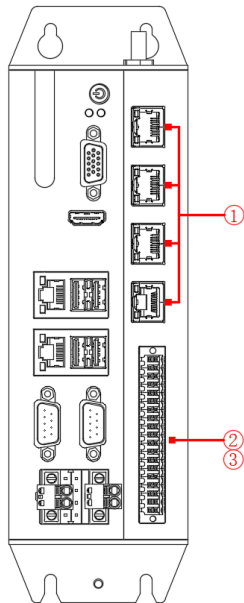
No.	Definition
1	PoE LAN
2	DI
3	DO

Figure 2-48 Interfaces of NP-6125-H1B

2.5.4.1 PoE LAN

There are four PoE Gigabit Ethernet ports: LAN3, LAN4, LAN5, and LAN6. The maximum power of each channel is 15W.

- Pin definition of PoE LAN connector:

Pin No.	Signals	
	100BASE-TX	1000BASE-T
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)
LED "Link"	On	Active
Orange(light)	Link(a connection to an Ethernet network exists)	Blinking(data be-ing transferred)
LED "Transmit"	On	Off
Green(light)	100Mbps	10Mbps
Orange(light)	1000Mbps	

*There are two status leds in the RJ45 connector indicate the status of the link and transmit separately. Link led is blinking when link successfully, and when the network is working in the 1000Mbps, the transmit led is on in orange color, and when the network is working in the 100Mbps, the transmit led is on in green color, and in green color when working in the other speed.

Type	Parameters
Network Type	1000BASE-T/100BASE-TX/10BASE-T
Transmission Speed*	1000M/100M/10Mbps
Maximum Cable Distance	100m/segment (min. Cat 5e)
NIC Type	Intel® i210-AT Ethernet Controller
PoE Standard	IEEE 802.3af

*When the transmission speed is 1000Mbps, a network cable of at least CAT 5e is required.

:
1. PoE LAN cable 1-2 are positive, 3-6 are negative and cannot be shorted;
2. No crossover PoE LAN cable allowed;
3. CAT-6 or higher PoE LAN cable recommended.

2.5.4.2 DIO

The H1B add-on board provides 16 channels of isolated DI, 16 channels of isolated DO.

■ Pin definition of DIO connector:

Pin No.	Signal	Description	Pin No.	Signal	Description
38	DICOM	Digital input common	37	DICOM	Digital input common
36	DIGND	Reserved	35	DIGND	Reserved
34	DI0	Digital input channel 0	33	DI8	Digital input channel 8
32	DI1	Digital input channel 1	31	DI9	Digital input channel 9
30	DI2	Digital input channel 2	29	DI10	Digital input channel 10
28	DI3	Digital input channel 3	27	DI11	Digital input channel 11
26	DI4	Digital input channel 4	25	DI12	Digital input channel 12
24	DI5	Digital input channel 5	23	DI13	Digital input channel 13
22	DI6	Digital input channel 6	21	DI14	Digital input channel 14
20	DI7	Digital input channel 7	19	DI15	Digital input channel 15
18	DO0	Digital output channel 0	17	DO8	Digital output channel 8
16	DO1	Digital output channel 1	15	DO9	Digital output channel 9
14	DO2	Digital output channel 2	13	DO10	Digital output channel 10
12	DO3	Digital output channel 3	11	DO11	Digital output channel 11
10	DO4	Digital output channel 4	9	DO12	Digital output channel 12
8	DO5	Digital output channel 5	7	DO13	Digital output channel 13
6	DO6	Digital output channel 6	5	DO14	Digital output channel 14
4	DO7	Digital output channel 7	3	DO15	Digital output channel 15
2	DOGND	Digital output ground common	1	DOGND	Digital output ground common

2.5.4.2.1 DI

The H1B add-on board provides 16 channels of isolated digital inputs (isolation voltage 3750Vrms), the maximum allowable voltage cannot be exceeded DC30V. Because of the internal circuit adopts bidirectional optocoupler isolation, it is compatible with PNP and NPN wiring solution. The reference wiring diagrams are as follows:

> ➢ NPN connection in wet contact way:

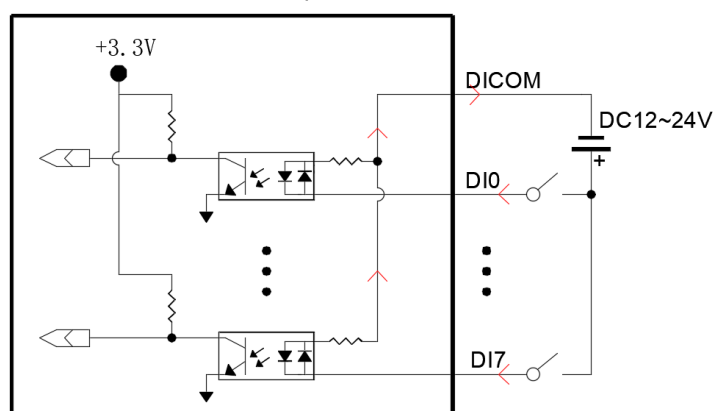Figure 2-49 H1B DI NPN wiring solution

> ➢ PNP connection in wet contact way:
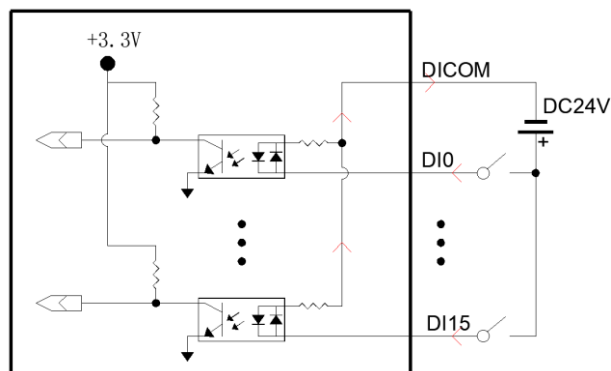
Figure 2-50 H1B DI PNP wiring solution

2.5.4.2.2 DO

The H1B add-on board provides 8 channels of Digital Output channels, transistor output, I_{max}: 500mA, V_{max}: 30V. Please remind that a diode should be connected in parallel for freewheeling when external inductive load is connected.
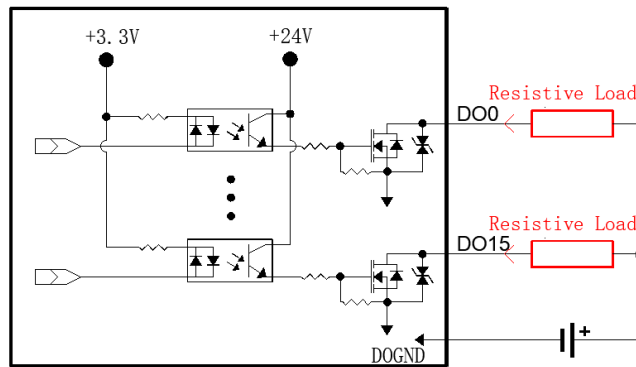
Figure 2-51 H1B Wiring of resistive load
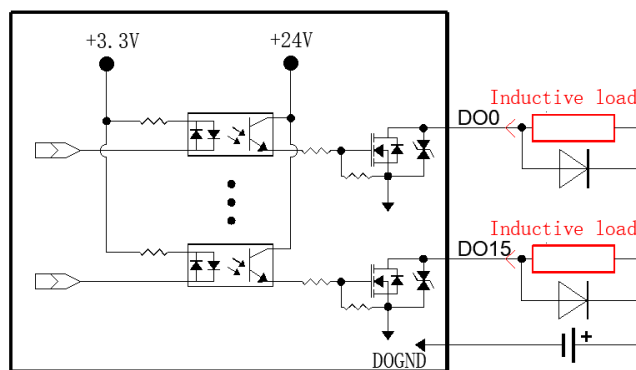
Figure 2-52 H1B Wiring of inductive load

	1. DO output current <500mA; 2. DO load voltage <30VDC; 3. Connect a flywheel diode when connecting the external inductive load. Diodes can be IN4001 or similar; 4. Positive and negative power supply terminals can not connected to the DO signal terminal and DOGND directly.

2.6 NP-6125-JH2B

NP-6125-JH2B is a functional industrial computer in the NP-6125 series for machine vision industry applications. It can be equipped with Intel the 6th/7th/8th Generation core i3/i5/i7 LGA11511 socket type desktop high performance processors, and integrates PoE Gigabit network card, DI/DO integrated, widely used in machine vision inspection, defect detection, image recognition, material sorting and other fields.

2.6.1 Key Features

◆ 2 x Intel GbE LAN controller

◆ 4 x USB3.0, USB2.0 Type A on board for dongle

◆ 2 x RS-232/RS-485, RS-485 support auto flow control

◆ 2 x Intel GbE PoE LAN controller

◆ 32 x isolated DIO(16 x DI, 16 x DO)

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment

2.6.2 Product Dimension

Unit: mm
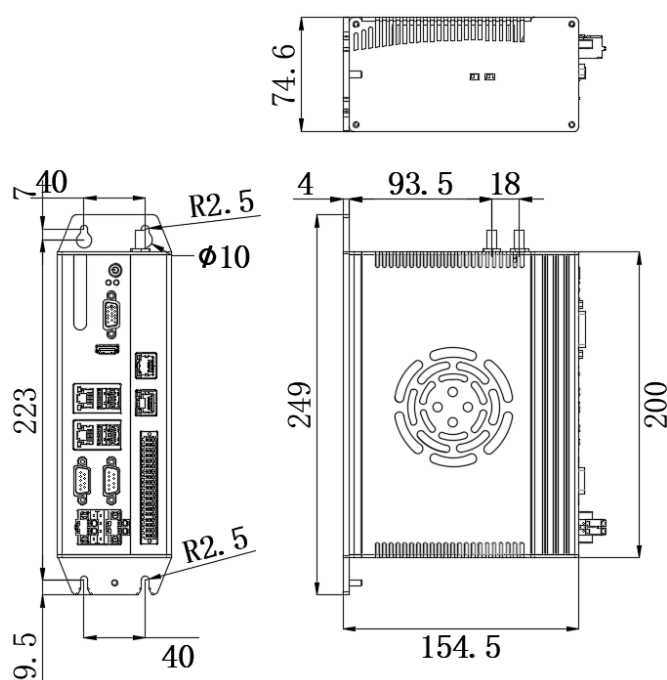
Figure 2-53 Dimension of NP-6125-JH2B

2.6.3 Product Specifications

<div style="float:right">页: 65 / 183</div>

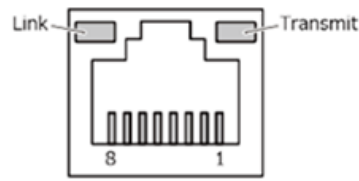| Model Name		NP-6125-JH2B
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max.65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
	Ethernet	2 x Intel GbE LAN controller
	PoE	2 x Intel GbE PoE LAN controller, max. 15W per channel
	DI	16 x DI NPN/PNP，isolated 3750 Vrms
	DO	16 x DO, Transistor output, Imax:0.5A per channel，isolated 3750 Vrms
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection
	Power Consumption	Max. 160W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.4Kg
Environment	Work Temperature	-20℃ ~ 60℃ (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40℃ ~ 80℃ (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.6.4 Description of Interfaces
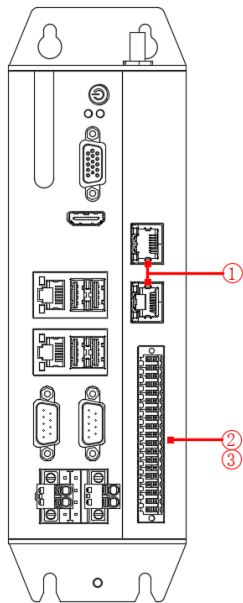
No.	Definition
1	PoE LAN
2	DI
3	DO

Figure 2-54 Interfaces of NP-6125-JH2B

2.6.4.1 PoE LAN

There are two PoE Gigabit Ethernet ports: LAN3, LAN4. The maximum power of each channel is 15W.

- Pin definition of PoE LAN connector:

	Pin No.	Signals	
		100BASE-TX	1000BASE-T
	1	TX+	TRD+(0)
	2	TX-	TRD-(0)
	3	RX+	TRD+(1)
	4	N.C.	TRD+(2)
	5	N.C.	TRD-(2)
	6	RX-	TRD-(1)
	7	N.C.	TRD+(3)
	8	N.C.	TRD-(3)
LED "Link"		**On**	**Active**
Orange(light)		Link(a connection to an Ethernet network exists)	Blinking(data be-ing transferred)
LED "Transmit"		**On**	**Off**
Green(light)		100Mbps	10Mbps
Orange(light)		1000Mbps	

*There are two status leds in the RJ45 connector indicate the status of the link and transmit separately. Link led is blinking when link successfully, and when the network is working in the 1000Mbps, the transmit led is on in orange color, and when the network is working in the 100Mbps, the transmit led is on in green color, and in green color when working in the other speed.

Type	Parameters
Network Type	1000BASE-T/100BASE-TX/10BASE-T
Transmission Speed*	1000M/100M/10Mbps
Maximum Cable Distance	100m/segment (min. Cat 5e)
NIC Type	Intel® i210-AT Ethernet Controller
PoE Standard	IEEE 802.3af

*When the transmission speed is 1000Mbps, a network cable of at least CAT 5e is required.

:
1. PoE LAN cable 1-2 are positive, 3-6 are negative and cannot be shorted;
2. No crossover PoE LAN cable allowed;
3. CAT-6 or higher PoE LAN cable recommended.

2.6.4.2 DIO

The JH2B add-on board provides 16 channels of isolated DI, 16 channels of isolated DO.

- ■ Pin definition of DIO connector:

Pin No.	Signal	Description	Pin No.	Signal	Description
38	DICOM	Digital input common	37	DICOM	Digital input common
36	DIGND	Reserved	35	DIGND	Reserved
34	DI0	Digital input channel 0	33	DI8	Digital input channel 8
32	DI1	Digital input channel 1	31	DI9	Digital input channel 9
30	DI2	Digital input channel 2	29	DI10	Digital input channel 10
28	DI3	Digital input channel 3	27	DI11	Digital input channel 11
26	DI4	Digital input channel 4	25	DI12	Digital input channel 12
24	DI5	Digital input channel 5	23	DI13	Digital input channel 13
22	DI6	Digital input channel 6	21	DI14	Digital input channel 14
20	DI7	Digital input channel 7	19	DI15	Digital input channel 15
18	DO0	Digital output channel 0	17	DO8	Digital output channel 8
16	DO1	Digital output channel 1	15	DO9	Digital output channel 9
14	DO2	Digital output channel 2	13	DO10	Digital output channel 10
12	DO3	Digital output channel 3	11	DO11	Digital output channel 11
10	DO4	Digital output channel 4	9	DO12	Digital output channel 12
8	DO5	Digital output channel 5	7	DO13	Digital output channel 13
6	DO6	Digital output channel 6	5	DO14	Digital output channel 14
4	DO7	Digital output channel 7	3	DO15	Digital output channel 15
2	DOGND	Digital output ground common	1	DOGND	Digital output ground common

2.6.4.2.1 DI

The JH2B add-on board provides 16 channels of isolated digital inputs (isolation voltage 3750Vrms), the maximum allowable voltage cannot be exceeded DC30V. Because of the internal circuit adopts bidirectional optocoupler isolation, it is compatible with PNP and NPN wiring solution. The reference wiring diagrams are as follows:
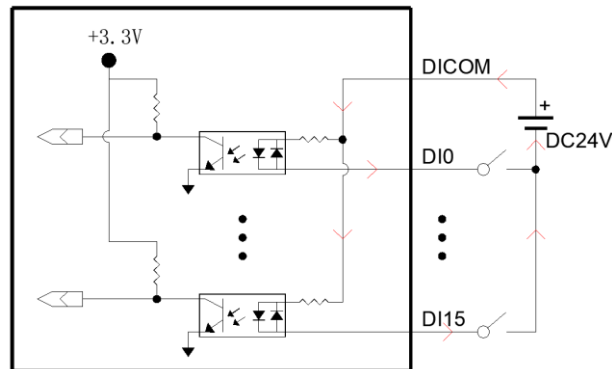
  ➢ NPN connection in wet contact way：
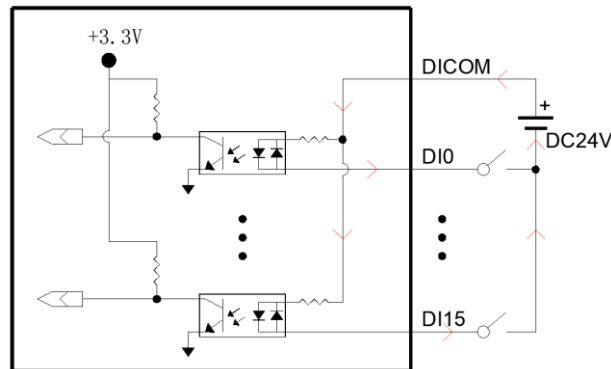
Figure 2-55 JH2B DI NPN wiring solution

  ➢ PNP connection in wet contact way:
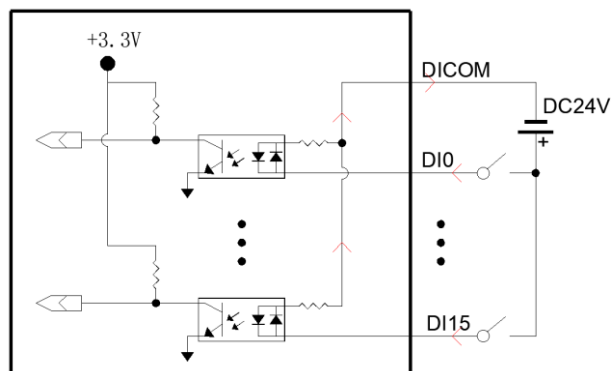
Figure 2-56 JH2B DI PNP wiring solution

2.6.4.2.2 DO

The JH2B add-on board provides 8 channels of Digital Output channels, transistor output, I_{max}: 500mA, V_{max}: 30V. Please remind that a diode should be connected in parallel for freewheeling when external inductive load is connected.

Figure 2-57 JH2B Wiring of resistive load

Figure 2-58 JH2B Wiring of inductive load

1. DO output current <500mA;

2. DO load voltage <30VDC;

3. Connect a flywheel diode when connecting the external inductive load. Diodes can be IN4001 or similar;

4. Positive and negative power supply terminals can not connect to the DO signal terminal and DOGND directly.

2.7 NP-6125-JH3

The NP-6125-JH3 is is one of the expansion model based on NP-6125 which integrates additional 4 USB ports, 2 CAN BUS ports(optional), 8 channels of isolated DI and 8 channels of isolated DO. It is widely used in the field of AGV, robotics and motion control applications.

2.7.1 Key Features

◆ 2 x Intel GbE LAN controller

◆ 8 x USB3.0, USB2.0 Type A on board for dongle

◆ 2 x RS-232/RS-485, RS-485 support auto flow control

◆ 2 x RS-232/RS-485

◆ 32 x isolated DIO (8 x DI, 8 x DO)

◆ 2 x CAN2.0 A/B bus(Optional)

◆ Lout(Optional)

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment

2.7.2 Product Dimension

Unit: mm
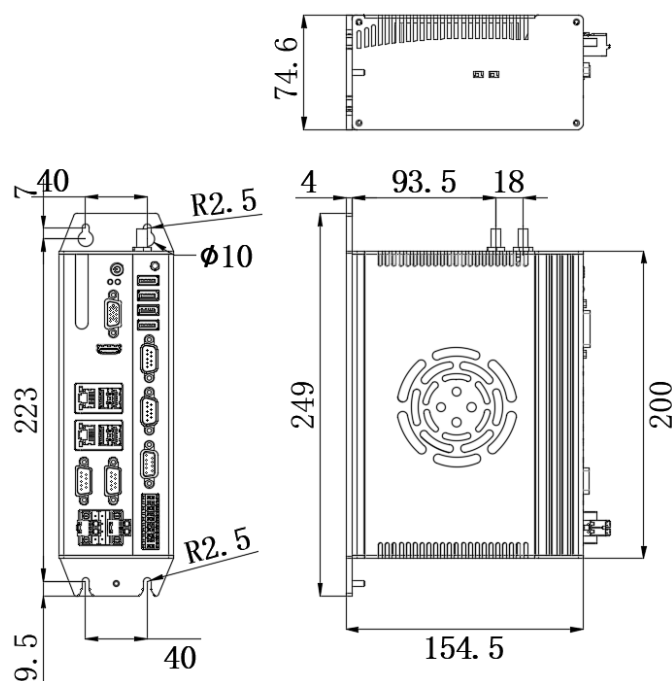

Figure 2-59 Dimension of NP-6125-JH3

2.7.3 Product Specifications

Model Name		NP-6125-JH3
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max.65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
		4 x USB2.0 extended by PCIE x1.
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
		2 x COM(DB-9), The RS-232 or RS-485 communication mode is configured internally on the board via jumper setting. (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
	CAN Bus	2 x CAN 2.0A/B bus(By mini-pcie slot expansioin, optional)
	Lout	1 x Lout (Optional)
	DI	8 x DI NPN/PNP，isolated 3750 Vrms
	DO	8 x DO, Transistor output, Imax:0.5A per channel，isolated 3750 Vrms
	Ethernet	2 x Intel GbE LAN controller
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection
	Power Consumption	Max. 120W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.4Kg
Environment	Work Temperature	-20℃ ~ 60℃ (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40℃ ~ 80℃ (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)

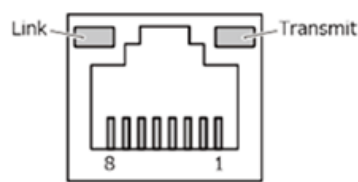|	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.7.4 Description of Interfaces
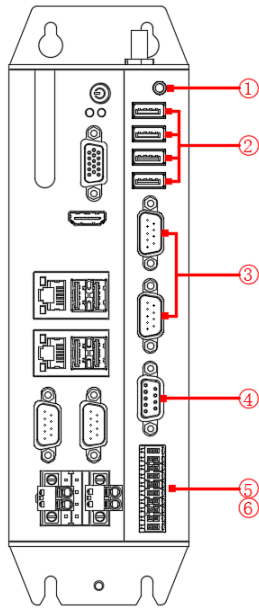
No.	Definition
1	Line out(optional)
2	USB
3	COM
4	CAN Bus(optional)
5	DI
6	DO

Figure 2-60 Interfaces of NP-6125-JH3
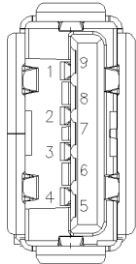
2.7.4.1 Lout interface

JH3 add-on board has an audio output interface, which is an optional item.

2.7.4.2 USB interface

JH3 add-on board expands 4 Type-A USB 3.0 ports via PCIe .

■ Pin definition of USB3.0 port:

	Pin No.	Signal
	1	VCC5
	2	DATA-
	3	DATA+
	4	GND
	5	SSRX-
	6	SSRX+
	7	GND
	8	SSTX-
	9	SSTX+
Current		Max. 0.5 A per USB

Cable length	Max.5 m USB2.0 (without hub)
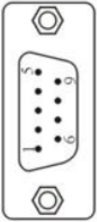
	1. The 4 USB ports are extended via PCIe, so it can only be used after the PCIe driver is loaded by the OS. 2. 4 USB ports share the bandwidth of USB3.0, so when using 1 port of them, the speed of USB3.0 can be achieved, but if more than 1 port is used, the bandwidth will be shared.

2.7.4.3 COM Ports

There are 2 additional COM ports on JH3 add-on board, they are COM3 and COM4. Both of the COM ports are the standard DB9 male terminal and can support RS-232 or RS-485. The serial port (RS-232/RS-485 mode) is selected through jumper configuration on the PCB

■ Pin definition of COM port:
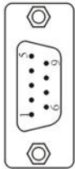
	Pin No.	Signal	Signal
		RS-232	RS-485
DB9 male terminal	1	N.C.	N.C.
	2	RXD	A
	3	TXD	B
	4	N.C.	N.C.
	5	GND	GND
	6	N.C.	N.C.
	7	N.C.	N.C.
	8	N.C.	N.C.
	9	N.C.	N.C.
Transfer rate	Max. 115.2kbit/s		

* The maximum bus length of RS-232 is 15m.

2.7.4.4 CAN Bus

A DB9 female terminal on the JH3 add-on board is reserved to be used to install the miniPCIE-CAN card.

■ Pin definition of CAN port:

	Pin No.	Signal	Pin No.	Signal
	1	5V	6	GND
	2	CAN1_L	7	CAN1_H
	3	GND	8	CAN2_H
	4	CAN2_L	9	5V
DB9 female terminal	5	GND		

Transfer rate	Max. 1Mbit/s
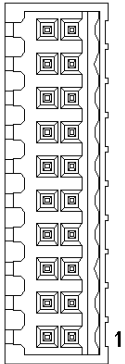
	1. There is a a 200Ω terminal resistor for each channel on the board, which can be turned on or off by toggle switch (default is on); 2. The miniPCIE-CAN is an optional part, and the port is not available if the card is not installed.

2.7.4.5 DIO

The JH3 add-on board provides 8 channels of isolated DI, 8 channels of isolated DO.

■ Pin definition of DIO connector:

	Pin No.	Signal	Description	Pin No.	Signal	Description
	20	DOGND	Digital output ground common	19	DOGND	Digital output ground common
	18	DO7	Digital output channel 7	17	DO6	Digital output channel 6
	16	DO5	Digital output channel 5	15	DO4	Digital output channel 4
	14	DO3	Digital output channel 3	13	DO2	Digital output channel 2
	12	DO1	Digital output channel 1	11	DO0	Digital output channel 0
	10	DICOM	Digital input common	9	DIGND	Digital output ground common
	8	DI7	Digital input channel 7	7	DI6	Digital input channel 6
	6	DI5	Digital input channel 5	5	DI4	Digital input channel 4
	4	DI3	Digital input channel 3	3	DI2	Digital input channel 2
	2	DI1	Digital input channel 1	1	DI0	Digital input channel 0

2.7.4.5.1 DI

The JH3 add-on board provides 8 channels of isolated digital inputs (isolation voltage 3750Vrms), the maximum allowable voltage cannot be exceeded DC30V. Because of the internal circuit adopts bidirectional optocoupler isolation, it is compatible with PNP and NPN wiring solution. The reference wiring diagrams are as follows:

➢ NPN connection in wet contact way:
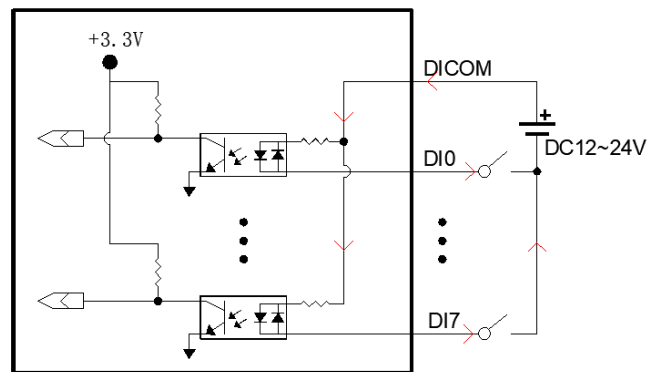
Figure 2-61 JH3 DI NPN wiring solution

➢ PNP connection in wet contact way：
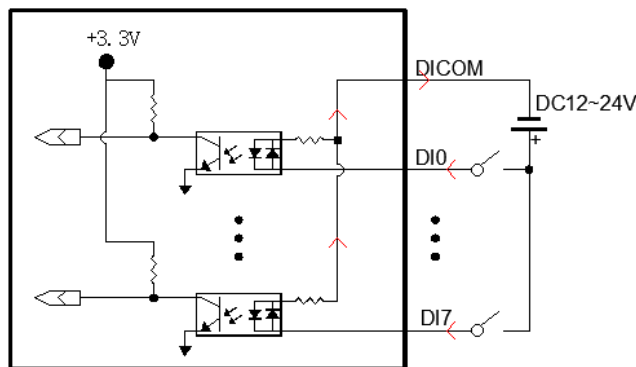
Figure 2-62 JH3 DI PNP wiring solution

➢ Dry contact way：
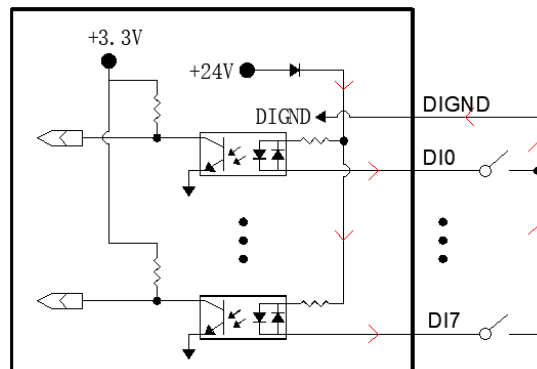
Figure 2-63 JH3 DI dry wiring solution

2.7.4.5.2 DO

The JH3 add-on board provides 8 channels of Digital Output channels, transistor output, I_{max}: 500mA, V_{max}: 30V. Please remind that a diode should be connected in parallel for freewheeling when external inductive load is connected.
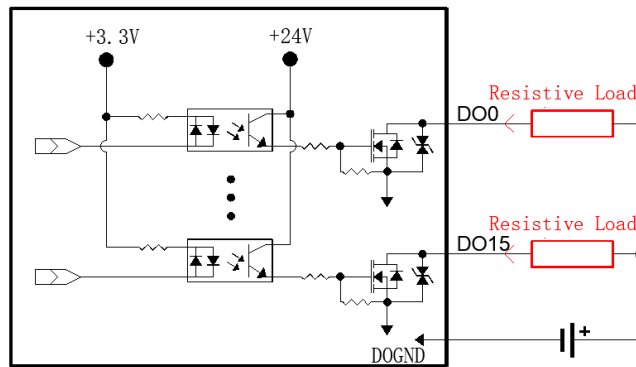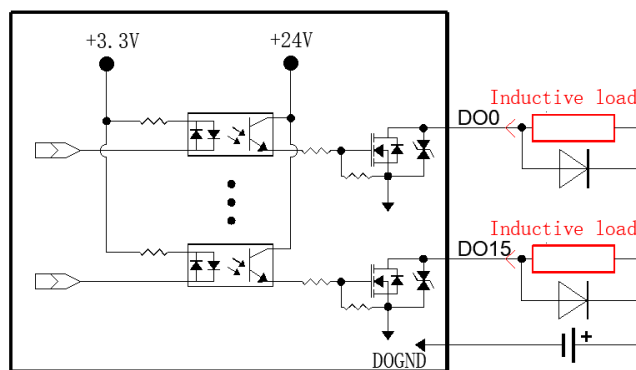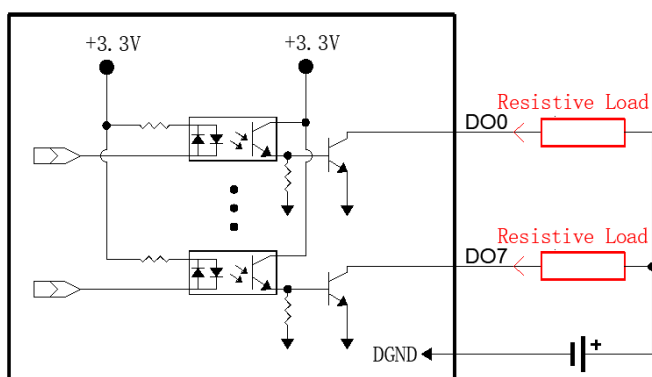
Figure 2-64 JH3 Wiring of resistive load
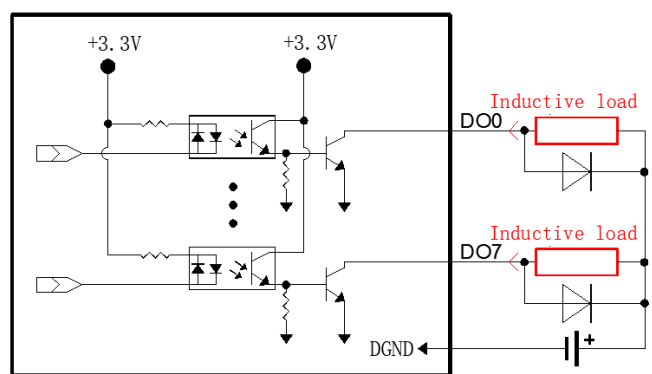
Figure 2-65 JH3 Wiring of inductive load

	1. DO output current <500mA;
⚠ :	2. DO load voltage <30VDC;
	3. Connect a flywheel diode when connecting the external inductive load. Diodes can be IN4001 or similar;
	4. Positive and negative power supply terminals can not connect to the DO signal terminal and DOGND directly.

2.8 NP-6125-JH4

NP-6125-JH4 is a functional industrial control machine for PLC, process control and intelligent gateway in NP-6125 series. It can carry Intel the 6th/7th/8th Generation core i3/i5/i7 LGA11511 socket type desktop high performance processors, and expand multiplex RS-485 and DI / DO, which can be accessed to DI / DO through Modbus RTU standard protocol.

2.8.1 Key Features

◆ 2 x Intel GbE LAN controller

◆ 4 x USB3.0, USB2.0 Type A on board for dongle

◆ 2 x RS-232/RS-485，8 x RS-485

◆ 8 x isolated DI, 4 x Relay output(NO)

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60°C wide temperature environment

2.8.2 Product Dimension

Unit: mm
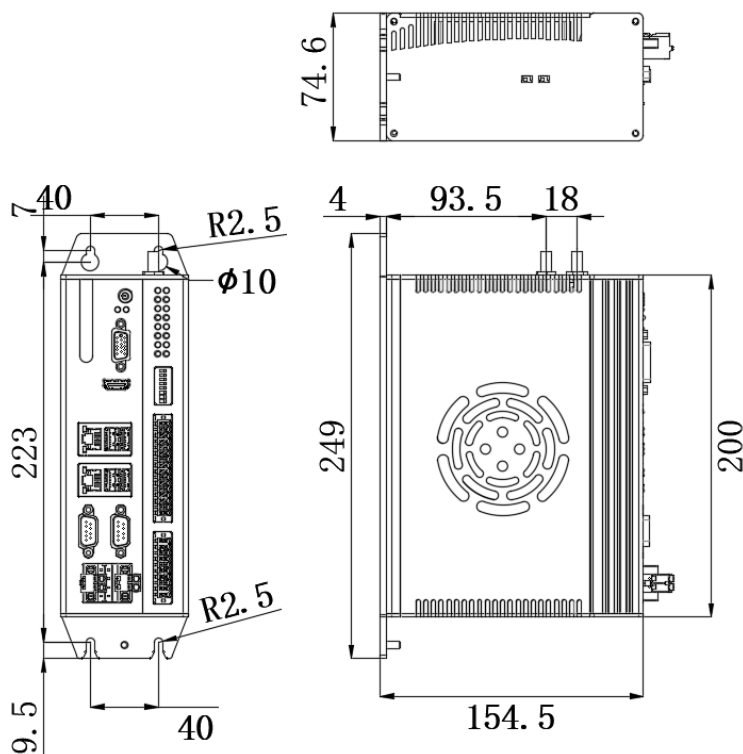
Figure 2-66 Dimension of NP-6125-JH4

2.8.3 Product Specifications

Model Name		NP-6125-JH4
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch,
		8 x RS-485(Phoenix Contators)
	DI	8 x DI NPN/PNP，isolated 3750 Vrms
	DO	4 x Relay output, Normally Open, 24VDC(Imax:1.0A)/ 125VAC(Imax: 0.5A)
	Ethernet	2 x Intel GbE LAN controller
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection
	Power Consumption	Max. 120W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.4Kg
Environment	Work Temperature	-20℃ ~ 60℃ (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40℃ ~ 80℃ (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27

	EMC	CE/FCC Class A	

2.8.4 Description of Interfaces
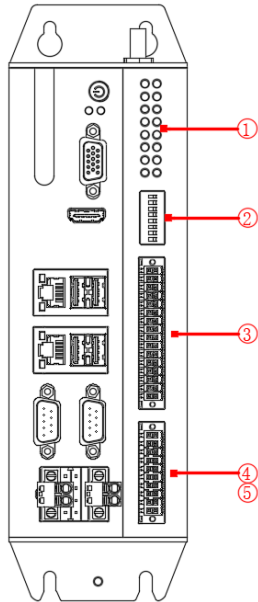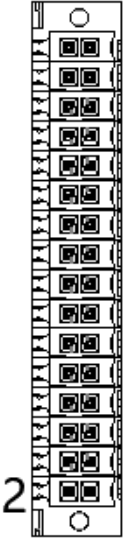
No.	Definition
1	Serial port transceiver status light
2	RS-485 terminal resistance DIP switch
3	RS-485 port
4	DI
5	DO

Figure 2-67 Interfaces of NP-6125-JH4

2.8.4.1 RS-485 COM Port

JH4 add-on board provides 8 channels of isolated RS-485 (COM3~COM10) by 32-pin phoenix terminals. All RS-485 communication channels on the JH4 expansion board share isolation ground.

- 32 pin phoenix terminals are defined as follows:

Pin No.	Signal	Description	Pin No.	Signal	Description
32	GND8	RS-485 GND	31	GND8	RS-485 GND
30	B8	COM10 RS-485 Data-	29	A8	COM10 RS-485 Data+
28	GND7	RS-485 GND	27	GND7	RS-485 GND
26	B7	COM9 RS-485 Data-	25	A7	COM9 RS-485 Data+
24	GND6	RS-485 GND	23	GND6	RS-485 GND
22	B6	COM8 RS-485 Data-	21	A6	COM8 RS-485 Data+
20	GND5	RS-485 GND	19	GND5	RS-485 GND
18	B5	COM7 RS-485 Data-	17	A5	COM7 RS-485 Data+
16	GND4	RS-485 GND	15	GND4	RS-485 GND
14	B4	COM6 RS-485 Data-	13	A4	COM6 RS-485 Data+
12	GND3	RS-485 GND	11	GND3	RS-485 GND
10	B3	COM5 RS-485 Data-	9	A3	COM5 RS-485 Data+
8	GND2	RS-485 GND	7	GND2	RS-485 GND

6	B2	COM4 RS-485 Data-	5	A2	COM4 RS-485 Data+
4	GND1	RS-485 GND	3	GND1	RS-485 GND
2	B1	COM3 RS-485 Data-	1	A1	COM3 RS-485 Data+

■ COM3~COM10 RS-485 termination resistors setting
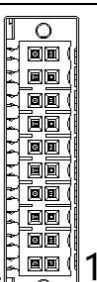
Pin	Function
8	When ON, COM10 enables 120 ohm termination resistors, OFF is not available
7	When ON, COM9 enables 120 ohm termination resistors, OFF is not available
6	When ON, COM8 enables 120 ohm termination resistors, OFF is not available
5	When ON, COM7 enables 120 ohm termination resistors, OFF is not available
4	When ON, COM6 enables 120 ohm termination resistors, OFF is not available
3	When ON, COM5 enables 120 ohm termination resistors, OFF is not available
2	When ON, COM4 enables 120 ohm termination resistors, OFF is not available
1	When ON, COM3 enables 120 ohm termination resistors, OFF is not available

■ COM3~COM10 RS-485 data transceiver status light

LED		Function
Tx8	Rx8	COM10 Tx8 blinks when sending data, Rx8 blinks when receiving data
Tx7	Rx7	COM9 Tx7 blinks when sending data, Rx7 blinks when receiving data
Tx6	Rx6	COM8 Tx6 blinks when sending data, Rx6 blinks when receiving data
Tx5	Rx5	COM7 Tx5 blinks when sending data, Rx5 blinks when receiving data
Tx4	Rx4	COM6 Tx4 blinks when sending data, Rx4 blinks when receiving data
Tx3	Rx3	COM5 Tx3 blinks when sending data, Rx3 blinks when receiving data
Tx2	Rx2	COM4 Tx2 blinks when sending data, Rx2 blinks when receiving data
Tx1	Rx1	COM3 Tx1 blinks when sending data, Rx1 blinks when receiving data

2.8.4.2 IO Signal terminals

JH4 add-on board provides 8 channels of isolated DI and 4 channels of relay outputs via a 20-pin phoenix terminal. The DI supports wet contact or NPN access and the user can access the status of the DI/DO via Modbus RTU communication protocol, the pin definition list as the below table shows.

Pin No.	Signal	Description	Pin No.	Signal	Description
20	DOCOM3	Relay output channel 3 common	19	DO3	Relay output channel 3
18	DOCOM2	Relay output channel 2 common	17	DO2	Relay output channel 2
16	DOCOM1	Relay output channel 1	15	DO1	Relay output channel 1

		common			
14	DOCOM0	Relay output channel 0 common	13	DO0	Relay output channel 0
12	DICOM	Digital input common	11	DICOM	Digital input common
10	DIGND	Digital input ground common	9	DIGND	Digital input ground common
8	DI7	Digital input channel 7	7	DI6	Digital input channel 6
6	DI5	Digital input channel 5	5	DI4	Digital input channel 4
4	DI3	Digital input channel 3	3	DI2	Digital input channel 2
2	DI1	Digital input channel 1	1	DI0	Digital input channel 0

2.8.4.2.1 DI

JH4 add-on board provides 8 channels of isolated digital inputs (isolation voltage 2500Vrms), with an optocoupler conduction voltage of DC12V~24V, the maximum allowable voltage cannot be exceeded DC30V. Because of the internal circuit adopts bidirectional optocoupler isolation, it is compatible with PNP and NPN wiring solutions. The wiring diagrams are as follows:

➢ NPN connection in wet contact way：
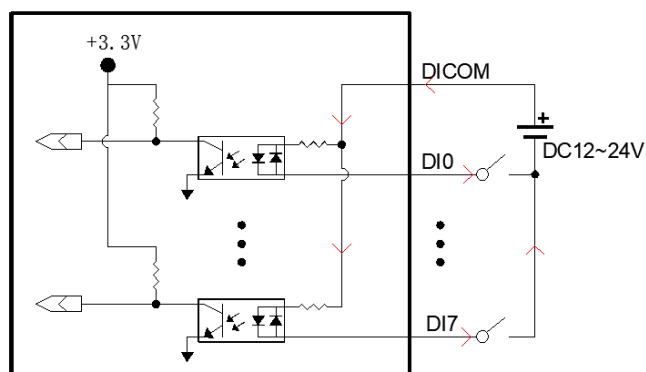
Figure 2-68 JH4 DI NPN wiring solution

➢ PNP connection in wet contact way：
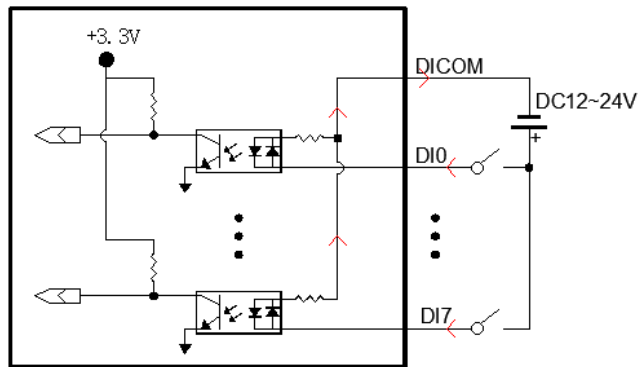
Figure 2-69 JH4 DI PNP wiring solution

➤ Dry contact way：
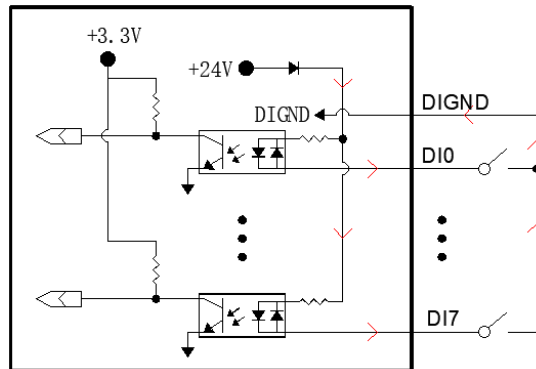
Figure 2-70 JH4 DI NPN wiring solution

2.8.4.2.2 RO

JH4 add-on board provides 4 channels of normally open relay outputs, relay size: 24VDC(Imax:1.0A)/ 125VAC(Imax: 0.5A). For inductive loads a discharge diode must be connected in parallel between the output signal and DOGND. The reference wiring method is as follows:
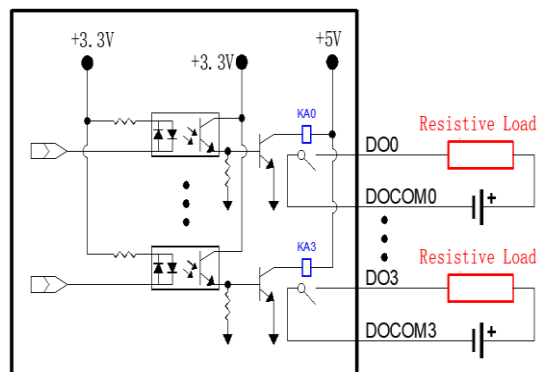
Figure 2-71 JH4 Wiring of resistive load
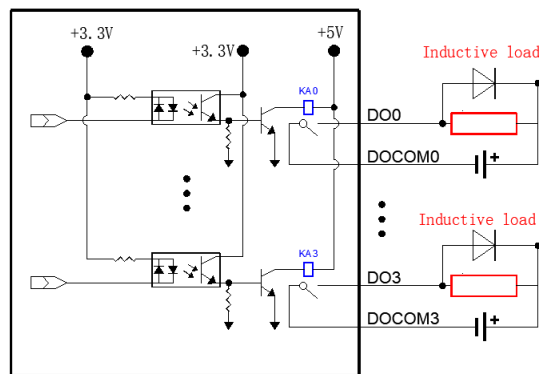
Figure 2-72 JH4 Wiring of resistive load

⚠️ :
The DO output load can't exceed the maximum allowable current and voltage of the relay, otherwise the relay will be damaged.

2.8.4.2.3 Modbus RTU Register Definitions

Target to be easily to read and write the DI and DO status, the status of DI and DO channels on the JH4 add-on board can be accessed via standard Modbus RTU protocol. When using Modbus RTU communication, the JH4 works as a slave device. The default address is 1, and the COM port used on the PC is COM11.

1. Default communication parameters

   ➢ Baud rate：115200bps

   ➢ Data bit：8bit

   ➢ Stop bit：1bit

   ➢ Parity bit：None

The communication parameters can be read or changed by the according holding register in the format of 0xPMRB:

■ P (Parity) means parity

   ● P=1 means none parity

   ● P=2 means odd parity

   ● P=3 means even parity

■ M: communication mode, 0: RTU;

■ R (Reserve): retain default values, 0: 1 stop bit, 8 data bits;

■ B (Baudrate): baud rate index,

   Refer to the following table in detail:

Baud rate	Set values		
	No parity bit	Odd parity bit	Even parity bit

	Hexadecimal	Decimal	Hexadecimal	Decimal	Hexadecimal	Decimal
9600	0x1001	4097	0x2001	8193	0x3001	12289
19200	0x1002	4098	0x2002	8194	0x3002	12290
38400	0x1003	4099	0x2003	8195	0x3003	12291
57600	0x1004	4100	0x2004	8196	0x3004	12292
76800	0x1005	4101	0x2005	8197	0x3005	12293
115200	0x1006	4102	0x2006	8198	0x3006	12294

NOTE: Default communication parameter is 0x1006: RTU communication mode, baud rate 115200, 1 stop bit, 8 data bits, no parity bits.

2.   Hot start function settings

The hot start function can be enabled or disabled by setting of 40012 register, set 1 to 40012, the hot start will be enabled and the last output state will be saved to the retentive memory, which will be reloaded after the system is restarted. While set 0 to 40012, the cold start will be enabled, and the state of the output will be lost after the system is restarted.

3.   Settings of the relay output

The state of 4 channels of the relay output can be set by the coil status register from 00001 to 00004 or by the according bit in the holding register 40021. Set to 1 to turn on the relay, while 0 to turn off the relay.

refer to the following table for set values and output states in 40021:

DO7	DO6	DO5	DO4	DO3	DO2	DO1	DO0	Set value
X	X	X	X	0	0	0	0	0x0000
X	X	X	X	0	0	0	1	0x0001
X	X	X	X	0	0	1	0	0x0002
X	X	X	X	0	0	1	1	0x0003
X	X	X	X	0	1	0	0	0x0004
X	X	X	X	0	1	0	1	0x0005
X	X	X	X	0	1	1	0	0x0006
X	X	X	X	0	1	1	1	0x0007
X	X	X	X	1	0	0	0	0x0008
X	X	X	X	1	0	0	1	0x0009
X	X	X	X	1	0	1	0	0x000A
X	X	X	X	1	0	1	1	0x000B

X	X	X	X	1	1	0	0	0x000C
X	X	X	X	1	1	0	1	0x000D
X	X	X	X	1	1	1	0	0x000E
X	X	X	X	1	1	1	1	0x000F

NOTE: The set command must not be bigger than 0x00FF, otherwise it is invalid.x means the current product does not support

4. Digital inputs and filter setting

The digital input status can be read by the input register from 10001 to 10008 or by the holding register 40023. The according bit is 1 when the DI is active, while is 0 when inactive.
 There is a separate holding register for each digital input channel to set the filter time, they are from 40031 to 40038, time unit is ms, maximum is 20ms.

5. DO Control registers

Function Code：01/05

NO.	Address	Signal	Remark
1	00001	DO0	Write 1 to open the relay, write 0 to close it
2	00002	DO1	Write 1 to open the relay, write 0 to close it
3	00003	DO2	Write 1 to open the relay, write 0 to close it
4	00004	DO3	Write 1 to open the relay, write 0 to close it

6. DI Input registers

Function Code：02

NO.	Address	Signal	Remark
1	10001	DI0	1 when active, 0 when inactive.
2	10002	DI1	1 when active, 0 when inactive.
3	10003	DI2	1 when active, 0 when inactive.
4	10004	DI3	1 when active, 0 when inactive.
5	10005	DI4	1 when active, 0 when inactive.
6	10006	DI5	1 when active, 0 when inactive.
7	10007	DI6	1 when active, 0 when inactive.
8	10008	DI7	1 when active, 0 when inactive.

7. Parameter holding registers

Function Code：03/06

NO	Address	Description of data	R/W	Remark
1	40001	Device ID	R	
2	40002	Device name character 1	R	
3	40003	Device name character 2	R	
4	40004	Device name character 3	R	
5	40005	Device name character 4	R	
6	40006	Device name character 5	R	
7	40007	Device hardware version number	R	
8	40008	Device hardware release number	R	
9	40009	Device firmware master version number	R	
10	40010	Device firmware compilation version number	R	
11	40011	Communication parameter	R	
12	40012	Hot start setting	RW	
13	40013	Reserved	-	
14	40014	Reserved	-	
15	40015	Reserved	-	
16	40016	Reserved	-	
17	40017	Reserved	-	
18	40018	Reserved	-	
19	40019	Reserved	-	
20	40020	Reserved	-	
21	40021	DO's output	RW	DO status acquisition and output control
22	40022	Reserved	-	
23	40023	Input status of DI	R	Each bit represents 1 input
24	40024	Reserved	-	

25	40025	Reserved	-	
26	40026	Reserved	-	
27	40027	Reserved	-	
28	40028	Reserved	-	
29	40029	Reserved	-	
30	40030	Reserved	-	
31	40031	DI0 filter time	RW	Unit ms, no filtering when 0, Max.20ms
32	40032	DI1 filter time	RW	Unit ms, no filtering when 0, Max.20ms
33	40033	DI2 filter time	RW	Unit ms, no filtering when 0, Max.20ms
34	40034	DI3 filter time	RW	Unit ms, no filtering when 0, Max.20ms
35	40035	DI4 filter time	RW	Unit ms, no filtering when 0, Max.20ms
36	40036	DI5 filter time	RW	Unit ms, no filtering when 0, Max.20ms
37	40037	DI6 filter time	RW	Unit ms, no filtering when 0, Max.20ms
38	40038	DI7 filter time	RW	Unit ms, no filtering when 0, Max.20ms
39	40039	Reserved	-	
40	40040	Reserved	-	

2.9 NP-6125-8PoE

NP-6125-8POE is a functional industrial computer in the NP-6125 series for machine vision industry applications. It can be equipped with Intel the 6th/7th/8th Generation core i3/i5/i7 LGA11511 socket type desktop high performance processors, Integrated 8-channel PoE Gigabit network card, widely used in machine vision inspection, defect detection, image recognition, material sorting and other fields.

2.9.1 Key Features

◆ 2 x Intel GbE LAN controller

◆ 4 x USB3.0, USB2.0 Type A on board for dongle

◆ 2 x RS-232/RS-485, RS-485 support auto flow control

◆ 8 x Intel GbE PoE LAN controller

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment

2.9.2 Product Dimension

Unit: mm

Figure 2-73 Dimension of NP-6125-8PoE

2.9.3 Product Specifications

Model Name		NP-6125-8POE
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
	Ethernet	2 x Intel GbE LAN controller
	PoE	8 x Intel GbE PoE LAN controller, max. 15W per channel
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 1920 x 1080 @30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V±10%, overcurrent, overvoltage and polarity inverse protection,
	Power Consumption	Max. 250W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.6Kg
Environment	Work Temperature	-20°C ~ 60°C (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40°C ~ 80°C (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.9.4 Description of Interfaces
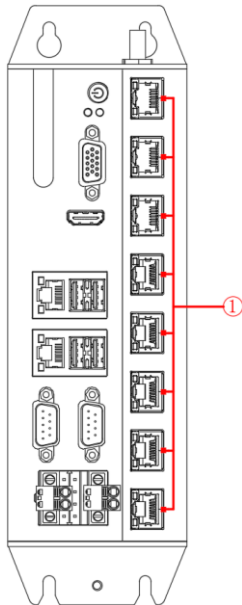
No.	Name
1	PoE LAN

Figure 2-74 Interfaces of NP-6125-8PoE

2.9.4.1 PoE LAN

There are eight PoE Gigabit Ethernet ports: from LAN3 to LAN10. The maximum power of each channel is 15W.

- Pin definition of PoE LAN connector:

<table>
<tr><td rowspan="2"></td><td rowspan="2">Pin No.</td><td colspan="2">Signals</td></tr>
<tr><td>100BASE-TX</td><td>1000BASE-T</td></tr>
<tr><td>1</td><td>TX+</td><td>TRD+(0)</td></tr>
<tr><td>2</td><td>TX-</td><td>TRD-(0)</td></tr>
<tr><td>3</td><td>RX+</td><td>TRD+(1)</td></tr>
<tr><td>4</td><td>N.C.</td><td>TRD+(2)</td></tr>
<tr><td>5</td><td>N.C.</td><td>TRD-(2)</td></tr>
<tr><td>6</td><td>RX-</td><td>TRD-(1)</td></tr>
<tr><td>7</td><td>N.C.</td><td>TRD+(3)</td></tr>
<tr><td>8</td><td>N.C.</td><td>TRD-(3)</td></tr>
<tr><td colspan="2">LED "Link"</td><td>On</td><td>Active</td></tr>
<tr><td colspan="2">Orange(light)</td><td>Link(a connection to an Ethernet network exists)</td><td>Blinking(data be-ing transferred)</td></tr>
<tr><td colspan="2">LED "Transmit"</td><td>On</td><td>Off</td></tr>
<tr><td colspan="2">Green(light)</td><td>100Mbps</td><td>10Mbps</td></tr>
<tr><td colspan="2">Orange(light)</td><td>1000Mbps</td><td></td></tr>
</table>

*There are two status leds in the RJ45 connector indicate the status of the link and transmit separately. Link led is blinking when link successfully, and when the network is working in the 1000Mbps, the transmit led is on in orange color, and when the network is working in the 100Mbps, the transmit led is on in green color, and in green color when working in the other speed.

Type	Parameters
Network Type	1000BASE-T/100BASE-TX/10BASE-T
Transmission Speed*	1000M/100M/10Mbps
Maximum Cable Distance	100m/segment (min. Cat 5e)
NIC Type	Intel® i210-AT Ethernet Controller
PoE Standard	IEEE 802.3af

*When the transmission speed is 1000Mbps, a network cable of at least CAT 5e is required.

:
1. PoE LAN cable 1-2 are positive, 3-6 are negative and cannot be shorted;
2. No crossover PoE LAN cable allowed;
3. CAT-6 or higher PoE LAN cable recommended.

2.10 NP-6125-L2

NP-6125-L2 is designed for the PLC, process control and industrial automation industry and can be extended with additional 2 LAN ports via miniPCIe slot.

2.10.1 Key Features

◆ 4 x Intel GbE LAN controller

◆ 4 x USB3.0, USB2.0 Type A on board for dongle

◆ 2 x RS-232/RS-485, RS-485 support auto flow control

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment
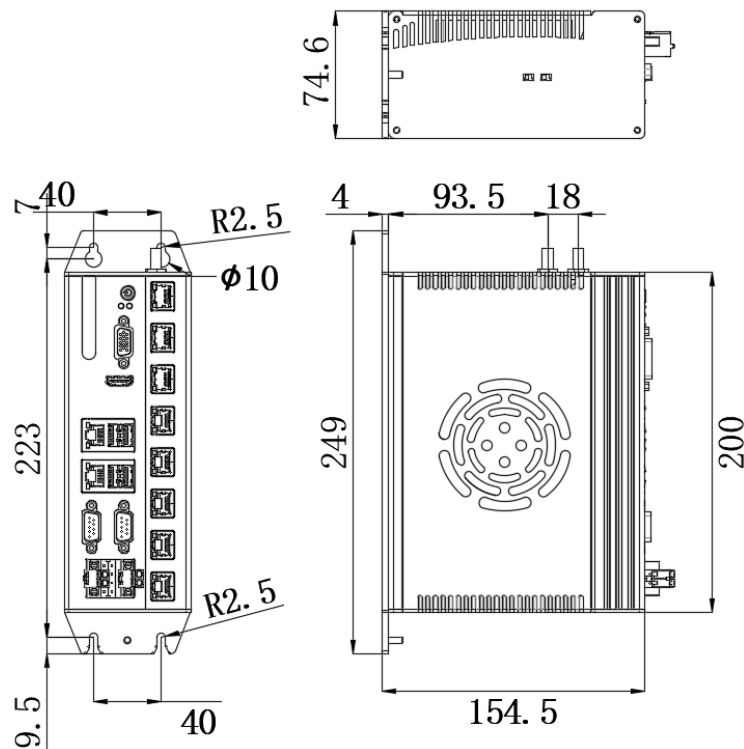
2.10.2 Product Dimension

Unit: mm

Figure 2-75 Dimension of NP-6125-L2

2.10.3 Product Specifications

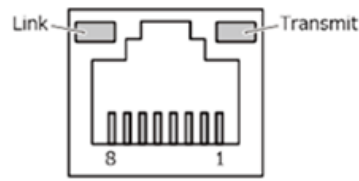| Model Name		NP-6125-L2
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
	Ethernet	4 x Intel GbE LAN controller
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection
	Power Consumption	Max. 120W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.0Kg
Environment	Work Temperature	-20ºC ~ 60ºC (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40ºC ~ 80ºC (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.10.4 Description of Interfaces
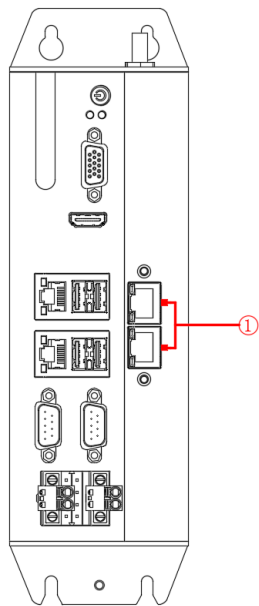
No.	Definition
1	Extended LAN Ports

Figure 2-76 Interfaces of NP-6125-L2

2.10.4.1 Ethernet

Additional 2 Intel GbE Ethernet RJ45 interfaces are extanded via miniPCIe slot, they are LAN3 and LAN4. Therefore, there is no miniPCIE slot on the board to extand the other interfaces.

■ Pin definition of RJ45 connector:

Pin No.	Signals	
	100BASE-TX	1000BASE-T
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)
LED "Link"	On	Active
Orange(light)	Link(a connection to an Ethernet network exists)	Blinking(data be-ing transferred)
LED "Transmit"	On	Off
Green(light)	100Mbps	10Mbps
Orange(light)	1000Mbps	

*There are two status leds in the RJ45 connector indicate the status of the link and transmit separately. Link led is blinking when linking successfully, and when the network is working in the 1000Mbps, the transmit led is on in orange color, and when the network is working in the 100Mbps, the transmit led is on in green color, and in green color when working in the other speed.

Items	Parameters
Network type	1000BASE-T/100BASE-TX/10BASE-T
Transmission speed*	1000M/100M/10M bps
Max. network path length	100m/segment
NIC type	Intel® i210-AT Ethernet Controller

*Operation at 1000Mbps requires a category 5e or greater cable

2.11 NP-6125-CAN2

NP-6125-CAN2 is designed for the PLC, AGV, Service robot and AGV controller applications. 2 independent CAN bus ports(DB9 female) can be extanded via miniPCIe slot, 120 ohm resistors on the board can be set via DIP switches.

2.11.1 Key Features

◆ 2 x Intel GbE LAN controller

◆ 4 x USB3.0, USB2.0 Type A on board for dongle

◆ 2 x RS-232/RS-485, RS-485 support auto flow control

◆ 2 x CAN Bus 2.0A/B

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment
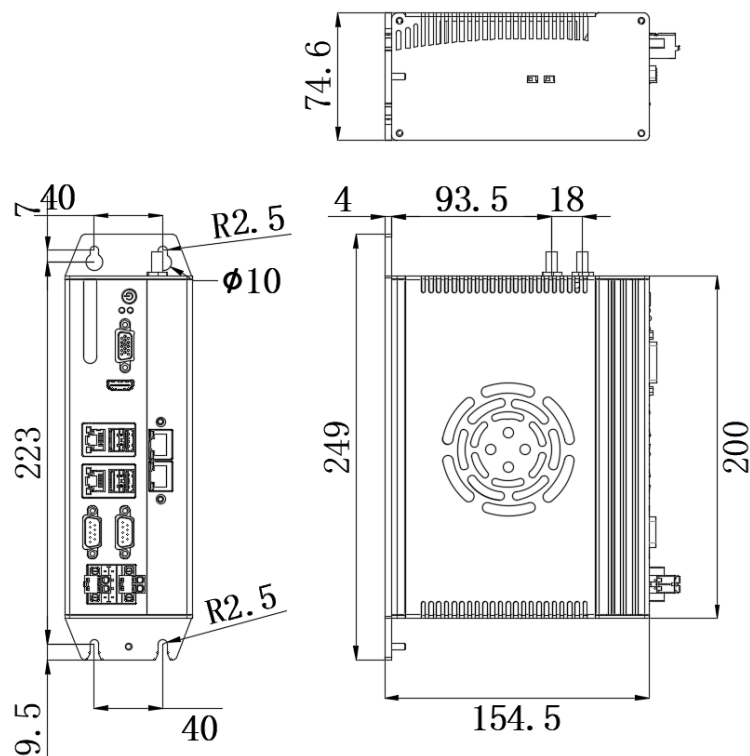
2.11.2 Product Dimension

Unit: mm

Figure 2-77 Dimension of NP-6125-CAN2

2.11.3 Product Specifications

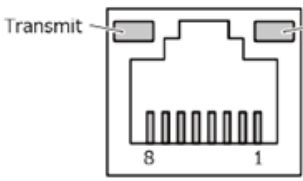| Model Name		NP-6125-CAN2
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
	Ethernet	2 x Intel GbE LAN controller
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	CAN Bus	2 x CAN Bus 2.0 A/B(By mini-pcie slot expansioin)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection
	Power Consumption	Max. 120W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.0Kg
Environment	Work Temperature	-20℃ ~ 60℃ (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40℃ ~ 80℃ (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.11.4 Description of Interfaces
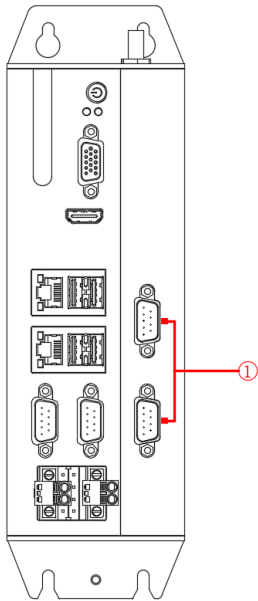
No.	Definition
1	CAN bus 2.0 A/B interface

Figure 2-78 Interfaces of NP-6125-CAN2

2.11.4.1 CAN Bus

1 or 2 channels of CAN2.0 A/B bus are extanded via miniPCIe slot on the board.

■ The definitions of DB9 male interface are as follows:

DB9 male interface	Pin No.	Signal	Pin No.	Signal
	1	N.C.	6	GND
	2	CAN_L	7	CAN_H
	3	GND	8	N.C.
	4	N.C.	9	N.C.
	5	N.C.		
Transfer rate	Max. 1Mbit/s			

2.12 NP-6125-H7

NP-6125-H7 is a functional industrial computer in the NP-6125 series for machine vision industry applications. It can be equipped with Intel Core 10th/11th generation i3/i5/i7 LGA1200 interface CPU, and integrates multi-channel USB3.0, light source control, DI/DO integrated, widely used in machine vision inspection, defect detection, image recognition, material sorting and other fields.

2.12.1 Key Features

◆ 2 x Intel GbE LAN controllerr

◆ 8 x USB3.0, Type A on board for dongle

◆ 2 x RS-232/RS-485, RS-485 support auto flow control

◆ 4 x PWM light control support external trigger input

◆ 16 x isolated DIO(8 x DI, 8 x DO)

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment
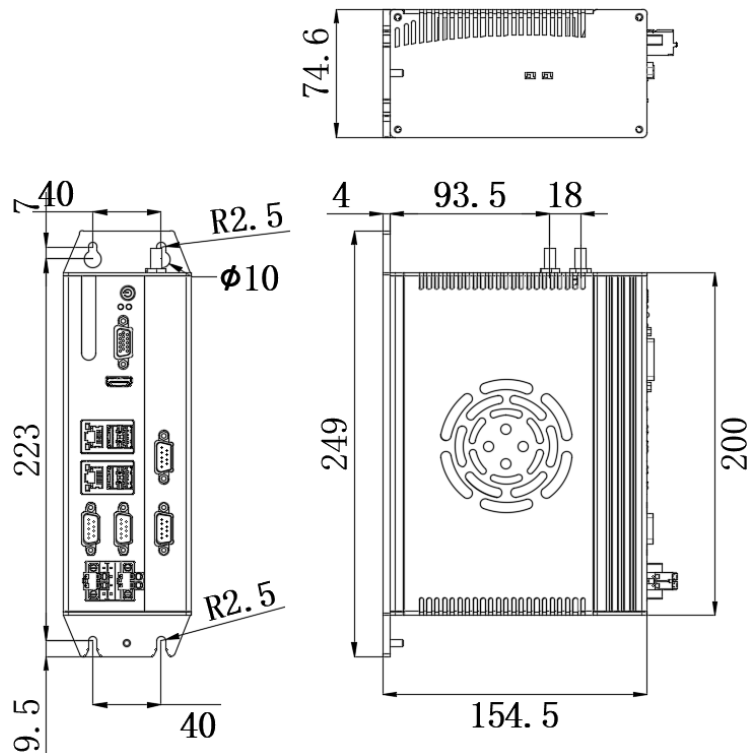
2.12.2 Product Dimension

Unit: mm
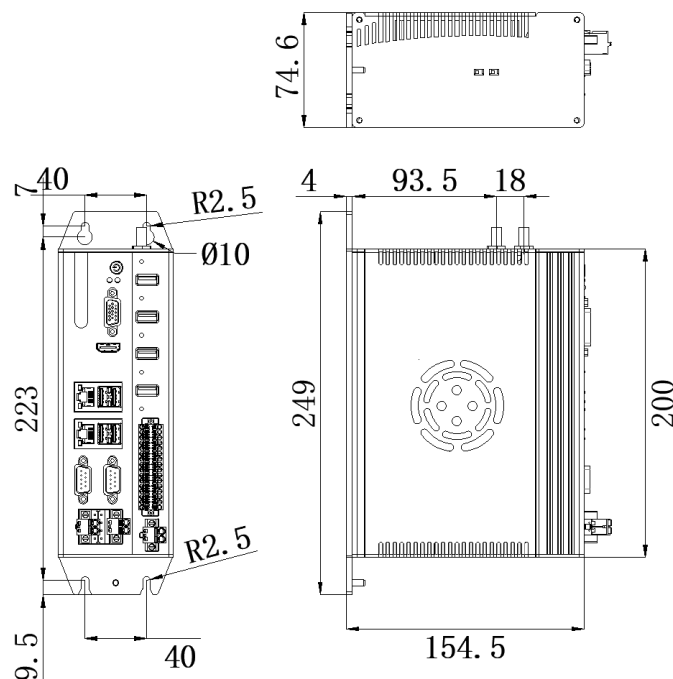
Figure 2-79 Dimension of NP-6125-H7

2.12.3 Product Specifications

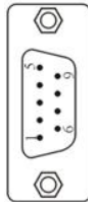| Model Name		NP-6125-H7
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	8 x USB3.0，Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
	Ethernet	2 x Intel GbE LAN controller
	DI	8 x DI NPN/PNP
	DO	8 x DO, Transistor output, Imax:0.5A per channel
	Light Control	4 x PWM Light power control with external trigger input，Imax: 1A per channel (independent power supply)
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection
	Power Consumption	Max.150W (Non-Light source power)
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.4Kg
Environment	Work Temperature	-20ºC ~ 60ºC (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40ºC ~ 80ºC (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.12.4 Description of Interfaces
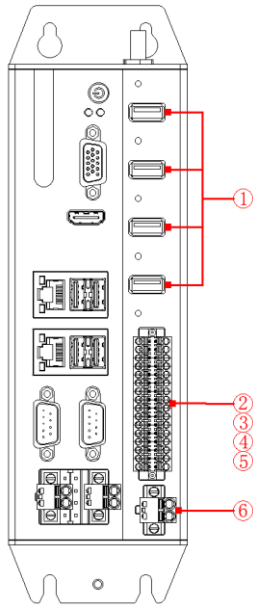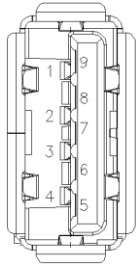
No.	Definition
1	USB3.0
2	DI
3	DO
4	PWM Light control output
5	PWM Light control trigger Input
6	Light source power supply

Figure 2-80 Interfaces of NP-6125-H7

2.12.4.1 USB3.0

H7 provides 4 independent USB3.0 interfaces, each road has an independent controller.

- Pin definition of USB3.0 port:

	Pin No.	Signal
	1	VCC5
	2	DATA-
	3	DATA+
	4	GND
	5	SSRX-
	6	SSRX+
	7	GND
	8	SSTX-
	9	SSTX+
Current	Max. 1 A per USB	
Cable length	Max.3 m (without hub)	
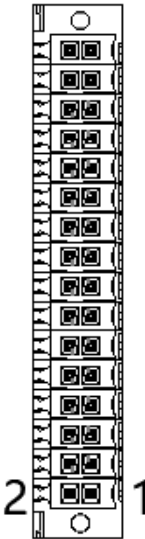
⚠ :
The 4-way USB3.0 interface is expanded through PCIE bus, so it can be used normally after entering the system with PCIE driver.

2.12.4.2 DIO

The H7 add-on board provides 8 channels of isolated DI, 8 channels of isolated DO, 4 channels of light PWM control outputs(Support external hard trigger input).:

■ Pin definition of the DIO connector:

Pin No.	Signal	Description	Pin No.	Signal	Description
32	DI0	Digital input channel 0	31	DO0	Digital output channel 0
30	DI1	Digital input channel 1	29	DO1	Digital output channel 1
28	DI2	Digital input channel 2	27	DO2	Digital output channel 2
26	DI3	Digital input channel 3	25	DO3	Digital output channel 3
24	DI4	Digital input channel 4	23	DO4	Digital output channel 4
22	DI5	Digital input channel 5	21	DO5	Digital output channel 5
20	DI6	Digital input channel 6	19	DO6	Digital output channel 6
18	DI7	Digital input channel 7	17	DO7	Digital output channel 7
16	DICOM	Common end of digital input channel	15	DGND	DO GND
14	LCOM	Common end of Light control trigger input	13	DGND	DO GND
12	TR1	Light control channel 1 trigger input	11	TR2	Light control channel 2 trigger input
10	TR3	Light control channel 3 trigger input	9	TR4	Light control channel 4 trigger input
8	CH1+	Light control channel 1 output positive	7	CH1-	Light control channel 1 output negative
6	CH2+	Light control channel 2 output positive	5	CH2-	Light control channel 2 output negative
4	CH3+	Light control channel 3 output positive	3	CH3-	Light control channel 3 output negative
2	CH4+	Light control channel 4 output positive	1	CH4-	Light control channel 4 output negative

2.12.4.2.1 DI

The H7 add-on board provides 8 isolated digital inputs (isolation voltage 3750Vrms), the maximum allowable voltage cannot be exceeded DC30V. Because of the internal circuit adopts bidirectional optocoupler isolation, it is compatible with PNP and NPN wiring solution. The reference wiring diagrams are as follows:

➢ NPN connection in wet contact way:
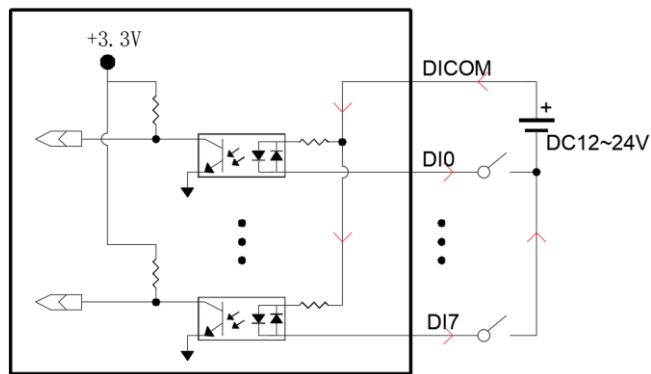
Figure 2-81 H7 DI NPN wiring solution

➢ PNP connection in wet contact way:
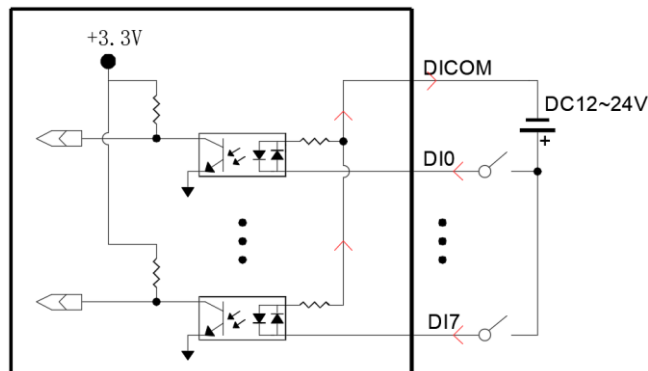
Figure 2-82 H7 DI PNP wiring solution

2.12.4.2.2 DO

The H7 add-on board provides 8 Digital Output channels, transistor output, I_{max}: 500mA, V_{max}: 30V. Please remind that a diode should be connected in parallel for freewheeling when external inductive load is connected.
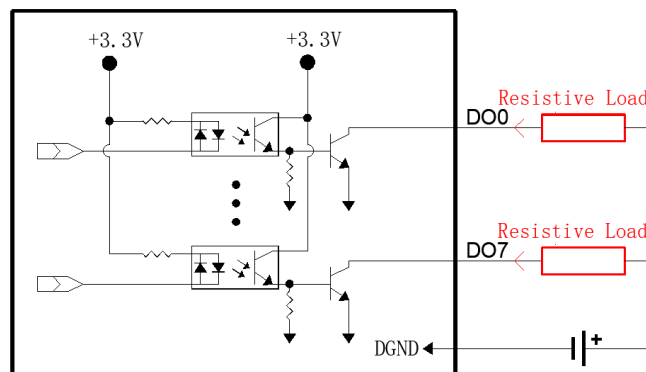
Figure 2-83 H7 Wiring of resistive load
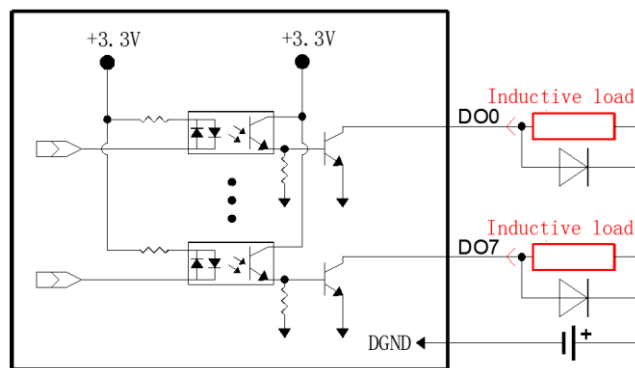
Figure 2-84 H7 Wiring of inductive load

	1. DO output current <500mA;
	2. DO load voltage <30VDC;
⚡ :	3. Connect a flywheel diode when connecting the external inductive load. Diodes can be IN4001 or similar;
	4. Positive and negative power supply terminals cannot connect to the DO signal terminal and DOGND directly.

2.12.4.2.3 PWM Light Control

The H7 add-on board provides 4 channels of PWM light control, the maximum output current for per channel is 1A, and the dimming level is 100. Kindly pay attention to the PC power supply input must be DC24V when using light control function. Each channel has its own external hard trigger input. The reference wiring solutions are as follows:

1. PWM light control output :
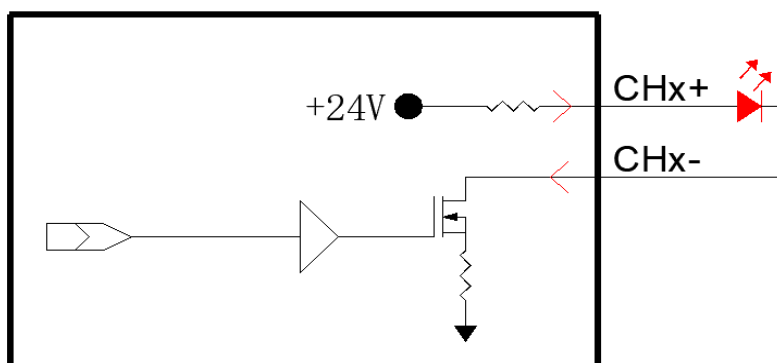
Figure 2-85 H7 Wiring of Light source

	1. Must be use DC24V power supply when use PWN light control function;
⚡ :	2. The power supply cannot be less than the total power consumption of the full load and the light source;

3. The positive and negative PWM outputs cannot be shorted.

2. Light source external trigger

➢ NPN connection in wet contact way:
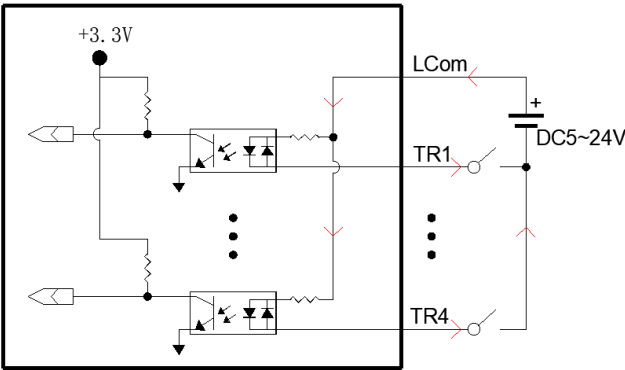
Figure 2-86 H7 NPN wiring solution

➢ PNP connection in wet contact way:
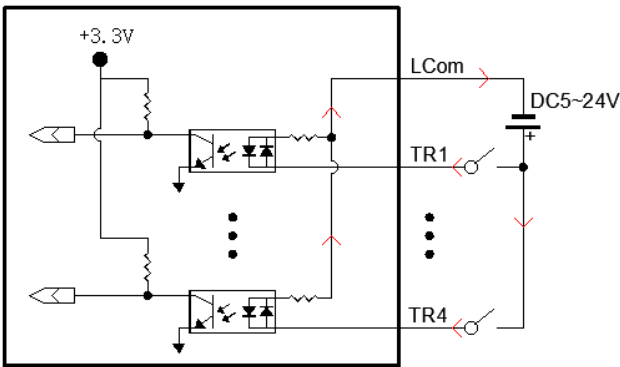
Figure 2-87 H7 PNP wiring solution

i : When using an external hard trigger signal for light control, the light controller needs to be set to hard trigger or hard switch mode in the software.

2.12.4.2.4 Light soure power supply

When the light source is used, an external power supply is required, and the input voltage is DC24V. The specific power supply depends on the power of the external light source.

■ Pin definition of the Light soure power connector:

	Pin No.	Signal	Pin No.	Signal
① ②	1	GND	2	DC24V

*Maximun possible current consumption at 24V with 96 W. The inrush current must also be taken into account when selecting the power supply.

2.13 NP-6125-H7B

NP-6125-H7B is a functional industrial computer in the NP-6125 series for machine vision industry applications. It can be equipped with Intel Core 10th/11th generation i3/i5/i7 LGA1200 interface CPU, and integrates multi-channel USB3.0, DI/DO integrated, widely used in machine vision inspection, defect detection, image recognition, material sorting and other fields.

2.13.1 Key Features

◆ 2 x Intel GbE LAN controllerr

◆ 8 x USB3.0, Type A on board for dongle

◆ 2 x RS-232/RS-485, RS-485 support auto flow control

◆ 32 x isolated DIO(16 x DI, 16 x DO)

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment

2.13.2 Product Dimension

Unit: mm
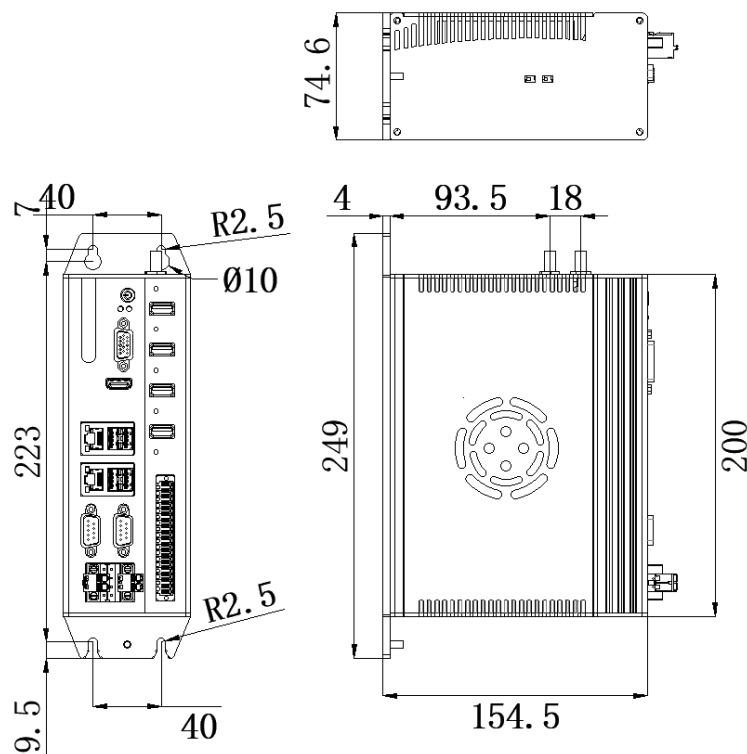
Figure 2-88 Dimension of NP-6125-H7B

2.13.3 Product Specifications

Model Name		NP-6125-H7B
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	8 x USB3.0，Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)
	Ethernet	2 x Intel GbE LAN controller
	DI	16 x DI NPN/PNP
	DO	16 x DO, Transistor output, Imax:0.5A per channel
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection
	Power Consumption	Max.150W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.4Kg
Environment	Work Temperature	-20℃ ~ 60℃ (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40℃ ~ 80℃ (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.13.4 Description of Interfaces
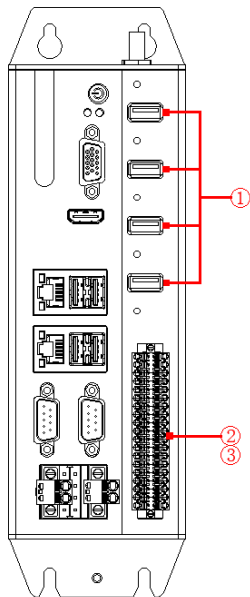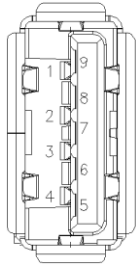
No.	Definition
1	USB3.0
2	DI
3	DO

Figure 2-89 Interfaces of NP-6125-H7B

2.13.4.1 USB3.0

H7 provides 4 independent USB3.0 interfaces, each road has an independent controller.

■ Pin definition of USB3.0 port:

Pin No.	Signal
1	VCC5
2	DATA-
3	DATA+
4	GND
5	SSRX-
6	SSRX+
7	GND
8	SSTX-
9	SSTX+
Current	Max. 1 A per USB
Cable length	Max.3 m (without hub)
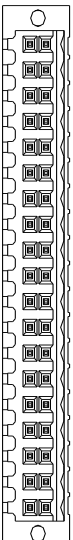
⚠ : The 4-way USB3.0 interface is expanded through PCIE bus, so it can be used normally after entering the system with PCIE driver.

2.13.4.2 DIO

The H1B add-on board provides 16 channels of isolated DI, 16 channels of isolated DO.

- Pin definition of DIO connector:

	Pin No.	Signal	Description	Pin No.	Signal	Description
	38	DICOM	Digital input common	37	DICOM	Digital input common
	36	DIGND	Reserved	35	DIGND	Reserved
	34	DI0	Digital input channel 0	33	DI8	Digital input channel 8
	32	DI1	Digital input channel 1	31	DI9	Digital input channel 9
	30	DI2	Digital input channel 2	29	DI10	Digital input channel 10
	28	DI3	Digital input channel 3	27	DI11	Digital input channel 11
	26	DI4	Digital input channel 4	25	DI12	Digital input channel 12
	24	DI5	Digital input channel 5	23	DI13	Digital input channel 13
	22	DI6	Digital input channel 6	21	DI14	Digital input channel 14
	20	DI7	Digital input channel 7	19	DI15	Digital input channel 15
	18	DO0	Digital output channel 0	17	DO8	Digital output channel 8
	16	DO1	Digital output channel 1	15	DO9	Digital output channel 9
	14	DO2	Digital output channel 2	13	DO10	Digital output channel 10
	12	DO3	Digital output channel 3	11	DO11	Digital output channel 11
	10	DO4	Digital output channel 4	9	DO12	Digital output channel 12
	8	DO5	Digital output channel 5	7	DO13	Digital output channel 13
	6	DO6	Digital output channel 6	5	DO14	Digital output channel 14
	4	DO7	Digital output channel 7	3	DO15	Digital output channel 15
	2	DOGND	Digital output ground common	1	DOGND	Digital output ground common

2.13.4.2.1 DI

The H1B add-on board provides 16 channels of isolated digital inputs (isolation voltage 3750Vrms), the maximum allowable voltage cannot be exceeded DC30V. Because of the internal circuit adopts bidirectional optocoupler isolation, it is compatible with PNP and NPN wiring solution. The reference wiring diagrams are as follows:

- ➢ NPN connection in wet contact way:
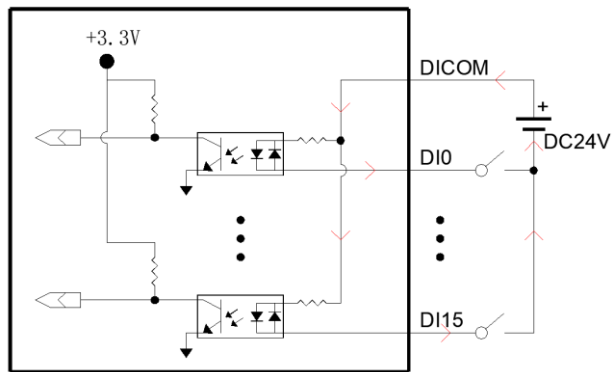
Figure 2-90 H7B DI NPN wiring solution

➢ PNP connection in wet contact way：
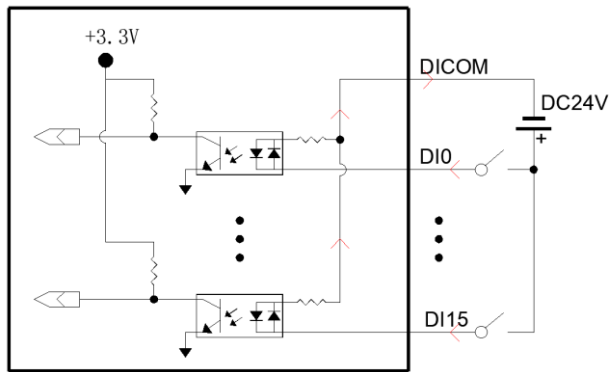
Figure 2-91 H7B DI PNP wiring solution

2.13.4.2.2 DO

The H1B add-on board provides 8 channels of Digital Output channels, transistor output, I_{max}: 500mA, V_{max}: 30V. Please remind that a diode should be connected in parallel for freewheeling when external inductive load is connected.
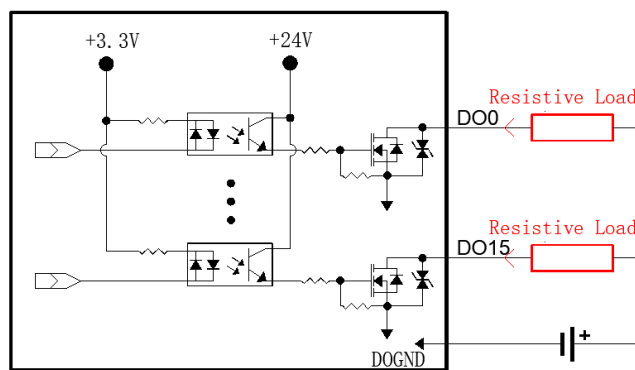
Figure 2-92 H7B Wiring of resistive load
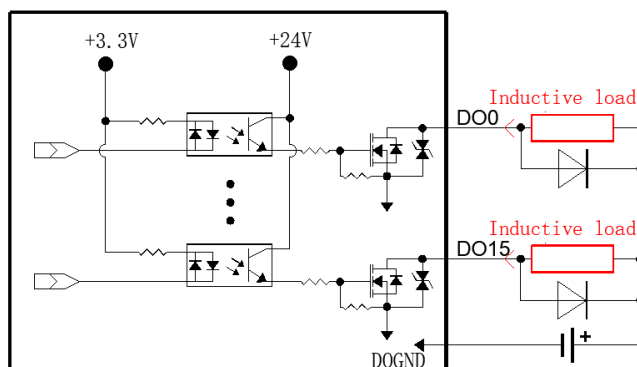
Figure 2-93 H7B Wiring of inductive load

1. DO output current <500mA;

2. DO load voltage <30VDC;

3. Connect a flywheel diode when connecting the external inductive load. Diodes can be IN4001 or similar;

4. Positive and negative power supply terminals can not connected to the DO signal terminal and DOGND directly.

2.14 NP-6125-H1BP

NP-6125-H1BP is a functional industrial computer in the NP-6125 series for machine vision industry applications. It can be equipped with Intel Core 10th/11th generation i3/i5/i7 LGA1200 interface CPU, and integrates PoE Gigabit network card, light source control, DI/DO integrated, widely used in machine vision inspection, defect detection, image recognition, material sorting and other fields.

2.14.1 Key Features

◆ 2 x Intel GbE LAN controller

◆ 4 x USB3.0, Type A on board for dongle

◆ 2 x RS-232/485, RS-485 supports automatic data flow control

◆ 4 x Intel GbE PoE LAN controller

◆ 16 x DI([2-channel A/B phase differential encoder input acquisition, maximum 1MHz)

◆ 16 x DO(Supports 2-channel single ended PWM output, maximum 1Mhz)

◆ 1 x miniPCIe slot can be extended to Wifi, 3G/4G

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment

2.14.2 Product Dimension

Unit: mm
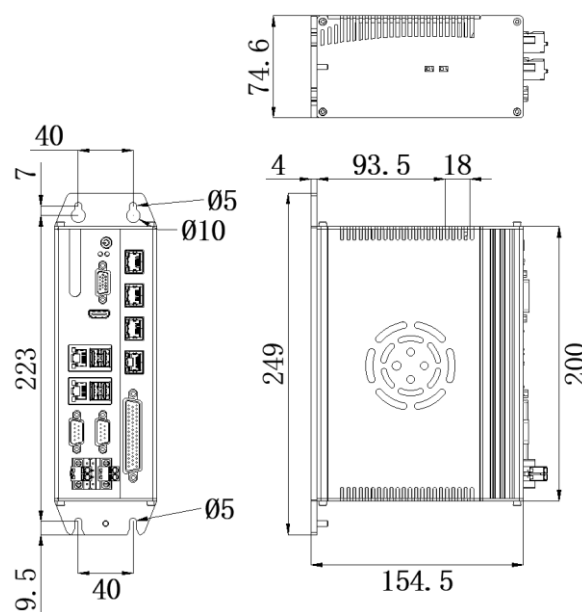
Figure 2-94 Dimension of NP-6125-H1BP

2.14.3 Product Specifications

Model Name		NP-6125-H1BP-N	NP-6125-H1BP-P
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU	
	TDP	Max. 65W	
	BIOS	AMI UEFI BIOS	
	Memory	2 x SO-DIMM DDR4，max up to 32GB	
	Storage	1 x mSATA bay	
		1 x M.2(B Key, Type 2280) bay support SATA	
	USB	4 x USB3.0, 1 x USB2.0 Type A on the board for USB dongle	
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch, (ESD protection for RS-232: Air gap ±8KV, Contact ±6KV)	
	Ethernet	2 x Intel GbE LAN controller	
	PoE	4 x Intel GbE PoE LAN controller, max. 15W per channel	
	DI	16 x DI NPN/PNP，2-channel A/B phase differential encoder input acquisition, maximum 1MHz	
	DO	16 x DO, NPN, max:500mA per channel，Supports 2-channel single ended PWM output, maximum 1Mhz	16 x DO, PNP, max:500mA per channel，Supports 2-channel single ended PWM output, maximum 1Mhz
	VGA	Support up to 1920 x 1080 @60Hz	
	HDMI	Support up to 3840 x 2160 @30Hz	
	Expansions	1 x Full-size PCIe Mini slot with SIM card holder(with USB signal)	
	Watch Dog	1~255 levels programmable	
OS Support	Microsoft Windows	Windows 10	
	Linux	Ubuntu, CentOS, Debian	
Power	Voltage Input	DC12~24V ±10%, overcurrent, overvoltage and polarity inverse protection	
	Power Consumption	Max. 220W	
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style	
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm	
	Net Weight	2.4Kg	
Environment	Work Temperature	-20℃ ~ 60℃ (-4°F~140°F) with air flow (SSD)	
	Storage Temperature	-40℃ ~ 80℃ (-40°F ~ 176°F) with air flow (SSD)	
	Relative Humidity	5~95% (Non-condensing)	
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64	
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27	
	EMC	CE/FCC Class A	

2.14.4 Description of Interfaces
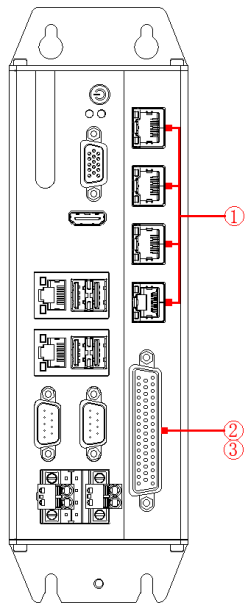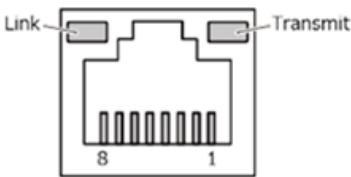
No.	Definition
1	PoE LAN
2	DI
3	DO

Figure 2-95 Interfaces of NP-6125-H1BP

2.14.4.1 PoE LAN

There are four PoE Gigabit Ethernet ports: LAN3, LAN4, LAN5, and LAN6. The maximum power of each channel is 15W.

■ Pin definition of PoE LAN connector:

Pin No.	Signal	
	100BASE-TX	1000BASE-T
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)
LED "Link"	On	Active
Orange(light)	Link(a connection to an Ethernet network exists)	Blinking(data be-ing transferred)
LED "Transmit"	On	Off
Green(light)	100Mbps	10Mbps
Orange(light)	1000Mbps	

*There are two status leds in the RJ45 connector indicate the status of the link and transmit separately. Link led is blinking when link successfully, and when the network is working in the 1000Mbps, the transmit led is on in orange color, and when the network is working in the 100Mbps, the transmit led is on in green color, and in green color when working in the other speed.

Type	Parameters
Network Type	1000BASE-T/100BASE-TX/10BASE-T
Transmission Speed*	1000M/100M/10Mbps
Maximum Cable Distance	100m/segment (min. Cat 5e)
NIC Type	Intel® i210-AT Ethernet Controller
PoE Standard	IEEE 802.3af

*When the transmission speed is 1000Mbps, a network cable of at least CAT 5e is required.

1. PoE LAN cable 1-2 are positive, 3-6 are negative and cannot be shorted;
2. No crossover PoE LAN cable allowed;
3. CAT-6 or higher PoE LAN cable recommended.

2.14.4.2 DIO

The H1BP add-on board provides 16 channels of isolated DI, 16 channels of isolated DO.DI multiplexing 2 circuit A / B / Z three-phase encoder input, Z phase does not do software processing, DO multiplexing 2 circuit PWM pulse output。

■ Pin definition of DIO connector:

	Pin No.	Signal	Description	Pin No.	Signal	Description	Pin No.	Signal	Description
	1	PWM1 /DO14	Pulse Width Modulation 1 Output /Digital output channel 14	18	DIR0 /DO13	Dir0 output/Digital output channel 13	34	DIR1 /DO15	Dir1 output /Digital output channel 15
	2	DO11	Digital output channel 11	19	DO10	Digital output channel 10	35	PWM0 /DO12	Pulse Width Modulation 0 Output /Digital output channel 12
	3	DO8	Digital output channel 8	20	DO7	Digital output channel 7	36	DO9	Digital output channel 9
	4	DO5	Digital output channel 5	21	DO4	Digital output channel 4	37	DO6	Digital output channel 6
	5	DO2	Digital output channel 2	22	DO1	Digital output channel 1	38	DO3	Digital output channel 3

6	DOCOM_VCC	Digital output of the VCC common end	23	DOCOM_VCC	Digital output of the VCC common end	39	DO0	Digital output channel 0
7	DOGND	Digital output ground common	24	DOGND	Digital output ground common	40	DOGND	Digital output ground common
8	Enc_GND	Encoder power supplyGND	25	Enc_VCC	Encoder power supply5VDC	41	Enc_GND	Encoder power supplyGND
9	Enc_VCC	Encoder power supply 5VDC	26	Enc1_Z-	Encoder 1 input Z-	42	DICOM_H	Public end of the high-speed digital input channel
10	Enc1_B-	Encoder 1 input B-	27	Enc1_Z+/DI15	Encoder 1 input Z+/Digital input channel15	43	Enc1_B+/DI14	Encoder 1 input B+/Digital input channel14
11	Enc1_A-	Encoder 1 input A-	28	Enc0_Z-	Encoder 0 input Z-	44	Enc1_A+/DI13	Encoder 1 input A+/Digital input channel13
12	Enc0_B-	Encoder 0 input B-	29	Enc0_Z+/DI12	Encoder 0 input Z+/Digital input channel12	45	Enc0_B+/DI11	Encoder 0 input B+/Digital input channel11
13	Enc0_A-	Encoder 0 input A-	30	DICOM	Digital input common	46	Enc0_A+/DI10	Encoder 0 input A+/Digital input channel10
14	DICOM	Digital input common	31	DI8	Digital input channel8	47	DI9	Digital input channel9
15	DI7	Digital input channel7	32	DI5	Digital input channel5	48	DI6	Digital input channel6
16	DI4	Digital input channel4	33	DI2	Digital input channel2	49	DI3	Digital input channel3
17	DI1	Digital input channel1				50	DI0	Digital input channel0

2.14.4.2.1 DI

The H1BP add-on board provides 16 channels of isolated digital inputs (isolation voltage 3750Vrms), the maximum allowable voltage cannot be exceeded DC30V. 0-9 is low speed DI input channel, 10-15 is high speed DI input channel, the common end of low speed DI input channel is DICOM, and the common end of high speed DI input channel is DICOM _ H. Two ways A / B / Z three-phase encoder input channel, the encoder input channel and the high-speed DI channel share，The reference wiring diagrams are as follows:

1. Low speed DI wiring：
➢ NPN connection in wet contact way
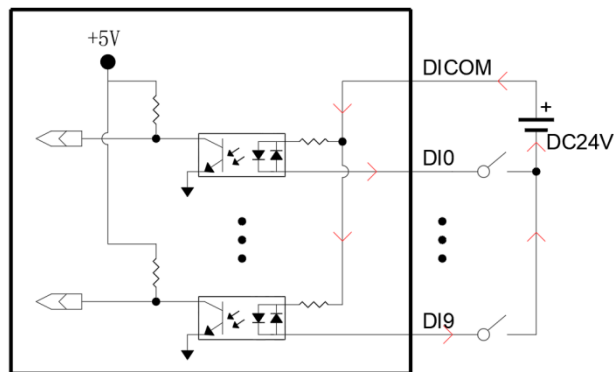
Figure 2-96 H1BP DI NPN wiring solution

➢ PNP connection in wet contact way
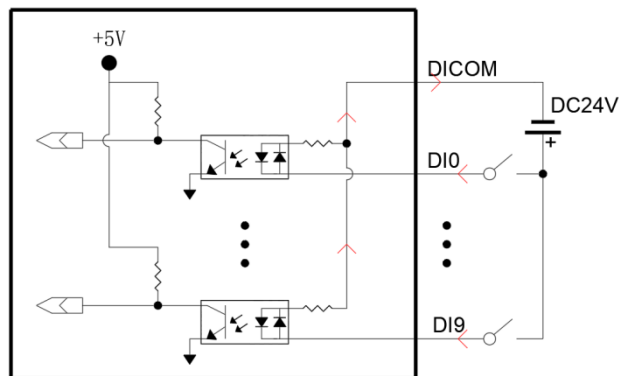
Figure 2-97 H1BP DI PNP wiring solution

2. High-speed DI wiring：
➢ NPN connection in wet contact way
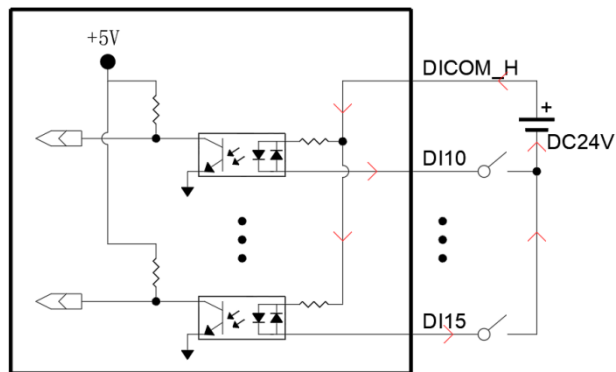
Figure 2-98 H1BP DI NPN wiring solution

➢ PNP connection in wet contact way
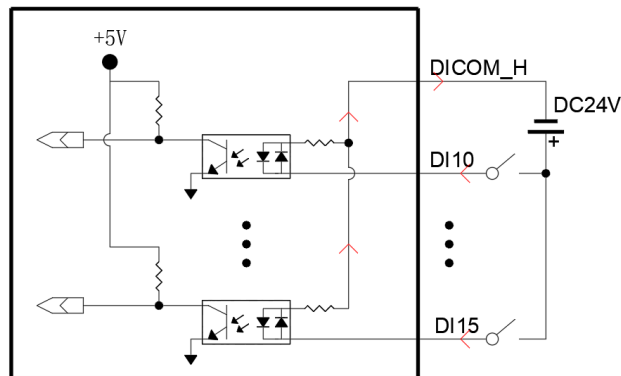
Figure 2-99 H1BP DI PNP wiring solution

3. Encoder wiring:
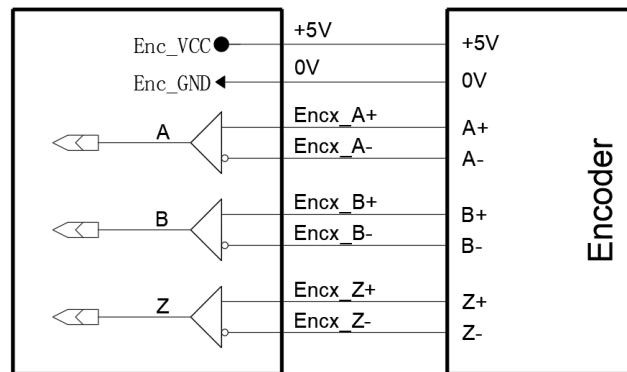
Figure 2-100 H1BP Encoder input wiring mode

2.14.4.2.2 DO

The H1BP add-on board provides 8 channels of Digital Output channels, transistor output, I_{max}: 500mA, V_{max}: 30V. Please remind that a diode should be connected in parallel for freewheeling when external inductive load is connected.0~11 is low speed output channel, 12~15 is high

speed output channel, high speed output channel and PWM output channel reuse.The reference wiring diagrams are as follows:

1. DO wiring:
➢ DO NPN wiring:
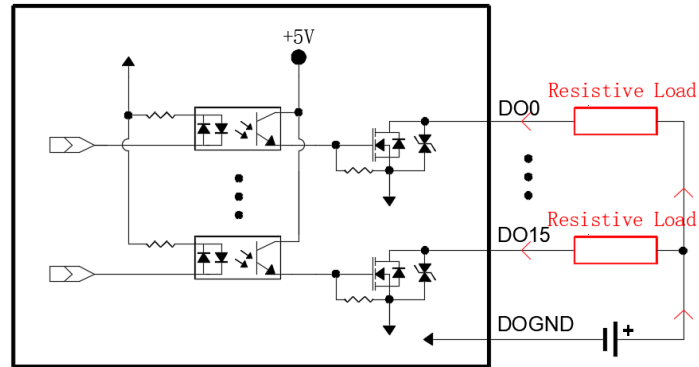
Figure 2-101 H1BP Wiring of resistive load
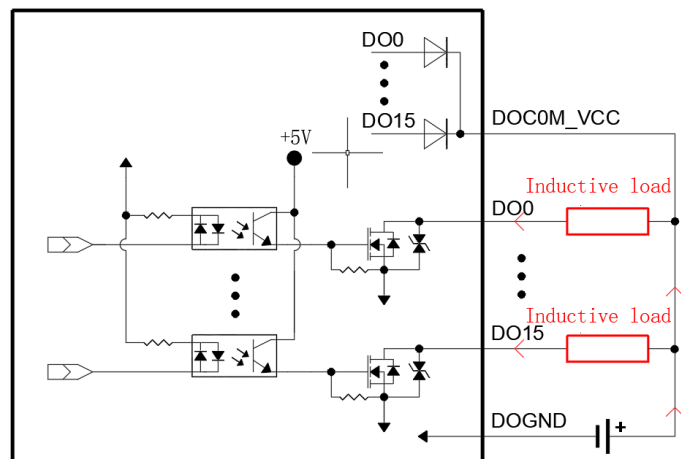
Figure 2-102 H1BP Wiring of inductive load

➢ DO PNP wiring:
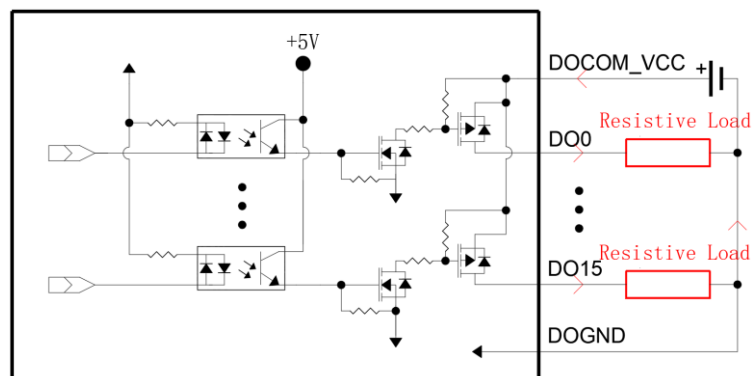
Figure 2-103 H1BP Wiring of resistive load
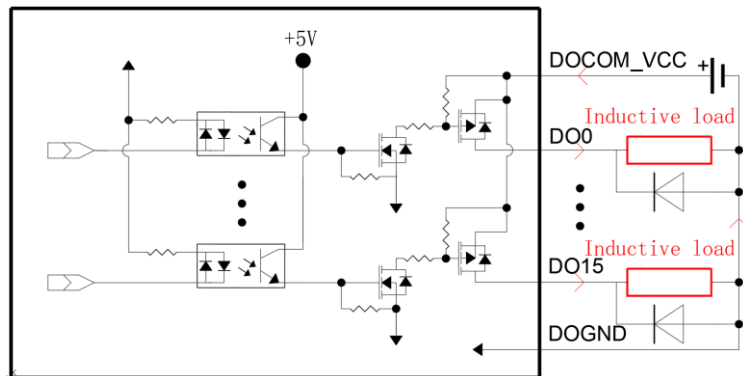
Figure 2-104 H1BP Wiring of inductive load

2. PWM wiring：
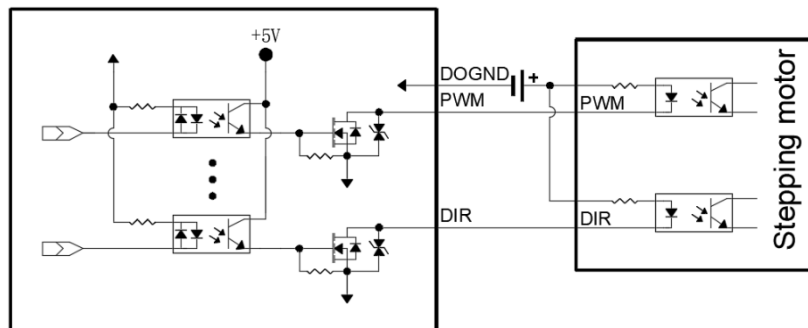
Figure 2-105 H1BP PWM wiring
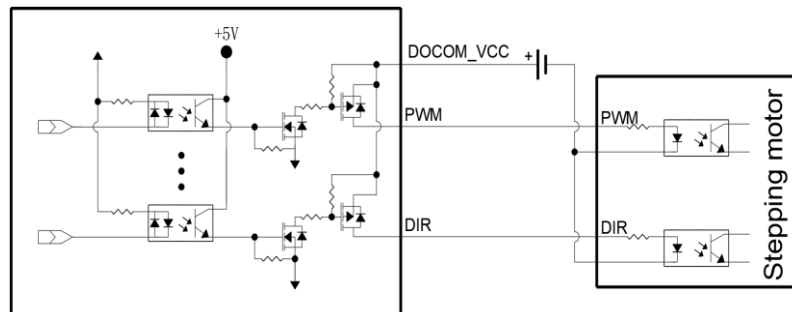
Figure 2-106 H1BP PWM wiring

1. DO output current <500mA;

2. DO load voltage <30VDC;

3. Connect a flywheel diode when connecting the external inductive load. Diodes can be IN4001 or similar;

4. Positive and negative power supply terminals can not connect to the DO signal terminal and DOGND directly.

2.15 NP-6125-JH5

NP-6125-JH5 is a functional industrial control machine for PLC, process control and intelligent gateway in NP-6125 series. It can carry Intel Core 10th/11th generation i3/i5/i7 LGA1200 interface CPU, and expand multiplex RS-485 and DI / DO.

2.15.1 Key Features

◆ 3 x Intel GbE LAN controllerr

◆ 4 x USB3.0, Type A on board for dongle

◆ 2 x RS-232/RS-485, 8 x RS-485

◆ 16 x isolated DI, 8 x isolated DO, 8 x Relay output(NO)

◆ 2 x miniPCIe slot can be extended to Wifi, 3G/4G,CAN modules

◆ 1 x M.2 2230 KEY-E WIFI

◆ VGA and HDMI dual display ports

◆ Support Wall-mounted or DIN-Rail mounted

◆ -20 ~ 60℃ wide temperature environment

2.15.2 Product Dimension

Unit: mm
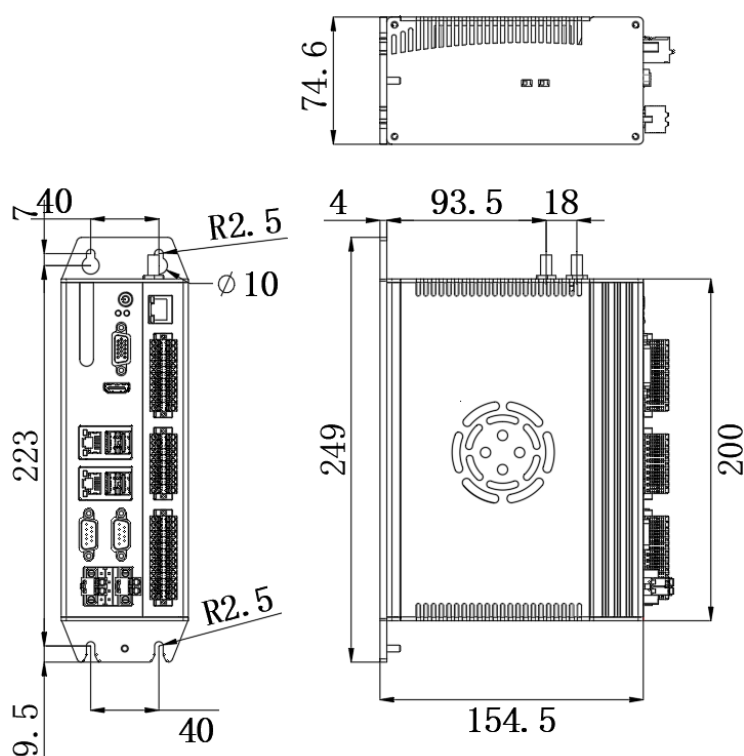
Figure 2-107 Dimension of NP-6125-JH5

2.15.3 Product Specifications

Model Name		NP-6125-JH5
System	CPU	Intel® Core™ 6th/7th/8th gen i3/i5/i7/Pentium/Celeron LGA1151 type CPU
	TDP	Max. 65W
	BIOS	AMI UEFI BIOS
	Memory	2 x SO-DIMM DDR4，max up to 32GB
	Storage	1 x mSATA bay
		1 x M.2(B Key, Type 2280) bay support SATA
	USB	4 x USB3.0，Type A on the board for USB dongle
	COM	2 x COM(DB-9), selectable to support RS-232 or RS-485 mode by the switch
		8 x RS-485(Phonenix Contator)
	CAN	2 x CAN 2.0A/B bus(By mini-pcie slot expansioin, optional)
	Ethernet	3 x Intel GbE LAN controller
	DI	16 x DI NPN/PNP
	DO	8 x DO, Imax:0.5A per channel
		8 x Relay output(NO, 30VDC(Imax:3.0A))
	VGA	Support up to 1920 x 1080 @60Hz
	HDMI	Support up to 3840 x 2160 @30Hz
	Expansions	2 x Full-size PCIe Mini slot with SIM card holder(with USB signal)
		1 x M.2 key-E 2230 slot
	Watch Dog	1~255 levels programmable
OS Support	Microsoft Windows	Windows 10
	Linux	Ubuntu, CentOS, Debian
Power	Voltage Input	DC12~24V±10%, overcurrent, overvoltage and polarity inverse protection
	Power Consumption	Max.120W
Chassis	Structure	Aluminum-magnesium alloy BOX with fan embedded to assist cooling, Wall-mounted or DIN-Rail fixing style.
	Dimensions	(L)200mm x (W)154.5mm x (H)74.6mm
	Net Weight	2.4Kg
Environment	Work Temperature	-20℃ ~ 60℃ (-4°F~140°F) with air flow (SSD)
	Storage Temperature	-40℃ ~ 80℃ (-40°F ~ 176°F) with air flow (SSD)
	Relative Humidity	5~95% (Non-condensing)
	Operating Vibration	5~500Hz, 1.5Grms@with SSD, Follow IEC60068-2-64
	Operating Shock	20G peak acceleration(11ms duration) with SSD, Follow IEC60068-2-27
	EMC	CE/FCC Class A

2.15.4 Description of Interfaces
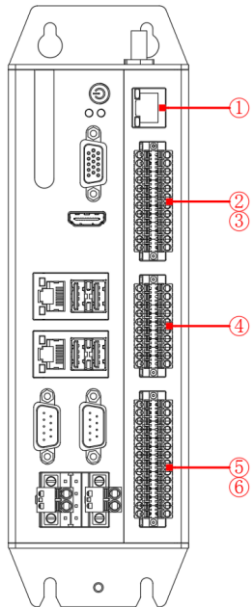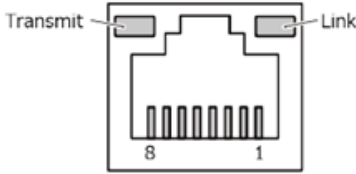
No.	Definition
1	Ethernet
2	RS-485
3	CAN(Optional)
4	DI
5	DO
6	RO

Figure 2-108 Interfaces of NP-6125-JH5

2.15.4.1 Ethernet

The product provides one GbE Lan controller using standard RJ45 connectors. It is LAN3.

■ Pin definition of RJ45 connector:

Pin No.	Signals	
	100BASE-TX	1000BASE-T
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)

LED "Link"	On	Active
Orange(light)	Link(a connection to an Ethernet network exists)	Blinking(data be-ing transferred)

LED "Transmit"	On	Off
Green(light)	100Mbps	10Mbps
Orange(light)	1000Mbps	

*There are two status leds in the RJ45 connector indicate the status of the link and transmit separately. Link led is blinking when linking successfully, and when the network is working in the 1000Mbps, the transmit led is on in orange color, and when the network is working in the 100Mbps, the transmit led is on in green color, and in green color when working in the other speed.

Items	Parameters
Network type	1000BASE-T/100BASE-TX/10BASE-T
Transmission speed*	1000M/100M/10M bps
Max. network path length	100m/segment
NIC type	Intel® i210-AT Ethernet Controller

*Operation at 1000Mbps requires a category 5e or greater cable

2.15.4.2 RS-485 & CAN

JH5 add-on board provides 8 channels of isolated RS-485 (COM3~COM10) by 24-pin phoenix terminals. The JH5 can optionally be equipped with 2 channels of CAN2.0 A/B bus, which is via the miniPCIe slot expansion. In the expanded CAN bus, only one miniPCIE slot iremains available.

- 24 pin phoenix terminals are defined as follows:

Pin No.	Signal	Description	Pin No.	Signal	Description
24	A3	COM3 RS-485 Data+	23	B3	COM3 RS-485 Data-
22	A4	COM4 RS-485 Data+	21	B4	COM4 RS-485 Data-
20	A5	COM5 RS-485 Data+	19	B5	COM5 RS-485 Data-
18	A6	COM6 RS-485 Data+	17	B6	COM6 RS-485 Data-
16	A7	COM7 RS-485 Data+	15	B7	COM7 RS-485 Data-
14	A8	COM8 RS-485 Data+	13	B8	COM8 RS-485 Data-
12	A9	COM9 RS-485 Data+	11	B9	COM9 RS-485 Data-
10	A10	COM10 RS-485 Data+	9	B10	COM10 RS-485 Data-
8	GND	Signal GND	7	GND	Signal GND
6	GND	Signal GND	5	GND	Signal GND
4	1L	CAN1 Data-	3	2L	CAN2 Data-
2	1H	CAN1 Data+	1	2H	CAN2 Data+
Transfer rate	COM3~COM6	Max. 115.2kbit/s	COM7~COM10	Max. 3Mbit/s	
	CAN1-CAN2	Max. 1Mbit/s			

2.15.4.3 DI

The JH5 add-on board provides 16 channels of isolated digital inputs (isolation voltage 3750Vrms), the maximum allowable voltage cannot be exceeded DC30V. Because of the internal circuit adopts bidirectional optocoupler isolation, it is compatible with PNP and NPN wiring solution.

- 20 pin phoenix terminals are defined as follows:

Pin No.	Signal	Description	Pin No.	Signal	Description
20	X0	Digital input channel 0	19	X1	Digital input channel 1
18	X2	Digital input channel 2	17	X3	Digital input channel 3
16	X4	Digital input channel 4	15	X5	Digital input channel 5
14	X6	Digital input channel 6	13	X7	Digital input channel 7
12	X8	Digital input channel 8	11	X9	Digital input channel 9
10	X10	Digital input channel 10	9	X11	Digital input channel 11
8	X12	Digital input channel 12	7	X13	Digital input channel 13
6	X14	Digital input channel 14	5	X15	Digital input channel 15
4	XCOM	Digital input common	3	XCOM	Digital input common
2	XCOM	Digital input common	1	XCOM	Digital input common

The reference wiring diagrams are as follows:

➢ NPN connection in wet contact way：
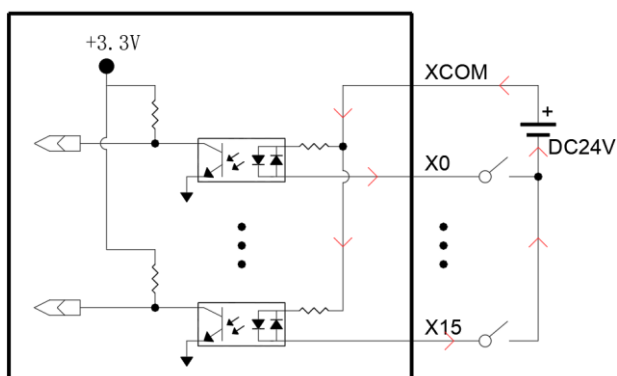
Figure 2-109 JH5 DI NPN wiring solution

➢ PNP connection in wet contact way：
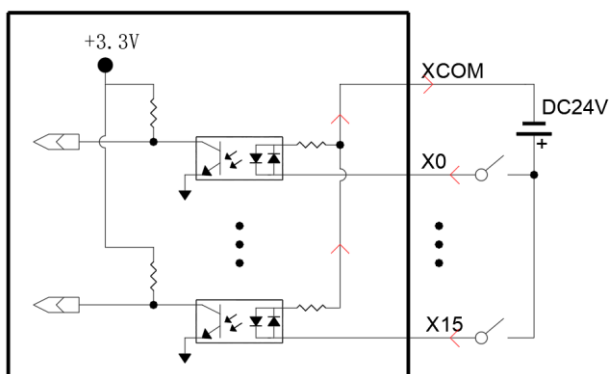
Figure 2-110 JH5 DI PNP wiring solution

2.15.4.4 DO&RO

The JH5 add-on board provides 8 channels of Digital Output channels, transistor output, I_{max}: 500mA, V_{max}: 30V. The product provides 8 channels of normally open relay outputs, relay size: 30VDC (max. current: 3.0A).

- 28 pin phoenix terminals are defined as follows:

Pin No.	Signal	Description	Pin No.	Signal	Description
28	X0	Digital output channel 0	27	X1	Digital output channel 1
26	X2	Digital output channel 2	25	X3	Digital output channel 3
24	X4	Digital output channel 4	23	X5	Digital output channel 5
22	X6	Digital output channel 6	21	X7	Digital output channel 7
20	YGND	Digital output groud	19	YGND	Digital output groud
18	N.C.	NULL	17	N.C.	NULL
16	NO1	Relay output channel1	15	NO2	Relay output channel2
14	COM1	Relay output channel1 common	13	COM2	Relay output channel2 common
12	NO3	Relay output channel3	11	NO4	Relay output channel4
10	COM3	Relay output channel3 common	9	COM4	Relay output channel4 common
8	NO5	Relay output channel5	7	NO6	Relay output channel6
6	COM5	Relay output channel5 common	5	COM6	Relay output channel6 common
4	NO7	Relay output channel7	3	NO8	Relay output channel8
2	COM7	Relay output channel7 common	1	COM8	Relay output channel8 common

Please remind that a diode should be connected in parallel for freewheeling when external inductive load is connected.

1. DO wiring:
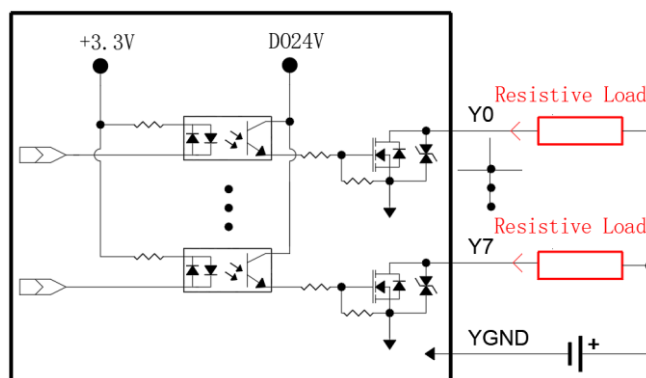
Figure 2-111 JH5 Wiring of resistive load
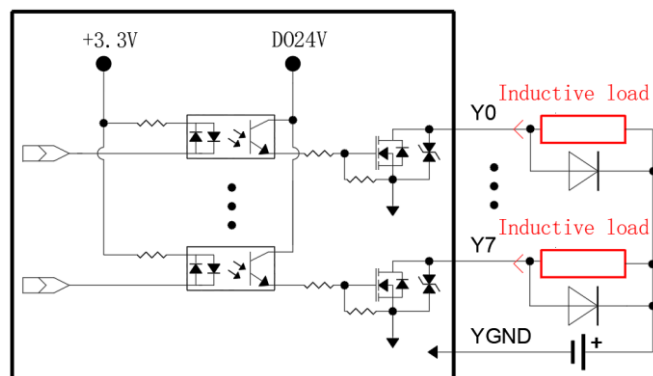
Figure 2-112 JH5 Wiring of inductive load

1. DO output current <500mA;

2. DO load voltage <30VDC;

3. Connect a flywheel diode when connecting the external inductive load. Diodes can be IN4001 or similar;

4. Positive and negative power supply terminals can not connected to the DO signal terminal and DOGND directly.

1. RO wiring:
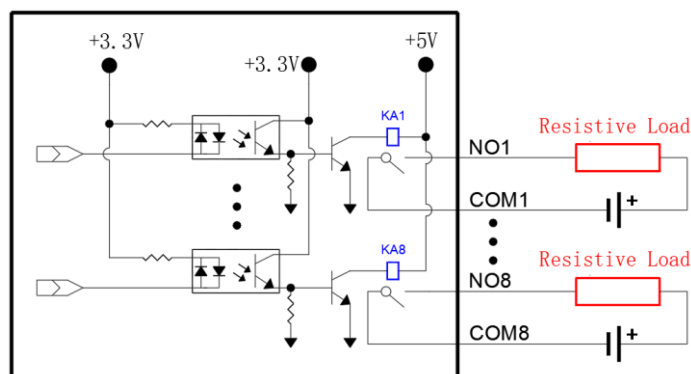
Figure 2-113 JH5 Wiring of resistive load
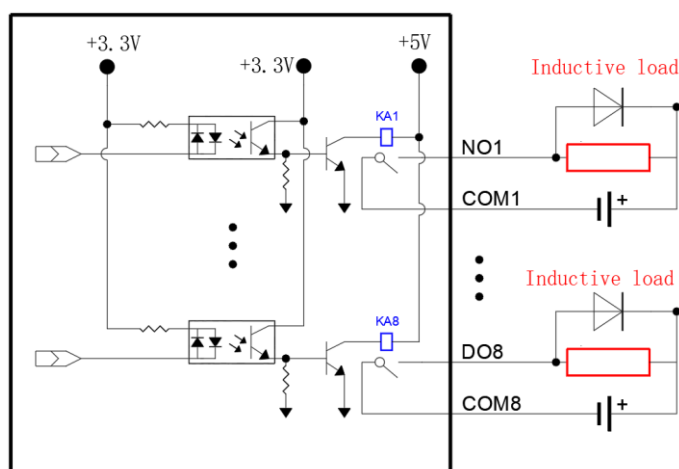
Figure 2-114 JH5 Wiring of inductive load

3 BIOS Settings

This chapter describes how to use AMI's BIOS configuration program to set up your system. Correctly setting BIOS parameters can ensure stable and reliable system operation, while also improving overall system performance. Improper or even incorrect BIOS parameter settings can greatly reduce system performance, making the system unstable or even unable to function properly.

When the BIOS settings in CMOS are destroyed, the system will also request to enter the BIOS settings program. All settings modified through BIOS are also saved in the system's CMOS memory, which is powered by the battery. Even if the external power is cut off, its contents will not be lost unless an operation is performed to clear the CMOS contents.

3.1 Start BIOS settings

When the system is powered on and starts up normally, the message prompting to enter the BIOS setup program can be seen.

Press <DEL> or <ESC> to enter setup.

At this time (other times are invalid), press the designated key (usually the<Del>key) according to the prompt information to enter the BIOS setup program. If this prompt has disappeared but you need to re-enter the BIOS setup system, you need to power off and restart the computer or reload the system using the<Ctrl>+<Alt>+<Delete>key combination, and then re-enter the BIOS setup interface according to the above prompt.

3.2 BIOSsetup method

Normally, the settings tab is selected using the arrow keys on the keyboard, with the<Enter>key entering the settings, the+and - keys switching between settings, the<F1>key for help information, and the<Esc>key exiting the settings. Please refer to the table below for details.

Key	Function Description
< ↑ >	Move forward one item
< ↓ >	Move one item backwards
<←>	Move one item to the left (main menu item)
<→>	Move one item to the right (main menu item)
<Esc>	Exit or return to the main interface
<Enter>	Enter the selection option
< + >	Add or change options
< - >	Reduce or change options
< F1 >	Get help information
< F2 >	Load the previous set values from CMOS
< F3 >	Load default optimization settings
< F4 >	Maintain the set value and exit the BIOS settings interface

3.3 BIOSsettings

Due to the fact that the BIOS program may make updates and adjustments based on different motherboards, the following BIOS settings interface and description are for reference only.

3.3.1 BIOS main interface

Once entering the BIOS setup system, the Main interface will be displayed.

Figure 3-1 NP-6122 BIOS-Main

The following menu items can be switched through the<←>and<→>directional keys on the keyboard:

➢ **Main**
■ In this menu, you can view the basic configuration information of the system, set the language and system time, etc.
➢ **Advanced**
■ In this menu, specific system functions can be set.
➢ **Chipset**
■ In this menu, you can set the functions of the system chipset.

- ➢ **Security**
  - ◼ In this menu, you can set security features such as password protection for the system.
- ➢ **Boot**
  - ◼ In this menu, the startup sequence of the system can be set.
- ➢ **Save & Exit**
  - ◼ In this menu, you can load or save settings and exit the BIOS setup system.

3.3.2 Main

This interface is mainly used to confirm the basic configuration information of the system.

- ◼ Display items

project	content	describe
Project Version	xxxxx x.xx x64	Version of BIOS
Build Date and Time	xx/xx/xxxx xx:xx:xx	BIOS creation time

- ◼ Customizable items

project	content	describe
System Date	Week Day Month / Day / Year	Set the date of the system
System TIme	Hour : Minute : Second	Set the system's time

3.3.3 Advanced

Set the detailed functions of the system in this menu, and the following functional items can be set:
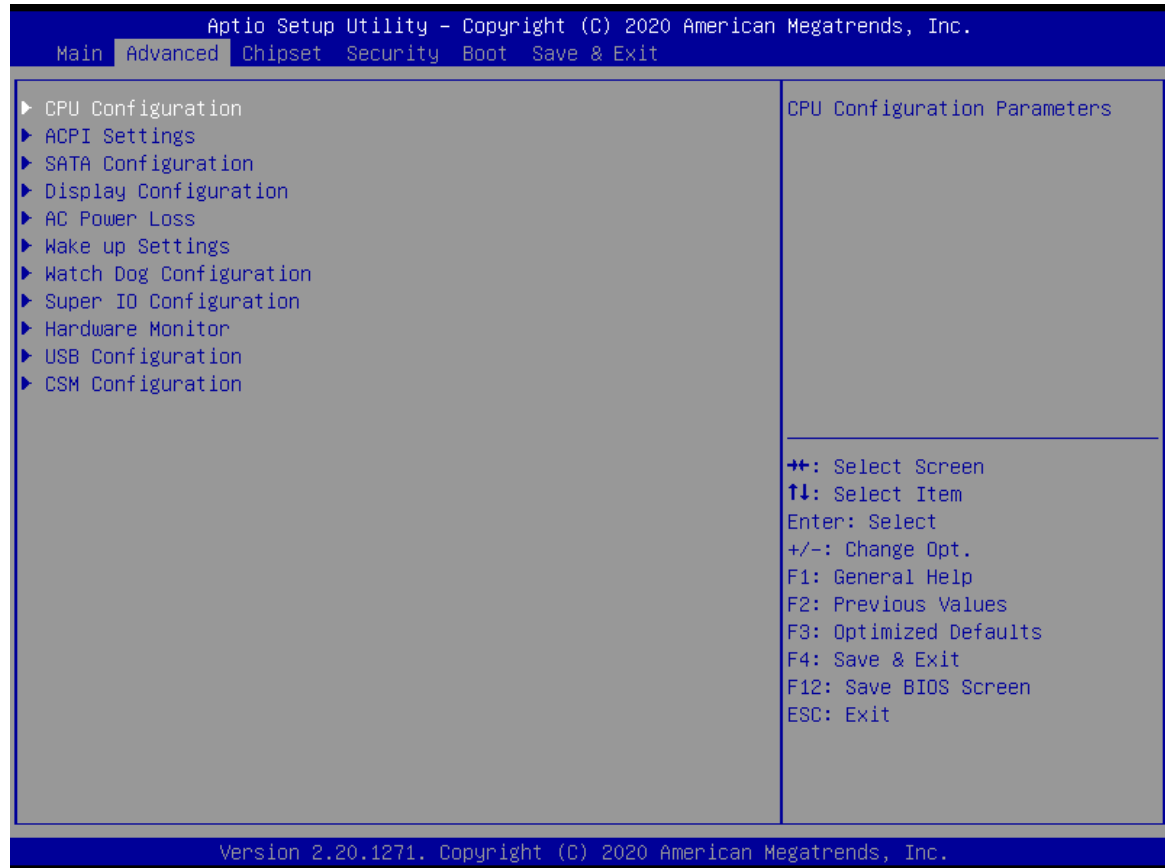
Figure 3-2 NP-6122 BIOS-Advanced

➢ ACPI Settings
- ■ This is a setting item related to ACPI (Advanced Configuration and Power Management Interface).

➢ Super IO Configuration
- ■ This is the IO parameter setting for the system.

➢ Hardware Monitor
- ■ The main function of this item is to display hardware monitoring parameters such as CPU temperature

➢ Display Configuration
- ■ The main function of this item is to display configuration.

➢ AC Power Loss
- ■ The main function of this item is power management settings.

➢ Wake up settings

- ■ The main function of this item is to set the sleep and wake-up functions of the system.
- ➤ CPU Configuration
  - ■ The main function of this item is to display specific information and configuration items of the CPU.
- ➤ SATA Configuration
  - ■ The main function of this item is to set up SATA.
- ➤ OS Configuration
  - ■ This is a setting configured for the operating system.
- ➤ Watch Dog Configuration
  - ■ This is the setting for the system's watchdog.
- ➤ CSM Configuration
  - ■ This is a setting for the Compatibility Support Module. This option is designed for compatibility with devices that can only work in Legacy mode and operating systems that do not support or do not fully support UEFI.
- ➤ USB Configuration
  - ■ The main function of this item is to set up the USB interface.

	Please set it carefully under the guidance of technical support. Improper settings may cause the system to fail to start or hardware to be damaged!

3.3.3.1 CPU Configuration

On this interface, you can set the relevant parameters of API (Advanced Configuration and Power Management Interface).
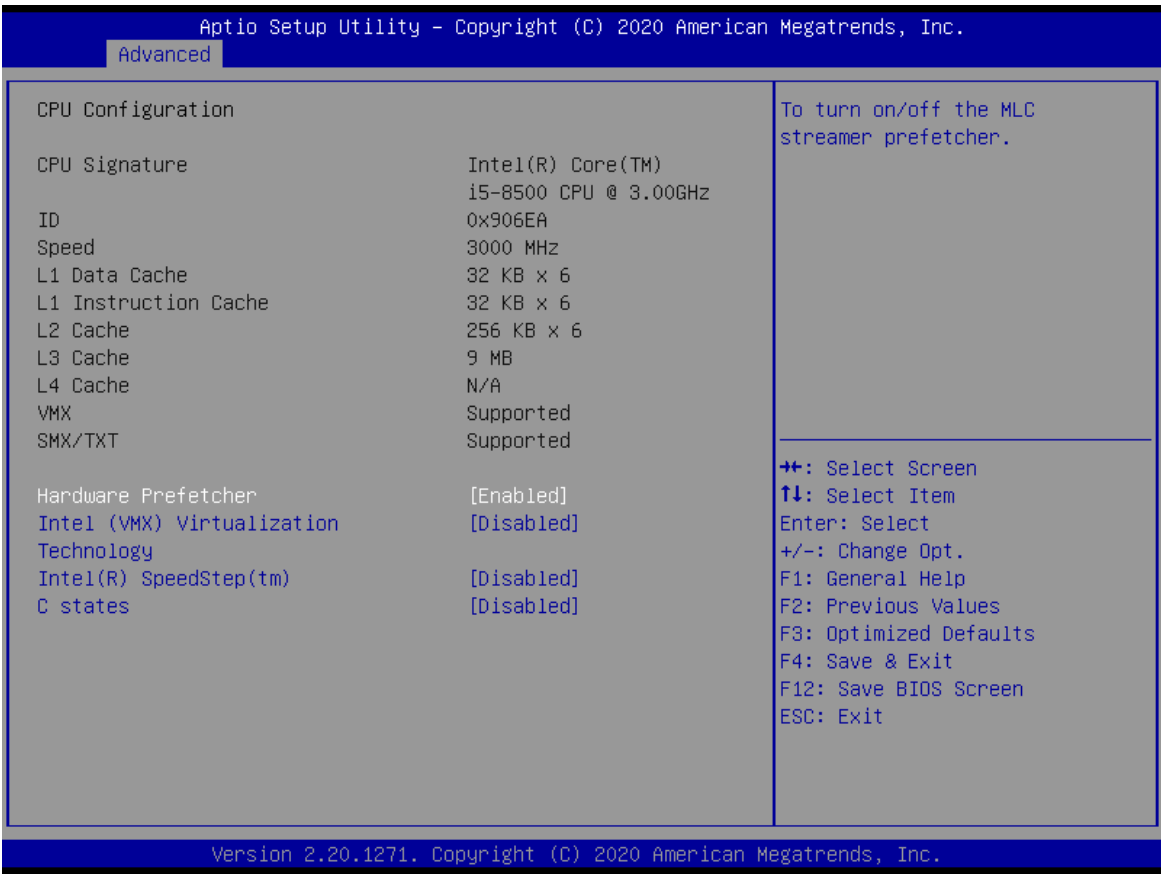
Figure 3-3 NP-6122 BIOS-CPU Configuration

■ **CPU Configuration:**

project	content	describe
Hardware Prefetcher	Disabled / Enabled	Hardware pre-fetch option refers to that the CPU has hardware pre-fetch function. Before the CPU processes instructions or data, it pre-takes these instructions or data from the memory to the memory of the L2 cache, so as to reduce the memory reading time, help eliminate potential bottlenecks, so as to improve the system efficiency. It is usually recommended to set it to Enabled.
Intel (VMX) Virtualization Technology	Disabled / Enabled	Intel virtualization technology, which allows for one CPU to work just like multiple CPUs running in parallel, makes

		it possible to run multiple operating systems on a single computer simultaneously. Usually set to the Disabled state.
Intel(R) SpeedStep(tm)	Disabled / Enabled	This option is intel's intelligent frequency reduction technology, and the CPU automatically adjusts the voltage and frequency doubling according to the usage situation, so as to reduce power consumption and heating function. Need to be set to the Disabled status.
C states	Disabled / Enabled	It refers to the CPU standby state, will adjust the clock and voltage according to the different state, or completely closed. Need to be set to Disabled.

3.3.3.2 ACPI Settings

In this interface, parameters related to integrated graphics cards can be set.
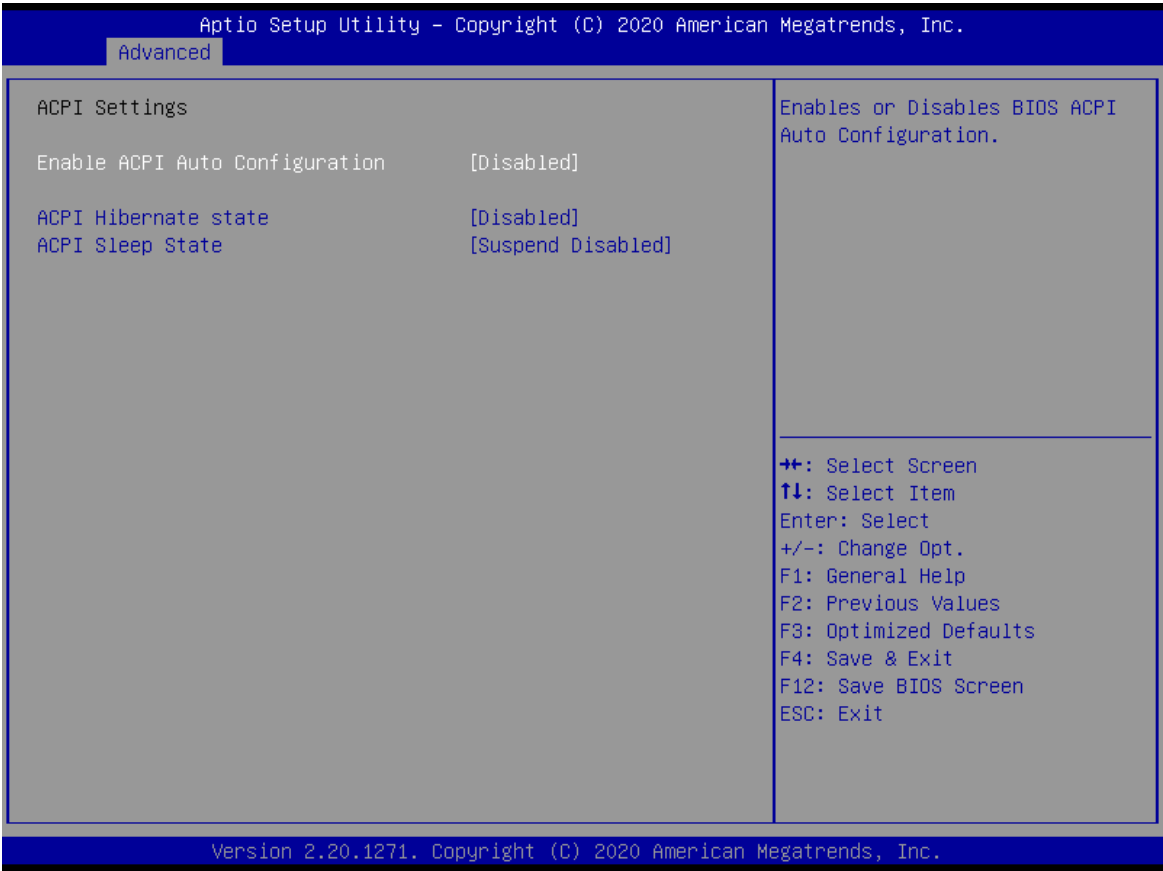
Figure 3-4 NP-6122 BIOS ACPI Settings

■ ACPI Settings:

project	content	describe
ACPI Auto Configuration	Disabled / Enabled	Do you want to allow API auto configuration. Usually set to Disabled state.
Enable Hibernate	Disabled / Enabled	Do you want to allow PDCP to enter sleep mode. Usually set to Disabled.
ACPI Sleep state	Suspend Disabled	Do you want to allow PDCP to enter sleep mode. The default is Suspend Disabled.

3.3.3.3 SATA Configuration

This interface is mainly used for hardware testing of the system.

Figure 3-5 NP-6122 BIOS SATA Configuration

■ SATA Configuration:

project	content	describe
SATA Controller(s)	Disabled / Enabled	Whether the SATA interface controller, if changed, may need to reinstall the system, do not change this item.
SATA Mode Selection	AHCI	Access mode of SATA, do not change this item.
SATA Controller Speed	Default/Gen1/Gen2/Gen3	Access speed of the SATA controller. Do not change this item.
MSATA Port 1	-	Whether to open the MSATA Port 1 interface and display the mSATA hard disk information connected to the MSATA Port 1 interface.

SATA Port 1	-	Whether to open the MSATA Port 2 interface and display the information to the SATA hard disk connected to the SATA Port 1 interface.
SATA Port 2	-	Whether to open the SATA Port 2 interface and display the SATA hard disk information connected to the SATA Port 2 interface.

3.3.3.4 Display Configuration

The parameters related to the integrated graphics card can be set in this interface.
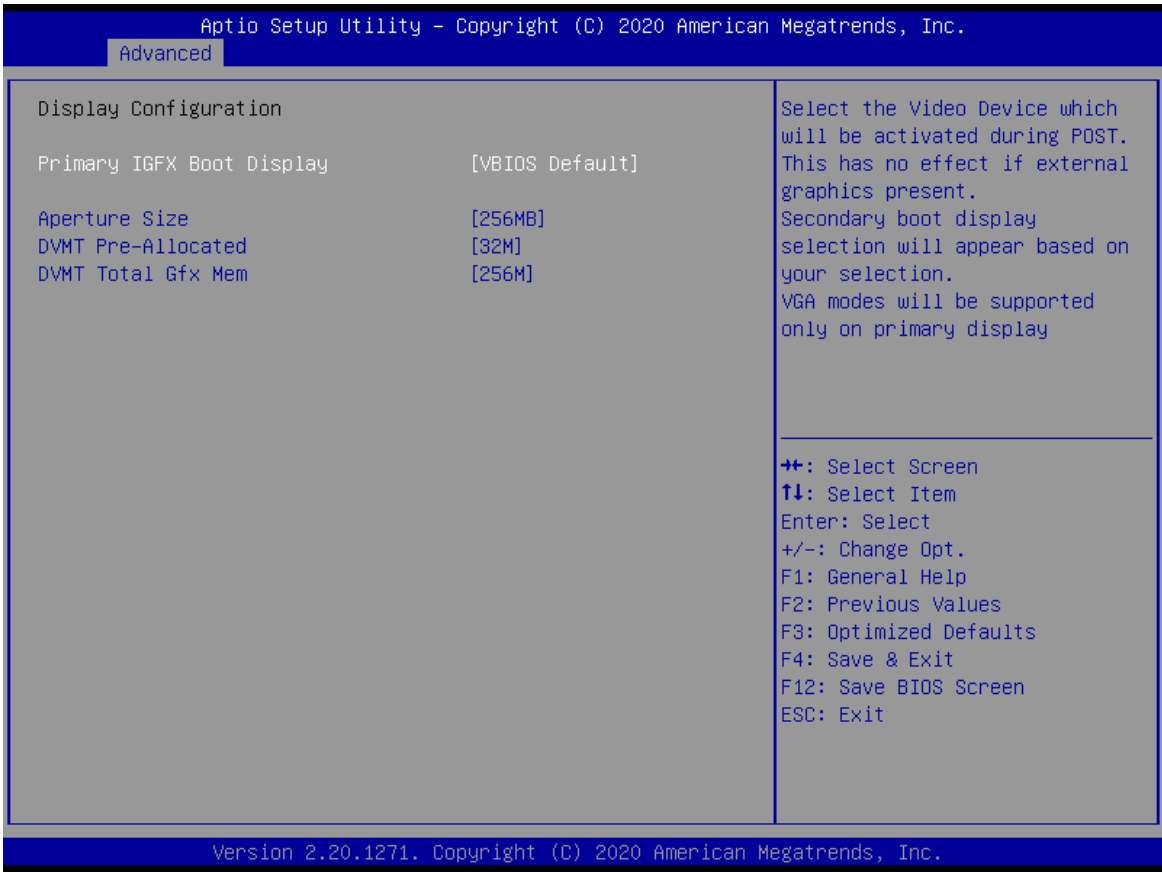
Figure 3-6 NP-6122 BIOS-Display Configuration

■ Display Configuration:

project	content	describe
Primary IGFX Boot Display	VBIOS Default / DVI / HDMI / VGA	It shows the display from which device is connected to the

		integrated graphics card when boot POST self-test. The default is the VBIOS.
Aperture Size	128MB/256MB/512MB/1024MB/2048MB	This parameter is the upper limit of the memory that the integrated graphics card can invoke if necessary. Keep the default can, do not change.
DVMT Pre-Allocated	0-60M	This parameter is the dynamic shared video memory preset value, which means that the system is first started to allocate such a size of memory as the video memory, if not enough, it is redistributed. The default is 32MB.
DVMT Total Gfx Mem	256M/128M/MAX	The total capacity of dynamic video memory allocated, the default is 256M, do not change at will.

3.3.3.5 AC Power Loss

This interface can set the power-startup.
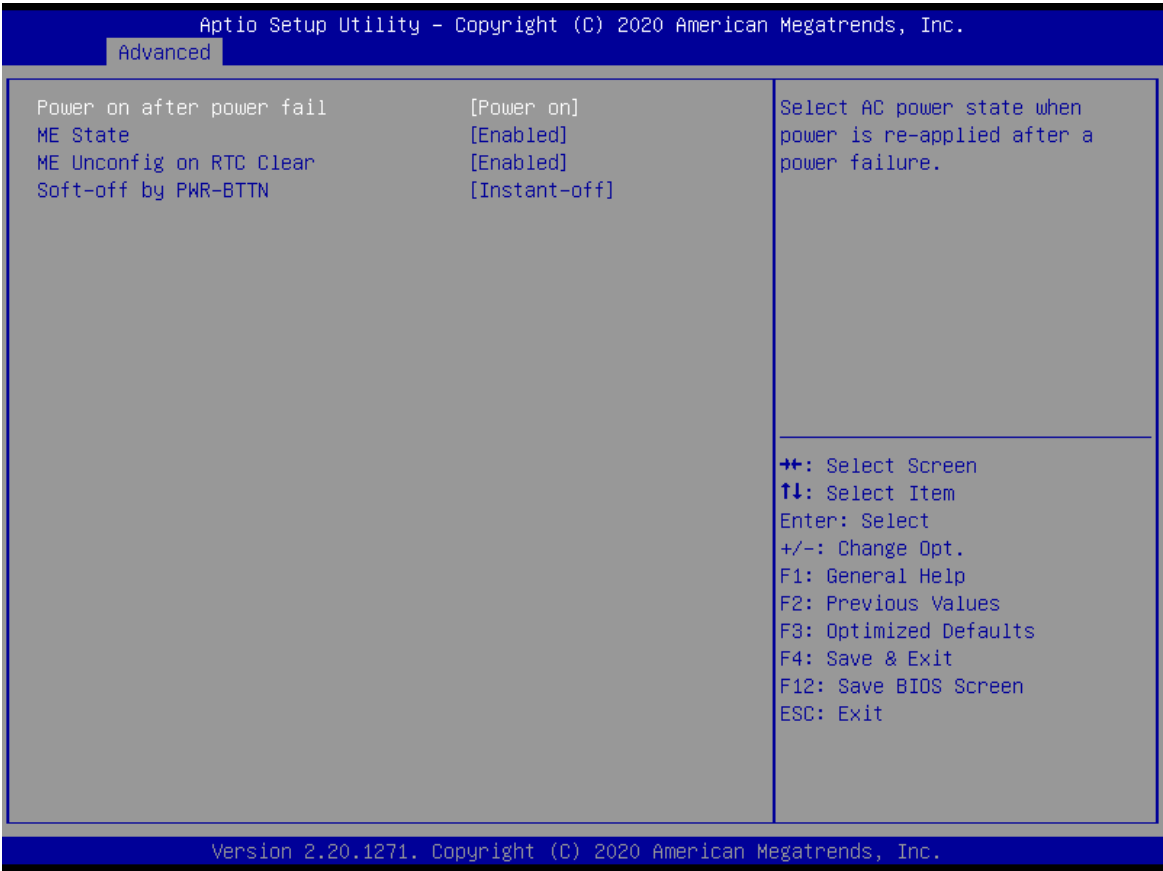
Figure 3-7 NP-6122 BIOS-AC Power Loss

project	content	describe
Power on after power fail	Power off / Power on / Last status	It means the power-on state of the motherboard after the new power supply is connected. – Power off: No matter what the last power failure is, the motherboard suddenly power supply after the power supply, the motherboard is not power; – Power on : No matter what state the last power off, the motherboard power suddenly after the power supply, the motherboard automatically power on;

		– Last State : Motherboard suddenly power supply after the power cut, restore the state before the power cut
ME State	Enabled / Disabled	Do not change this item.
ME Unconfig on RTC Clear	Enabled / Disabled	Do not change this item.
Soft-off by PWR-BTTN	Delay 4 sec / Instant-off	Turn off the computer when clicking "Close the computer" in the system or running the shutdown command. The default is in the Instant-off mode. – Delay 4 sec: Delay of 4 seconds for shutdown; – Instant-off: Turn off immediately.

3.3.3.6 Wake up settings

This interface sets the wake-up mode of the system in hibernation mode.

Figure 3-8 NP-6122 BIOS-Wake up Settings

■ **Wake up Settings:**

project	content	describe
Wake system form s5	Enabled / Disabled	Do not change this item.
Wake on LAN	Enabled / Disabled	Do not change this item.

3.3.3.7 Watch Dog Configuration

In this interface, you can open the watchdog timer of the system and set its parameters.
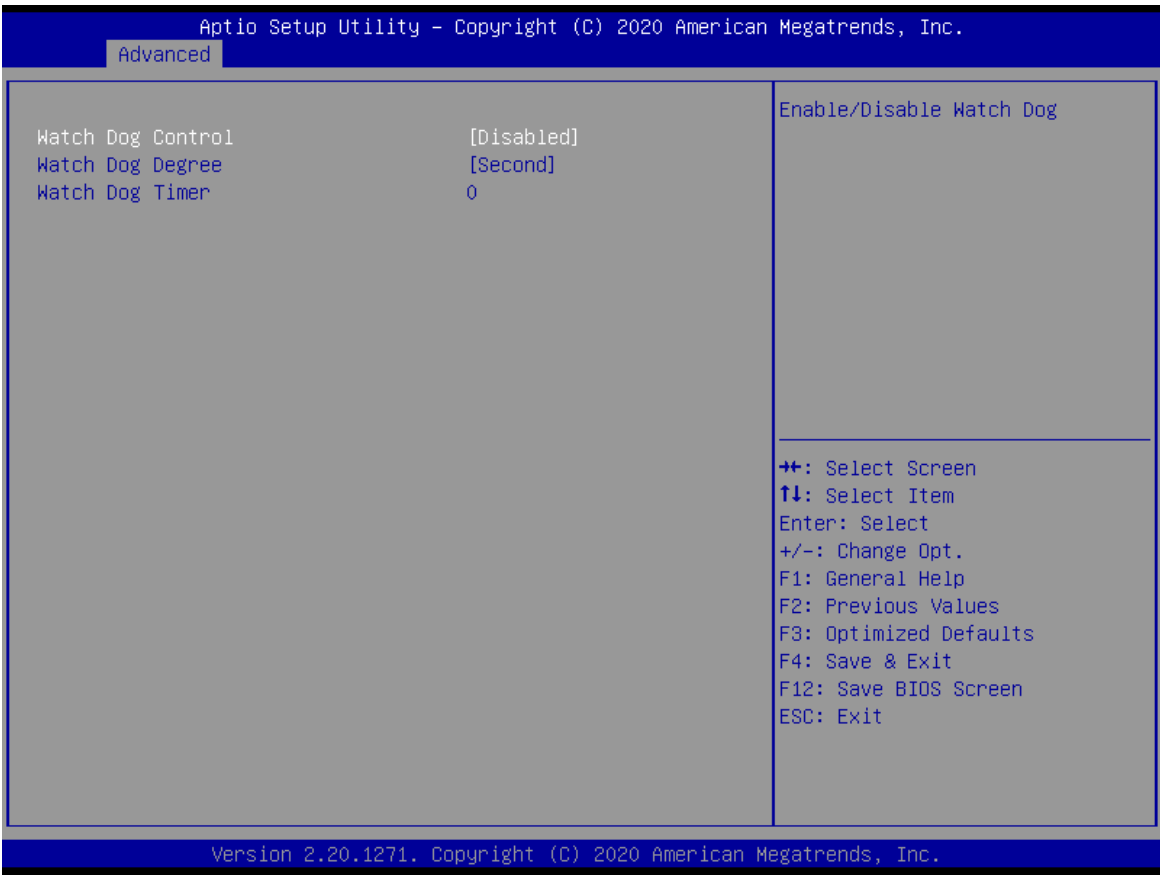
Figure 3-9 NP-6122 BIOS-Watch Dog Settings

project	content	describe
Watch Dog Control	Enabled / Disabled	The Watchdog timer function is on and off.
Watch Dog Degree	Second / Minute	Unit of set of the watchdog timer.
Watch Dog Timer	0-255	Watchdog timer timeout settings. When the timer is opened, the software needs to feed the dog

		periodically (reset the timer). When the timer time time exceeds the set value, the system will be reset and restarted.

3.3.3.8 Super IO Configuration

In this interface, the super IO (Super IO) is mainly configured, and the super IO is mainly for the serial port (Serial Port x) and the interface (Parallel Port) configuration.

Figure 3-10 NP-6122 BIOS-Super IO Configuration

3.3.3.8.1 Serial Port x Configuration

In this subinterface, it is mainly used to set up the interrupt and the IO address of the serial port, including Auto and IO and the interrupt address
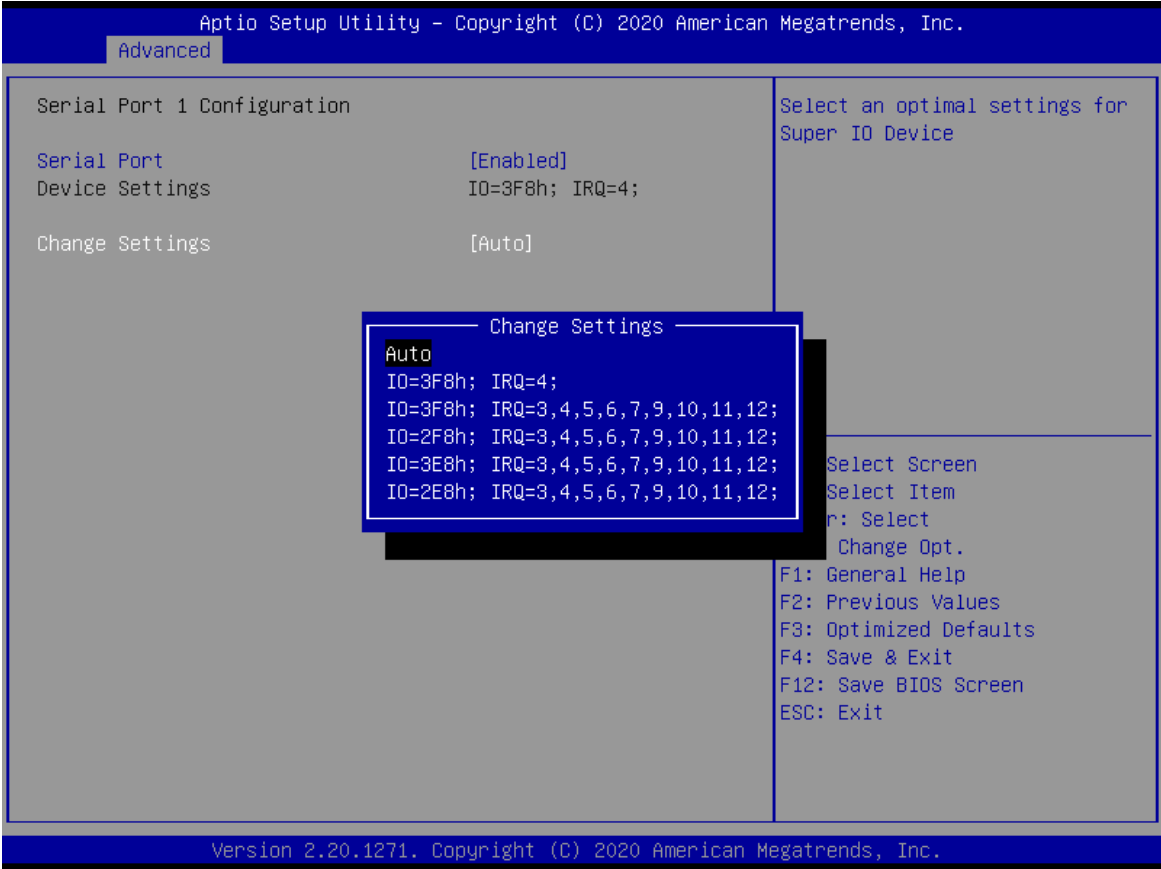
Figure 3-11 NP-6122 BIOS-Serial Port Configuration

■ **Serial Port x Configuration:**

project	content	describe
Serial Port	Enabled / Disabled	Access to the enabling and closing of the serial port interface
Device Settings	IO=3F8h; IRQ=4	The IO address and interrupt priority of the serial port
Change Settings		Serial port address and interrupt priority setting. Default is to Auto.

3.3.3.9 Hardware Monitor

This interface is mainly used to detect the hardware of the system.


```
Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
 Advanced

 PC Health Status

 CPU temp                          : +46°C
 CPU fan1                          : 6428 RPM
 VCC CPU                           : +0.968 V
 VCC DDR                           : +1.224 V
 5V                                : +5.105 V
 3V                                : +3.431 V



                                               →←: Select Screen
                                               ↑↓: Select Item
                                               Enter: Select
                                               +/-: Change Opt.
                                               F1: General Help
                                               F2: Previous Values
                                               F3: Optimized Defaults
                                               F4: Save & Exit
                                               F12: Save BIOS Screen
                                               ESC: Exit


 Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.
```

Figure 3-12 NP-6122 BIOS-Hardware Monitor

3.3.3.10 USB Configuration

The configuration of the USB controller interface in this interface.

```
          Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
      Advanced

  USB Configuration                                     Enables Legacy USB support.
                                                        AUTO option disables legacy
  USB Module Version              21                    support if no USB devices are
                                                        connected. DISABLE option will
  USB Controllers:                                      keep USB devices available
      1 XHCI                                            only for EFI applications.
  USB Devices:
      1 Drive, 1 Keyboard, 1 Mouse

  Legacy USB Support              [Disabled]
  XHCI Hand-off                   [Enabled]
  USB Mass Storage Driver Support [Enabled]
  Port 60/64 Emulation            [Disabled]            ─────────────────────────
                                                        ↔: Select Screen
  USB hardware delays and time-outs:                    ↑↓: Select Item
  USB transfer time-out           [20 sec]              Enter: Select
  Device reset time-out           [20 sec]              +/-: Change Opt.
  Device power-up delay           [Auto]                F1: General Help
                                                        F2: Previous Values
  Mass Storage Devices:                                 F3: Optimized Defaults
  Teclast CoolFlash 1.00          [Auto]                F4: Save & Exit
                                                        F12: Save BIOS Screen
                                                        ESC: Exit

          Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.
```
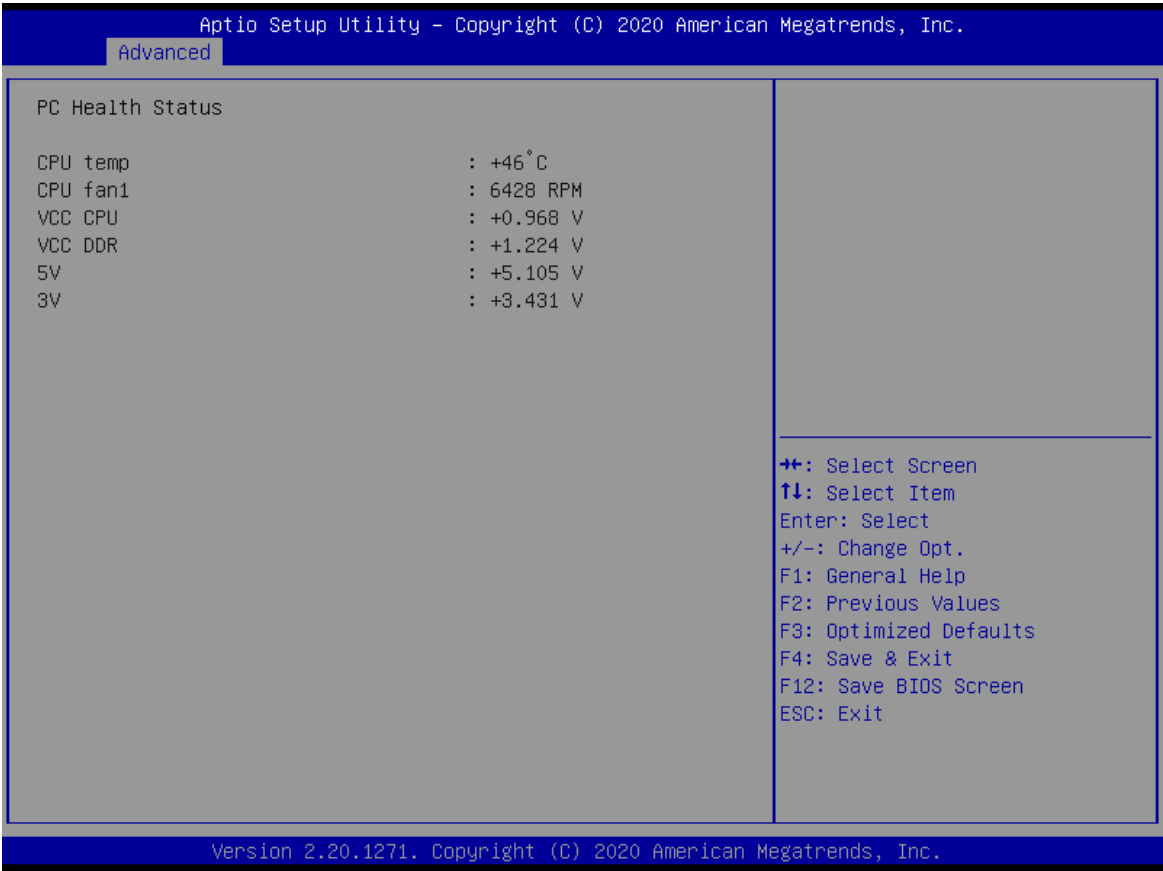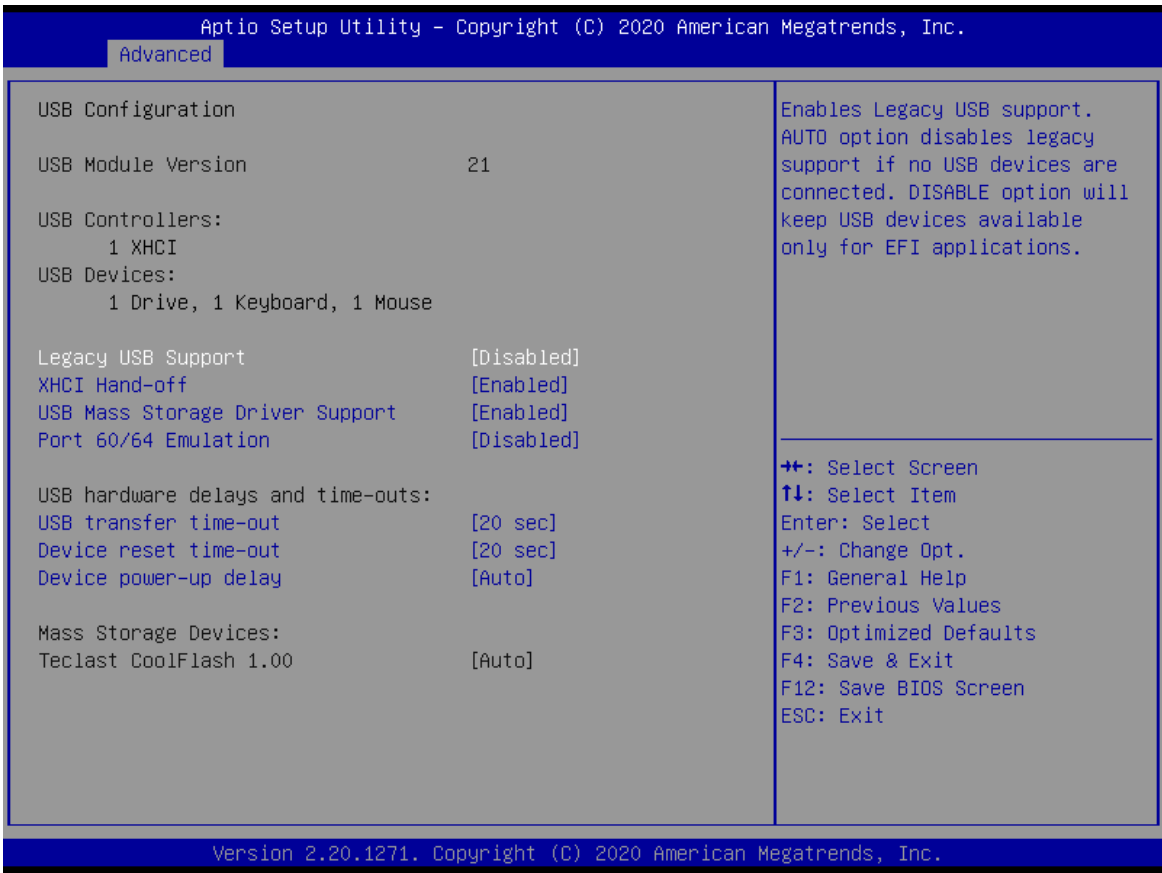
Figure 3-13 NP-6122 BIOS-USB Configuration

■ **USB Configuration:**

project	content	describe
Legacy USB Support	Enabled / Disabled / Auto	Configure whether the USB keyboard and similar devices can be used in older operating systems (such as MS-DOS).
XHCI Hand-off	Disabled / Enabled	Do not change this setting.
USB Mass Storage Driver Support	Disabled / Enabled	Configuration to support USB storage devices in the BIOS
Port 60/64 Emulation	Disabled / Enabled	IIO 60 / 64 Software analog switch. Do not change this item.
USB transfer time-out	1sec/5sec/10sec/20sec	The USB transport timeout value setting

Device reset time-out	10sec/20sec/30sec/40sec	The USB command timeout setting
Device power-up delay	Auto / Manual	USB start delay settings

3.3.3.11 CSM Configuration

This interface is designed for compatible devices that can only work in Legacy mode and for operating systems that do not support or do not fully support UEFI.CSM enabled enables support for UEFI startup and non-UEFI startup.If a traditional MBR device is required to be started, the CSM should be turned on.Closing the CSM becomes pure UEFI startup and fully supports safe startup.Secure Boot (Safe Start), which applies only for operating systems starting with UEFI.
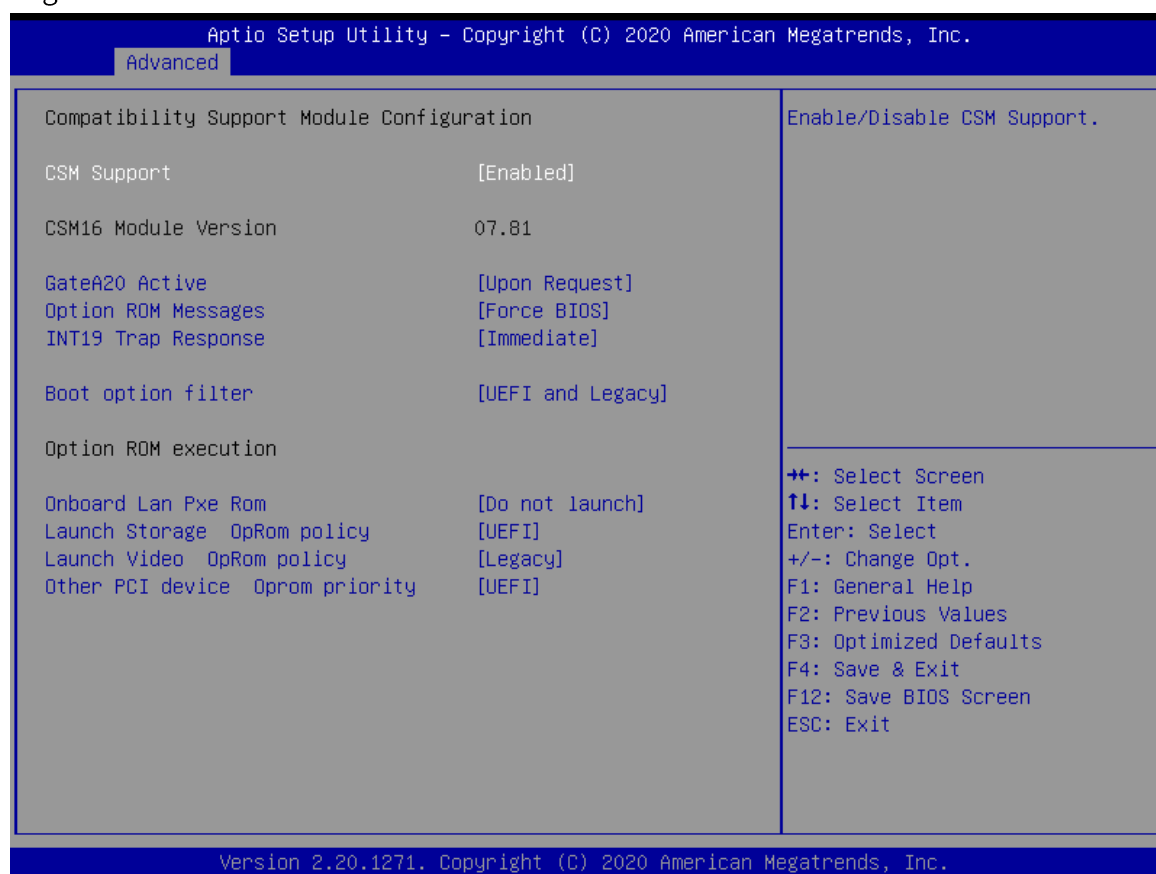

Figure 3-14 NP-6122 BIOS-CSM Configuration

■ CSM Configuration：

project	content	describe
CSM Support	Enabled / Disabled	Open the compatible module support function.

		Do not change this item!
GateA20 Active	Upon Request / Always	Upon Request: GA20 can be disabled using BIOS services Always: do not allow disabling GA20, this option is useful when any RT code is executed above 1MB
Option ROM Messages	Force BIOS / Keep Current	Set display mode for Option ROM
INT19 Trap Response	Immediate / Postponed	BIOS reaction on INT19 trapping by Option ROM Immediated: execute the trap right always; Postponed: execute the trap during legacy boot.
Boot option filter	UEFI and Legacy / Legacy only / UEFI only	This option controls Legacy/UEFI ROMs priority
Onboard Lan Pxe Rom	Do not launch / UEFI / Legacy	Controls the execution of UEFI and Legacy PXE OpROM
Launch Storage OpRom policy	Do not launch / UEFI / Legacy	Controls the execution of UEFI and Legacy Storage OpROM
Launch Video OpRom policy	Do not launch / UEFI / Legacy	Controls the execution of UEFI and Legacy Video OpROM
Other PCI device Oprom priority	Do not launch / UEFI / Legacy	Determines OpROM execution policy for devices other than Network, Storage, or Video

3.3.4 Chipset

The interface is mainly used to display the information of the chipset or to set the specific functions of the chipset.
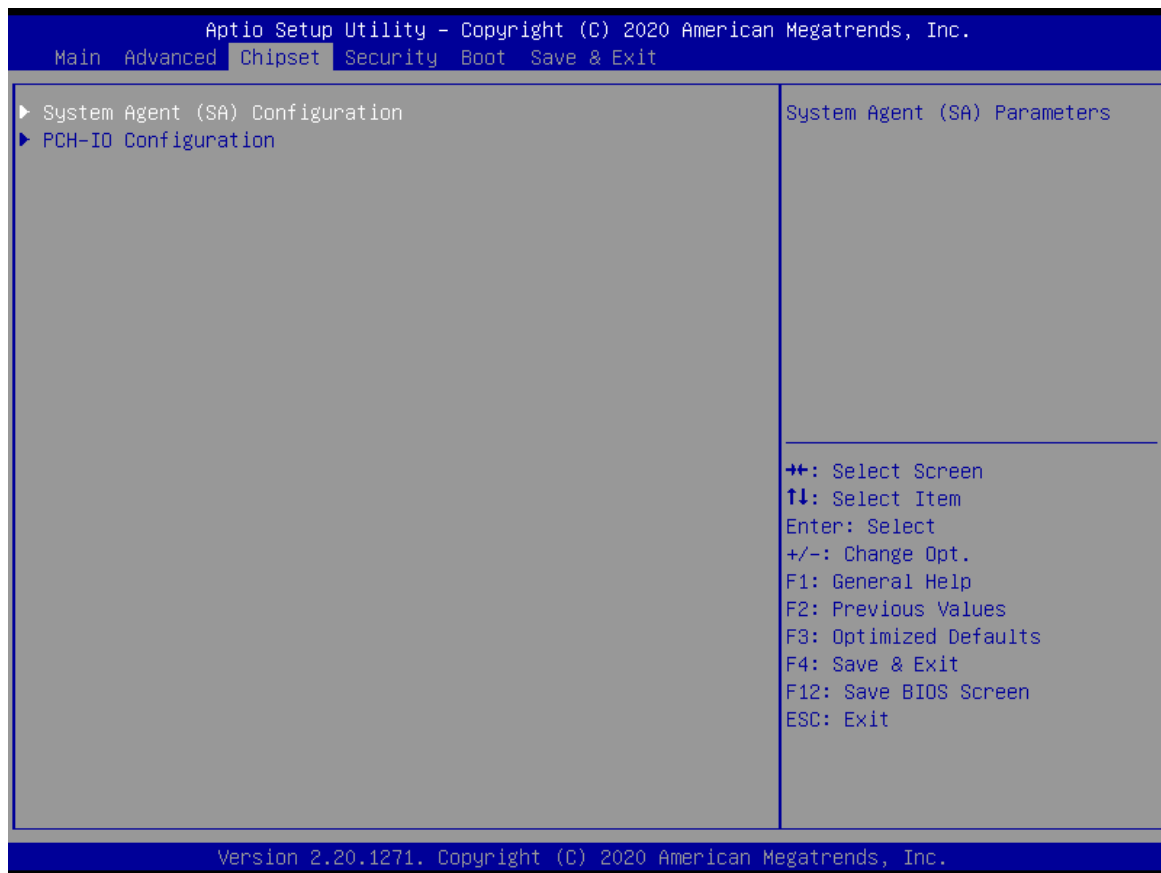
Figure 3-15 NP-6122 BIOS-Chipset

Mainly view or set the following features in this interface:

➢ System Agent(SA) Configuration

   ■ Auxiliary information of the system

➢ PCH-IO Configuration

   ■ Configure PCI Express、LAN、USB 以及 HD Audio And other equipment interface.

3.3.4.1 System Agent Configuration

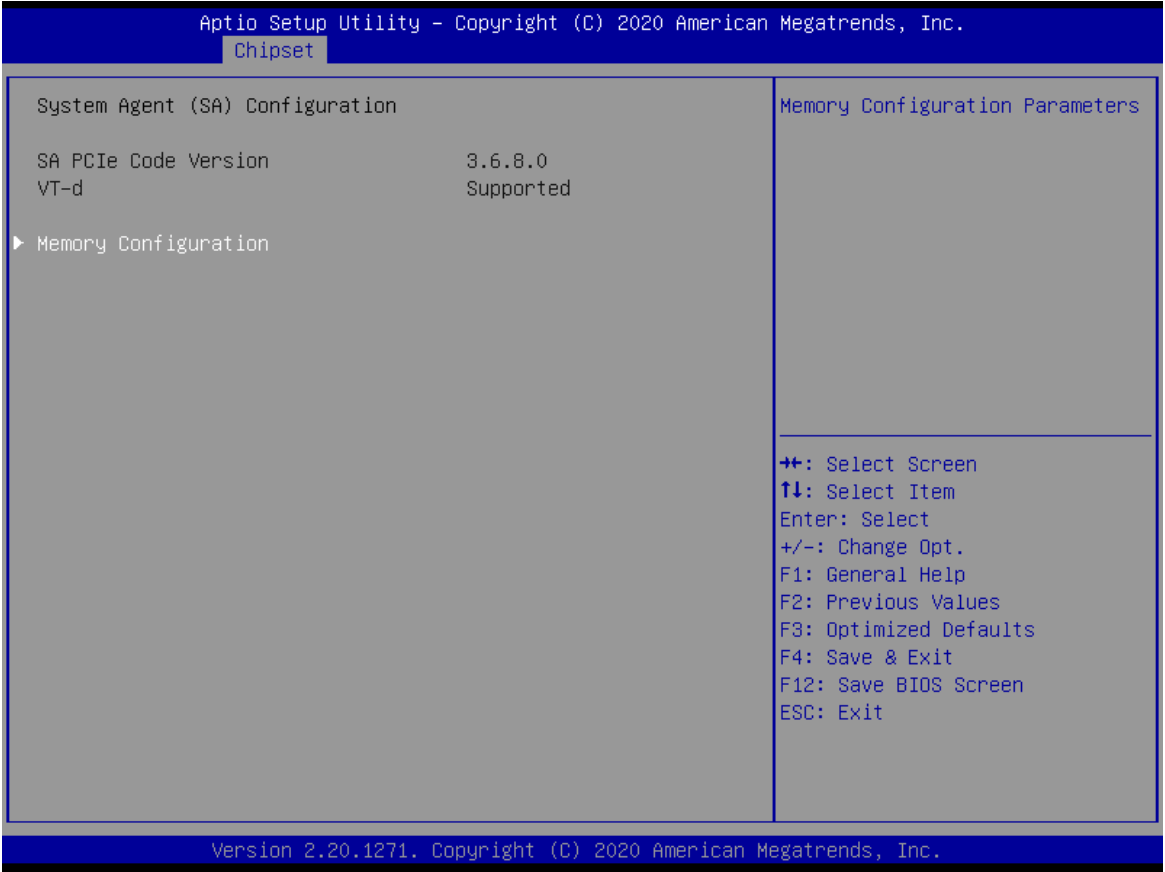Displays the current secondary configuration item.

Figure 3-16 NP-6122 BIOS-System Agent Configuration

3.3.4.1.2 Memory Configuration

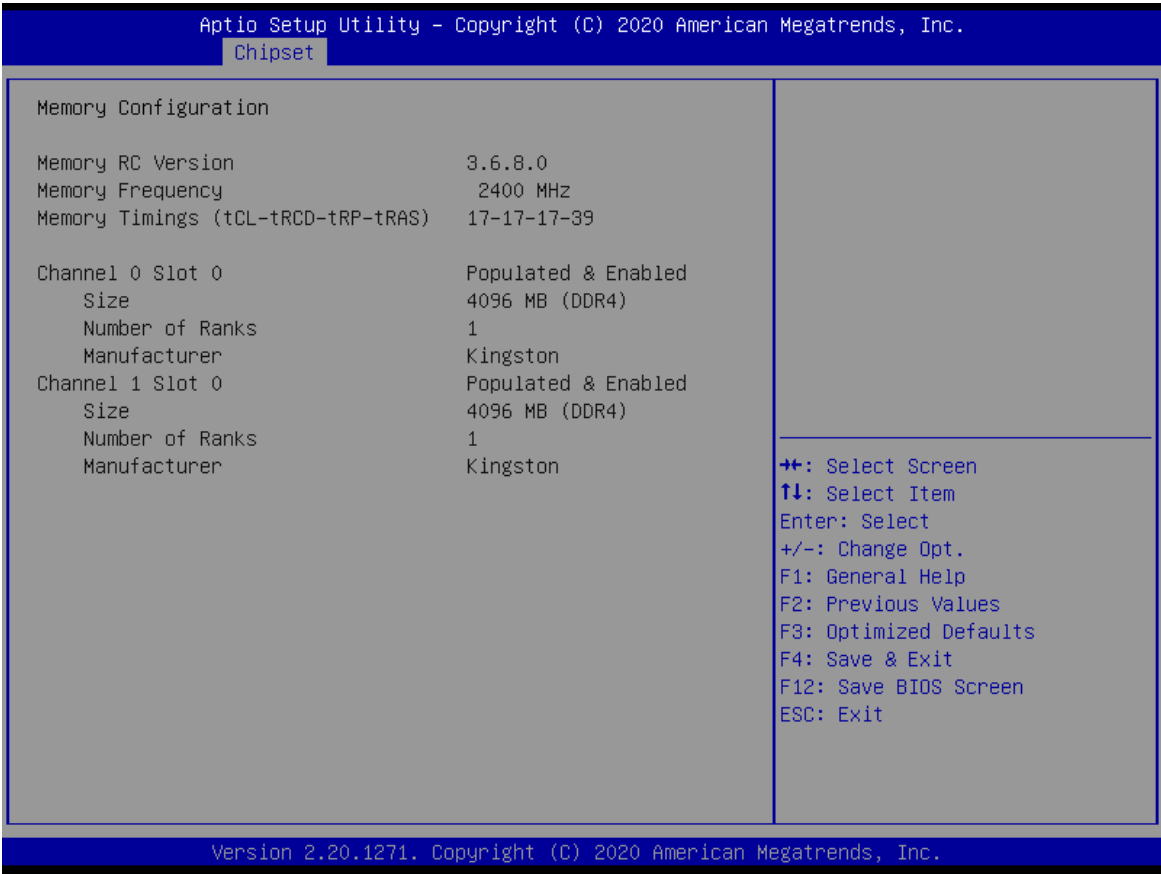Displays the current memory channel configuration information.

Figure 3-17 NP-6122 BIOS-Memory Configuration

3.3.4.2 PCH-IO Configuration

This interface is mainly used to configure onboard PCI Express, LAN, USB and HD Audio equipment interfaces.
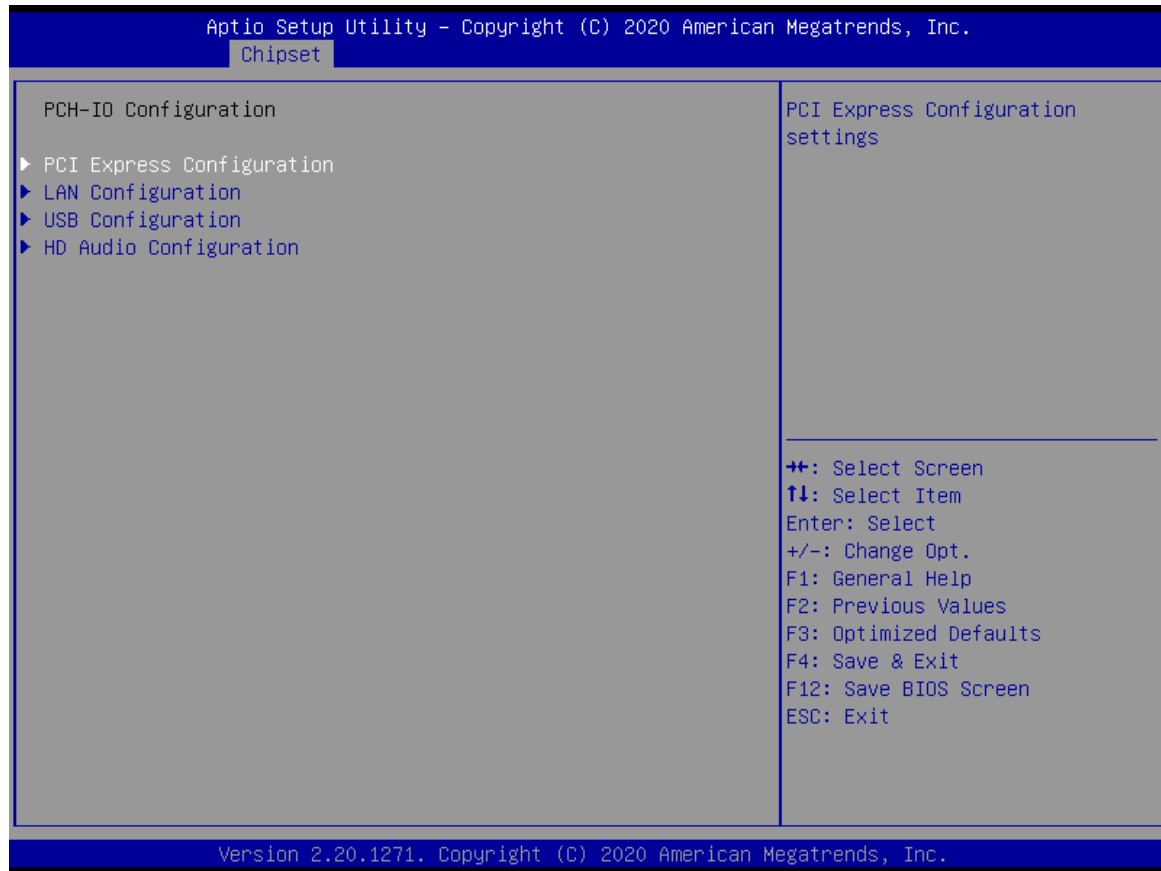

Figure 3-18 NP-6122 BIOS-PCH-IO Configuration

Mainly contains the following submenus：

➢ PCI Express Configuration

■ PCI Express configure.

➢ LAN Configuration

■ Configuration of the onboard network ports.

➢ USB Configuration

■ Allocation of the onboard USB.

➢ HD Audio Configuration

■ Setting of the onboard sound card.

3.3.4.2.3 PCI Express Configuration

This interface is mainly configured for the onboard PCI Express bus. Do not change the setting items in this interface!
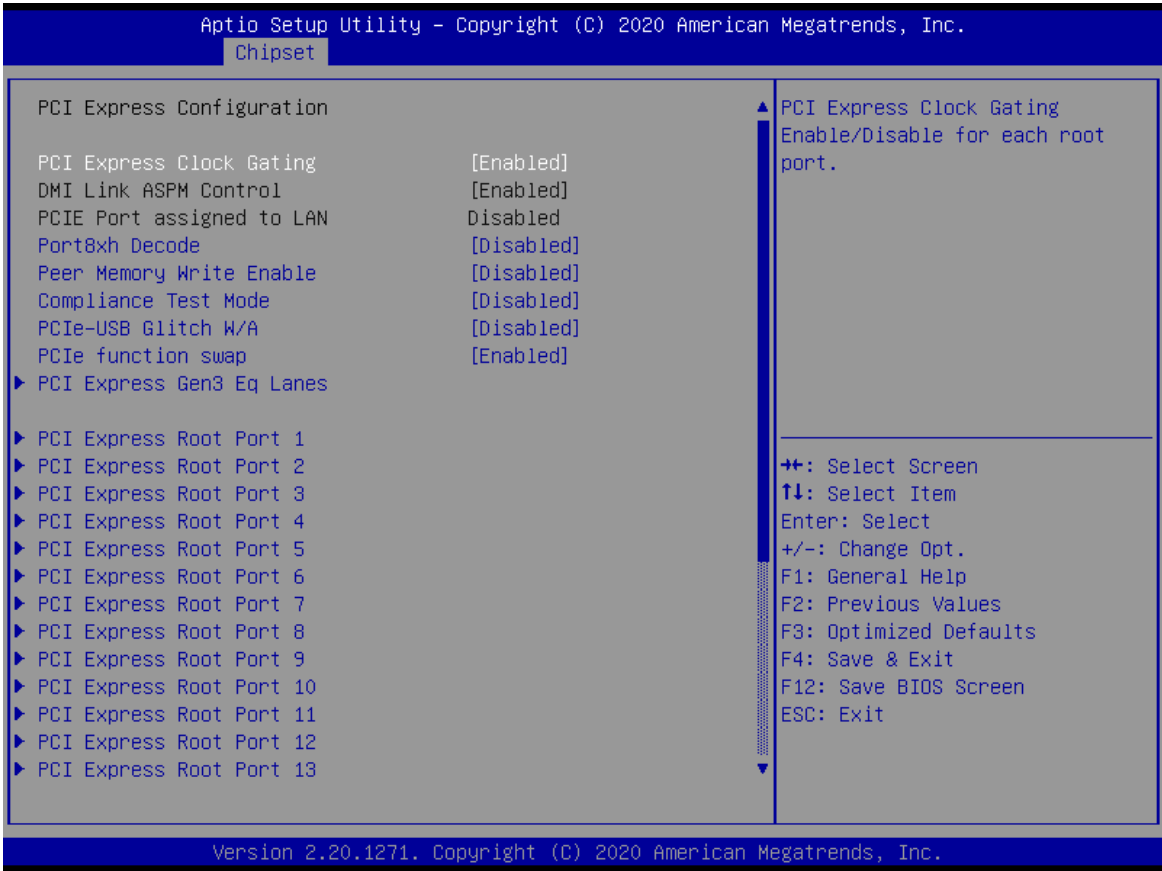

Figure 3-19 NP-6122 BIOS-PCI Express Configuration

3.3.4.2.4 LAN Configuration

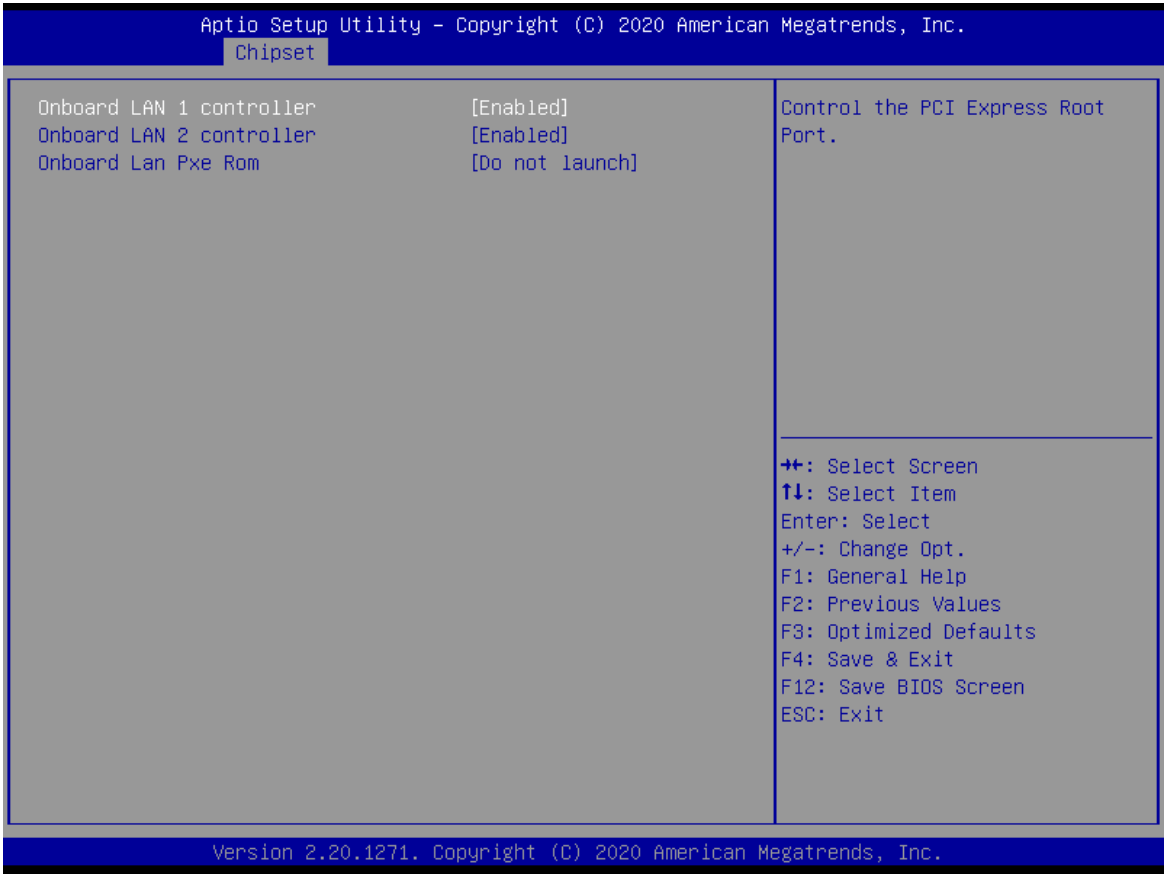This interface will mainly configure the onboard network card.

```
              Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
              Chipset

    Onboard LAN 1 controller          [Enabled]              Control the PCI Express Root
    Onboard LAN 2 controller          [Enabled]              Port.
    Onboard Lan Pxe Rom               [Do not launch]


                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             F12: Save BIOS Screen
                                                             ESC: Exit


              Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.
```

Figure 3-20 NP-6122 BIOS-LAN Configuration

project	content	describe
Onboard LAN 1 controller	Enabled / Disabled	Enables or disables onboard card 1
Onboard LAN 2 controller	Enabled / Disabled	Enable or disable INC 2
Onboard Lan Pxe Rom	Do not launch / UEFI / Legacy	Do not change this setting!

3.3.4.2.5 USB Configuration

The configuration and setting of the on-board USB bus.

Figure 3-21 NP-6122 BIOS-USB Configuration

project	content	describe
XHCI Disable Compliance Mode	FALSE / TRUE	Turn off the XHCI compatible mode, do not change!
xDCI Support	Enabled / Disabled	Do not change this setting!
USB Port Disable Override	Enabled / Disabled	Do not change this setting!

3.3.5 Security

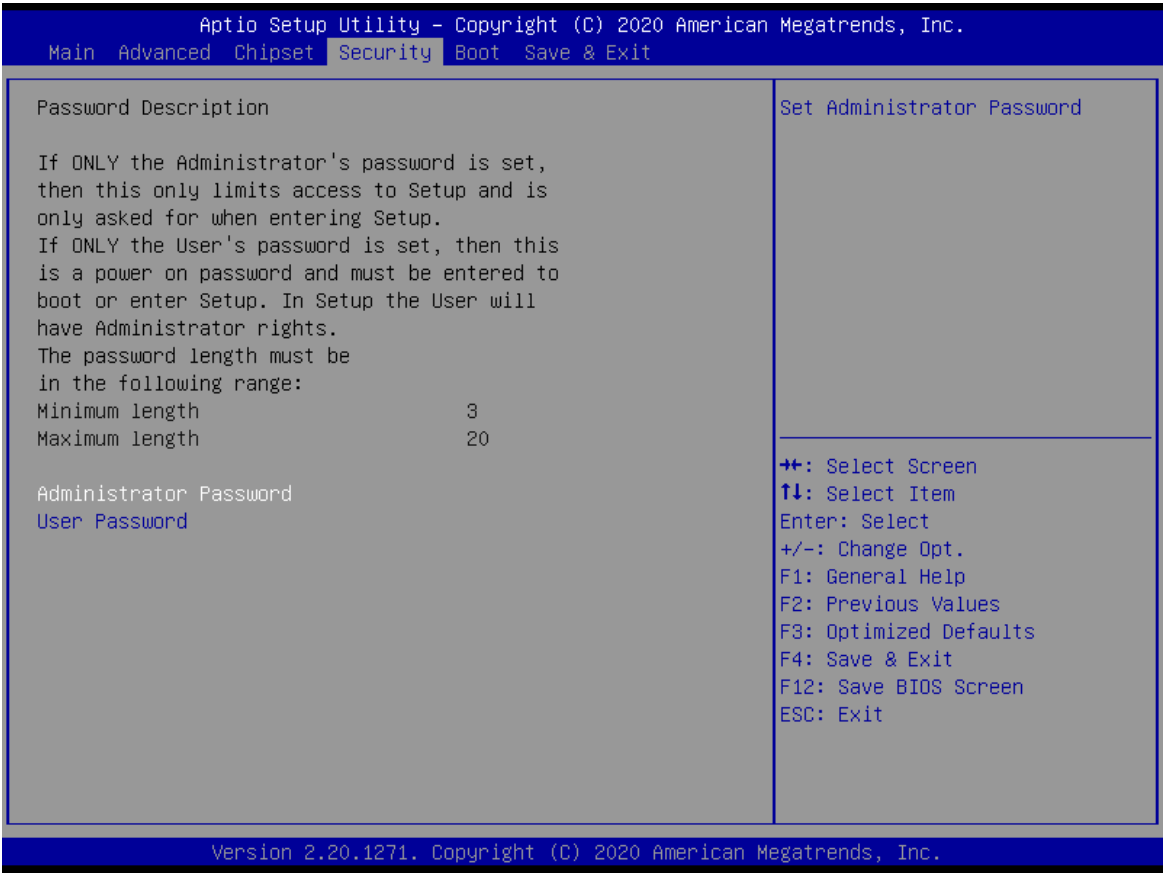This interface is mainly used for the key settings related to the system security protection.

```
               Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit

    Password Description                                    Set Administrator Password

    If ONLY the Administrator's password is set,
    then this only limits access to Setup and is
    only asked for when entering Setup.
    If ONLY the User's password is set, then this
    is a power on password and must be entered to
    boot or enter Setup. In Setup the User will
    have Administrator rights.
    The password length must be
    in the following range:
    Minimum length                     3
    Maximum length                     20                ↔: Select Screen
                                                         ↑↓: Select Item
    Administrator Password                               Enter: Select
    User Password                                        +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         F12: Save BIOS Screen
                                                         ESC: Exit


               Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.
```

Figure 3-22 NP-6122 BIOS-Security

➢ **Administrator Password**

■   Set the administrator password.

➢ **User Password**

■   Set the user password.

⚠ :   Once you once the password is set, you need to remember the password, otherwise it will lead to no permission and cannot enter the system! It may incur additional maintenance costs.

3.3.6 Boot

This interface is mainly used to set the parameters related to the BIOS system startup and equipment loading sequence.
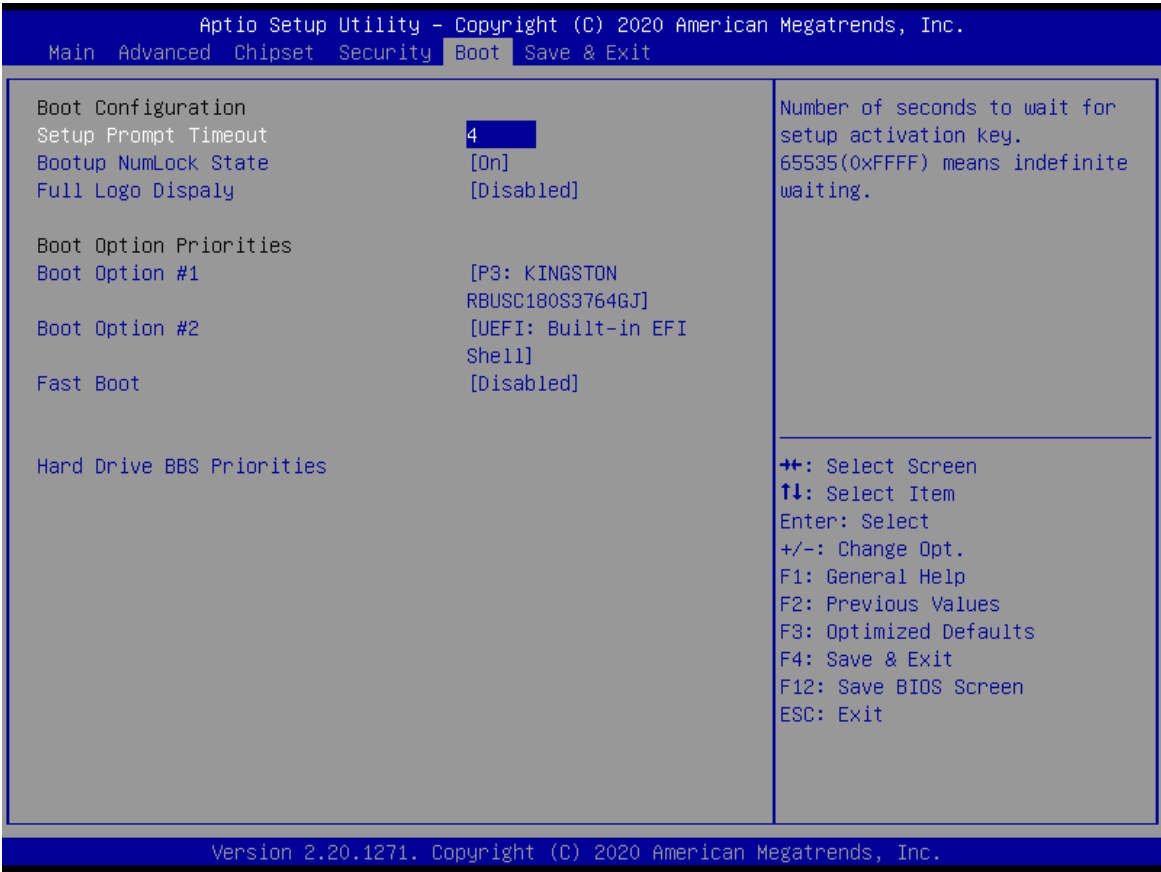

Figure 3-23 NP-6122 BIOS-Boot

■   **Boot Configuration:**

project	content	describe
Setup Prompt Timeout	4	When the system is started, wait for the BIOS to set the button in seconds
Bootup NumLock State	On / Off	The status of the numeric keypad at system startup.
Full Logo Display	Enabled / Disabled	Do not change this setting!
Boot Option #1	XXXXXXXX	System first guide device
Boot Option #2	XXXXXXXX	System second guide device
Fastw Boot	Enabled / Disabled	Do not change this setting!
Hard Drive BBS Priorities	-	Sets the loading order of the system-boot storage media.

3.3.7 Save & Exit

This menu is used to save settings or load default configuration parameters, exit BIOS settings, etc.
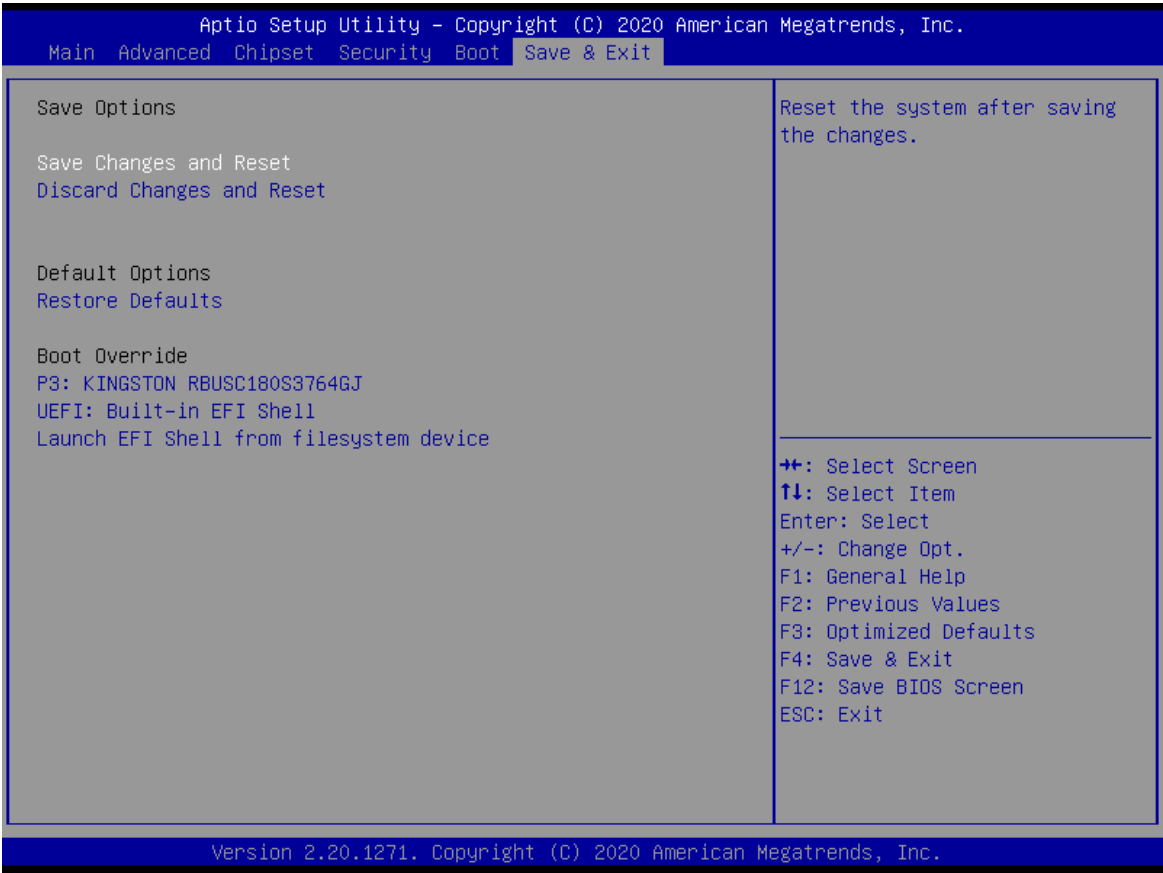
Figure 3-24 NP-6122 BIOS-Save&Exit

➤ **Save Changes and Reset**

■ Save the settings, and restart the system.

➤ **Discard Changes and Reset**

■ Disve the settings changes, and restart the system.

➤ **Restore Defaults**

■ Load the default setting parameters.

➤ **Boot Override**

■ When it is necessary to load the starting system in another system storage medium temporarily connected, the corresponding system storage medium can be selected here. But it does not affect the system startup order set in the Boot menu. When the system is restarted, the system startup will be loaded according to the system disk startup order set in the Boot menu.

4 System Setup

This chapter mainly introduces how to setup hardware components drivers.

4.1 Hardware installation

The installation mode of the NP-6125 series hardware module is basically similar, but when installing or removing the function expansion board, please make sure that the extension terminal direction is perpendicular and pull out the expansion board before installing other modules. Conversely, when installing the expansion board, first make sure that the connector is aligned with the direction of the extension board connector and press it firmly in place before locking the fixing screw, otherwise it may cause hardware damage.

Figure 4-1 Dismantling method for industrial control computers with expansion boards
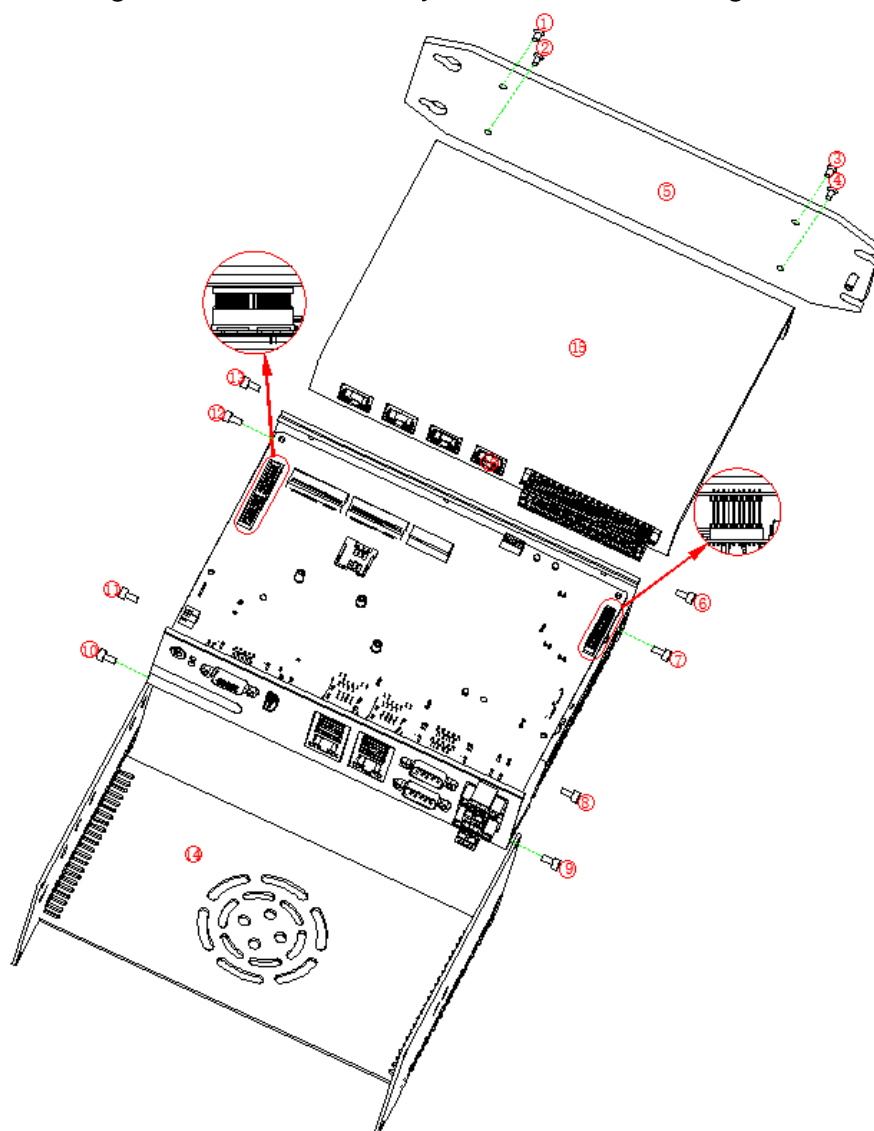
4.1.1 Installation of fixed hanging board

The NP-6125 series products support wall mounted installation, and the mounting bracket is fixed to the product's housing with 2 (or 4) screws. When installing or disassembling, only the 2 (or 4) screws need to be removed.
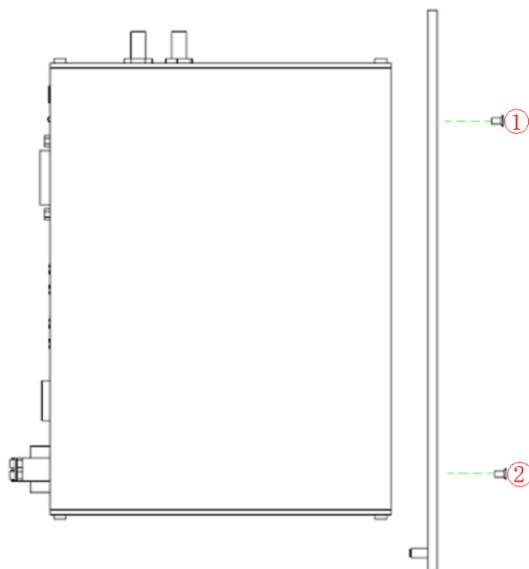
Figure 4-2 Hanging board installation

4.1.2 Fixed rail installation

The NP-6125 series products support rail mounting, and the rail mounting bracket is fixed to the product's housing with four screws. When installing or disassembling, only the four screws need to be removed.
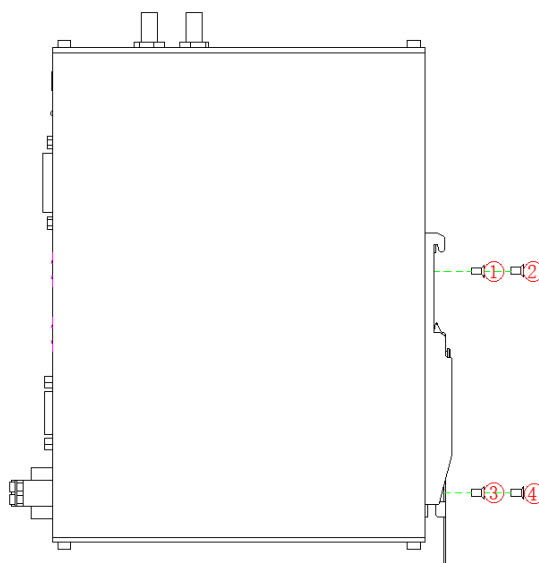
Figure 4-3 NP-6125 DIN-Rail Mounting

4.1.3 SSD Hard disk installation

There are SSD hard drive interfaces (⑪, ⑫) left on the carrier board, where ⑪ is the mSATA interface and ⑫ is the M.2 KEY-B interface. During installation or removal, eight screws (①, ②, ③, ④, ⑤, ⑥, ⑦, ⑧) need to be removed, and then the back cover (⑩) needs to be opened to expose the carrier board. SSD cards can be installed in the slots (⑪, ⑫) on the carrier board.
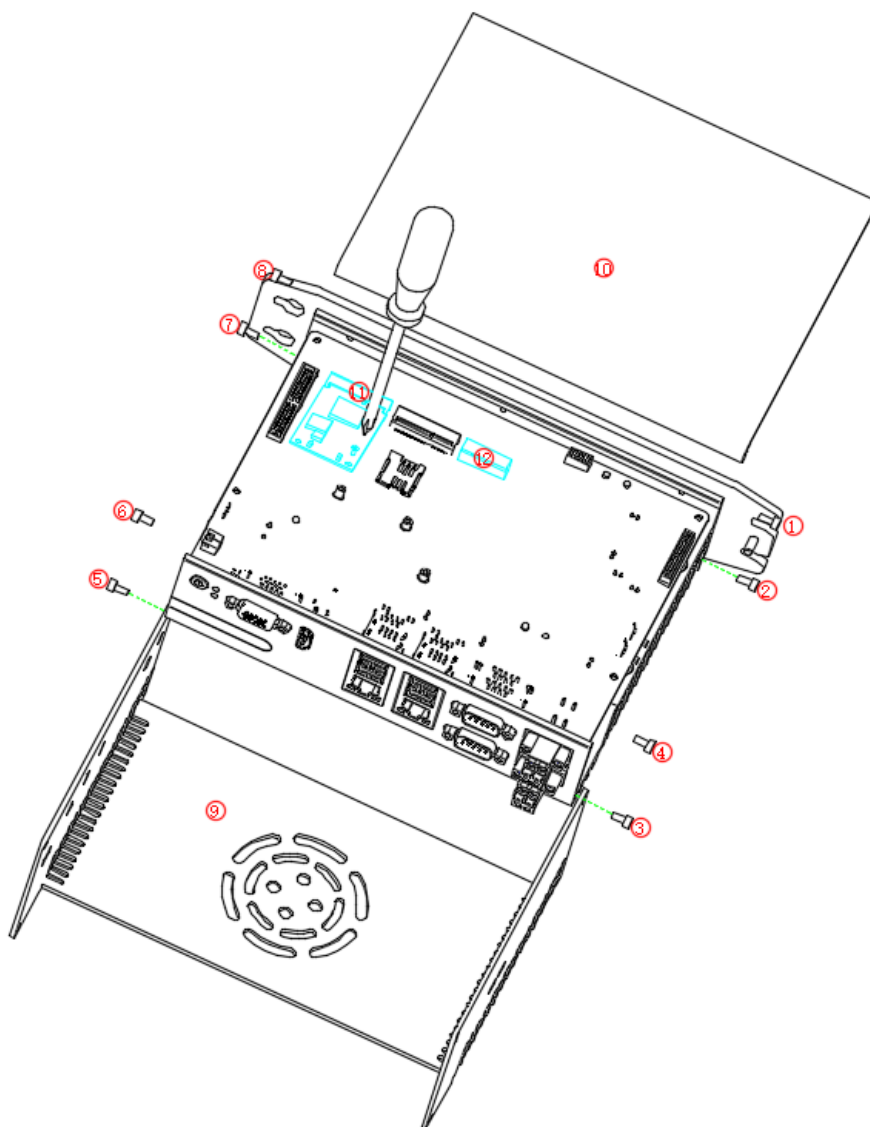
Figure 4-4 NP-6125 MSATA installation method

| ⚠ : | 1. Do not operate with power on, and disconnect the power supply before dismantling. |
| | 2. Pay attention to electrostatic discharge. |

4.1.4 miniPCIE Installation of Expansion Modules

There is a miniPCIe expansion slot (⑪) left on the carrier board, and below the expansion slot (⑪) is a SIM card slot that can be used to install 4G, WiFi, Bluetooth, SIM card and other functional modules. When installing or disassembling, it is necessary to remove the eight screws ①, ②, ③, ④, ⑤, ⑥, ⑦, and ⑧, and then open the back cover ⑩ to expose the carrier board. WiFi and other expansion modules can be installed in the slot (⑪) on the carrier board. The feeder is installed on the fan cover plate ⑨, and the antenna is installed in the position of ⑫.
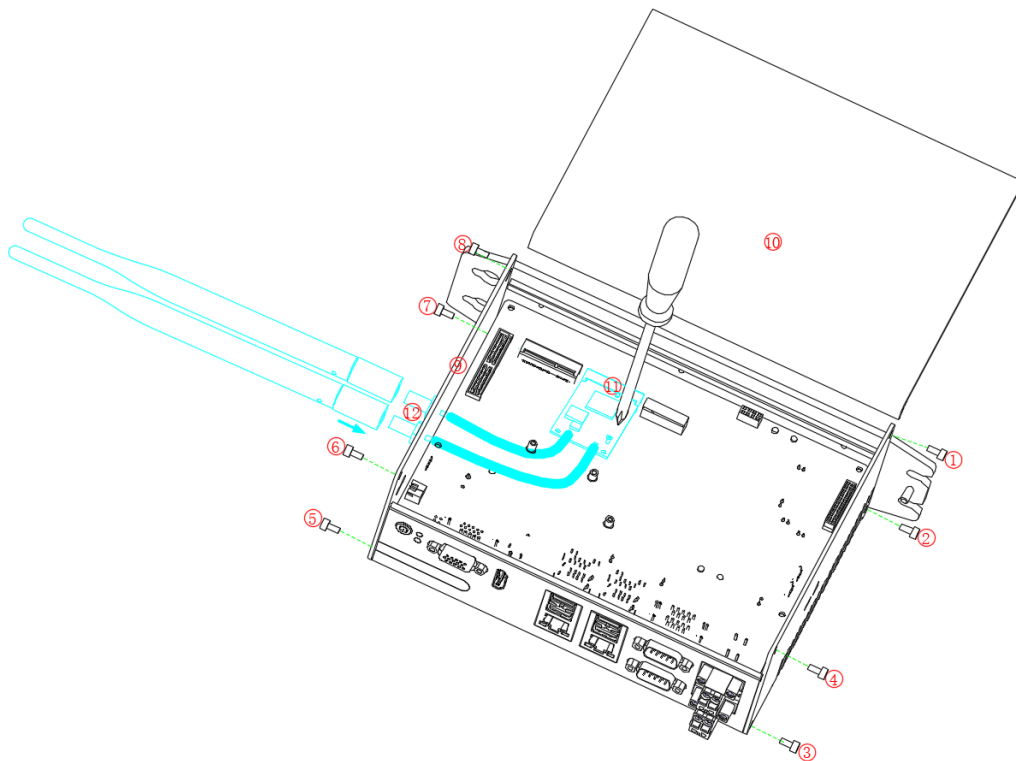
Figure 4-5 miniPCIE Expansion module installation method

⚠ :	1.	Do not operate with power on, and disconnect the power supply before dismantling.
	2.	Pay attention to electrostatic discharge.

4.1.5 USB Installation of encryption dog

There is a USB slot (⑦) inside the carrier board, which can be used to install USB devices such as USB encryption dongles. When installing or disassembling, simply remove the eight screws ①, ②, ③, ④, ⑤, ⑥, ⑦, and ⑧, and then open the fan cover ⑨. The internal USB slot position can be seen from the side, and the encryption dog module ⑩ can be installed in the slot (⑪) on the carrier board.
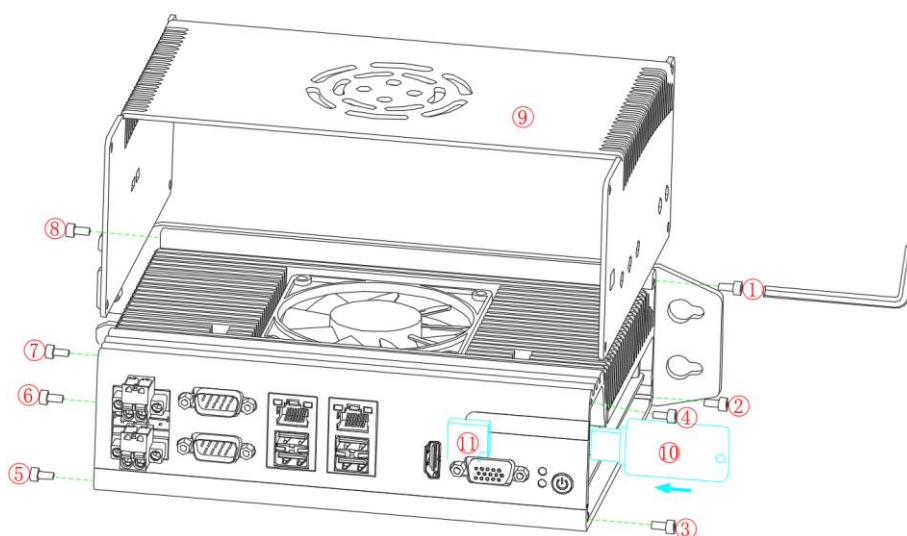
Figure 4-6 NP-6125 USBInstallation method of encryption dog

4.1.6 Fan installation

When installing or disassembling the fan, it is necessary to remove the eight screws ①, ②, ③, ④, ⑤, ⑥, ⑦, and ⑧, and then open the fan cover ⑨. Remove the four screws ⑩, ⑪, ⑫, and ⑬ from the fan ⑭, and the internal fan slot position (indicated by the circle) can be seen from the side. Install the ⑮ fan plug into the slot position.
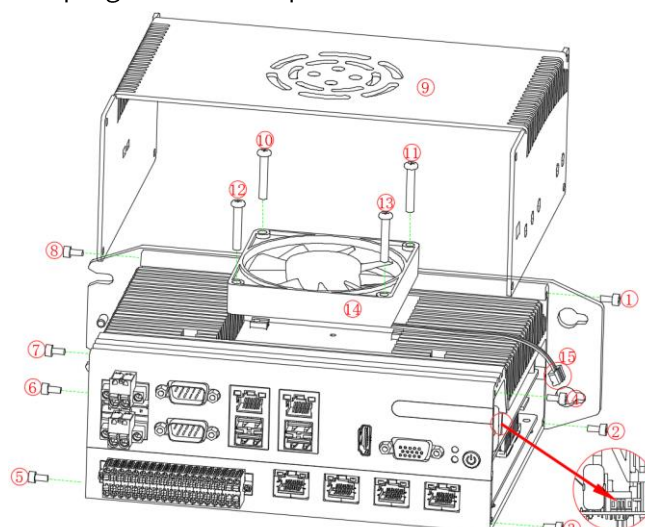
Figure 4-7 NP-6125Fan installation method

4.1.7 IPC installation space

In order to facilitate the installation and heat dissipation and ventilation of the IPC, a sufficient distance should be left between the IPC and the surrounding components. Figures of two installation methods:
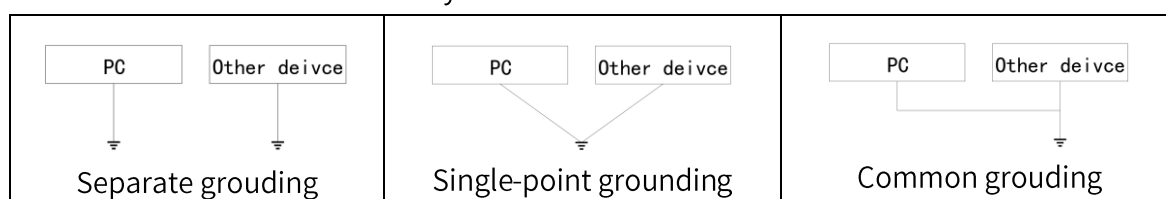
Wall mounted installation	Figure 4-8
DIN-Rail mounted	Figure 4-9
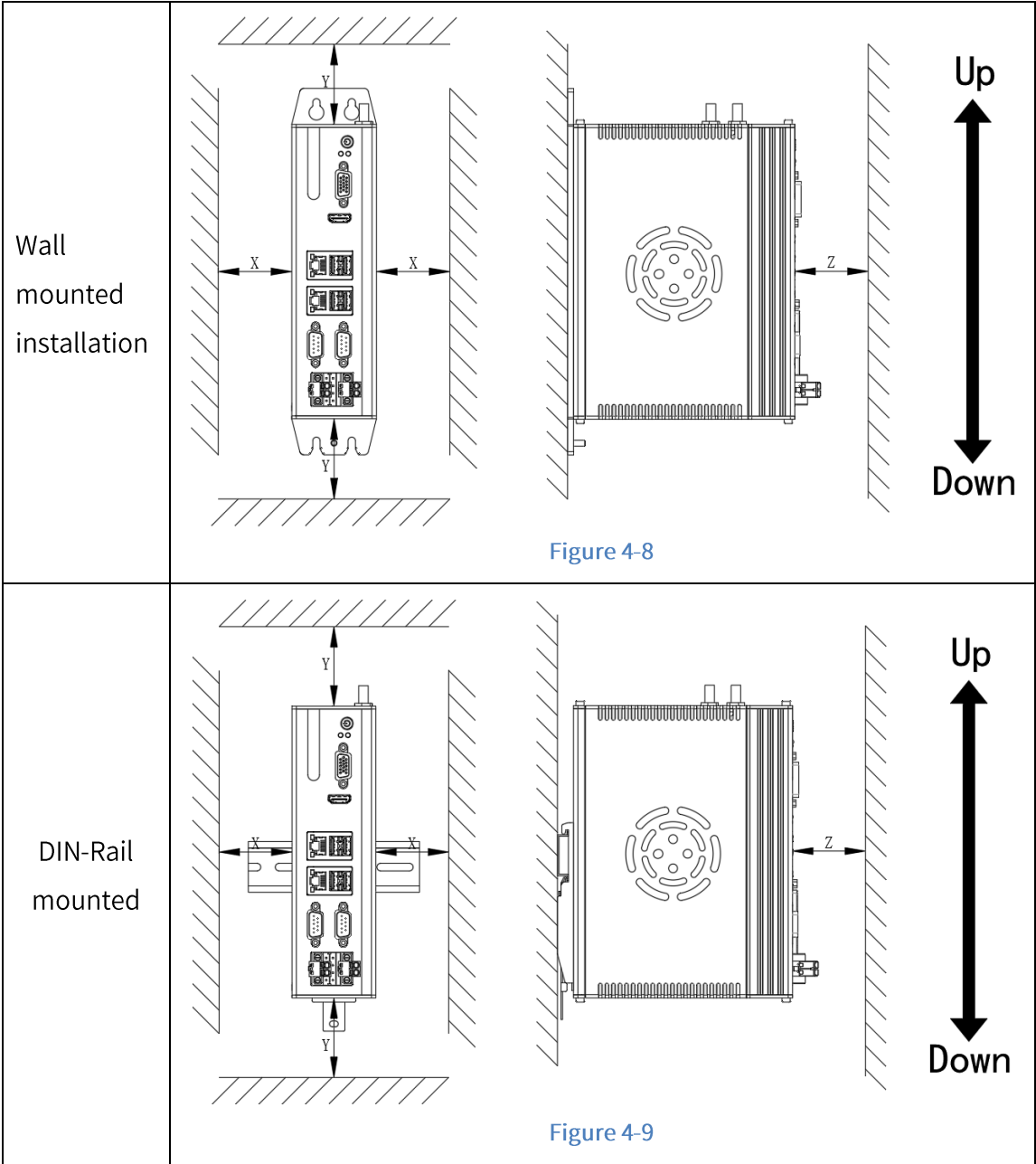
Direction	Minimun size(mm)
X	50
Y	100
Z	50

4.1.8 Ground wiring

The NP-6125 series IPC have a ground screw on hanging plate; it is recommended to use thicker and shorter cable to connect to the ground nearby properly. The IPC must use either separate grounding or single-point grounding. Common grounding is prohibited to prevent noise interference and ensure safety.

PC Other deivce	PC Other deivce	PC Other deivce
Separate grouding	Single-point grounding	Common grouding

4.1.9 Wall mounted installation

There is a hanging plate on the back of the IPC, and there is a hole on the upper and lower sides of the hanging plate. The IPC can be fixed on the backboard through screws to realize the wall-mounted structure (Refer to **Figure 3-10**). Please refer to **Figure 3-11** during disassembly. Please pay attention that the mounting screw pan head needs to be less than 10mm and greater than 5.5mm, screw length not less than 8mm.

Figure 4-10

Figure 4-11
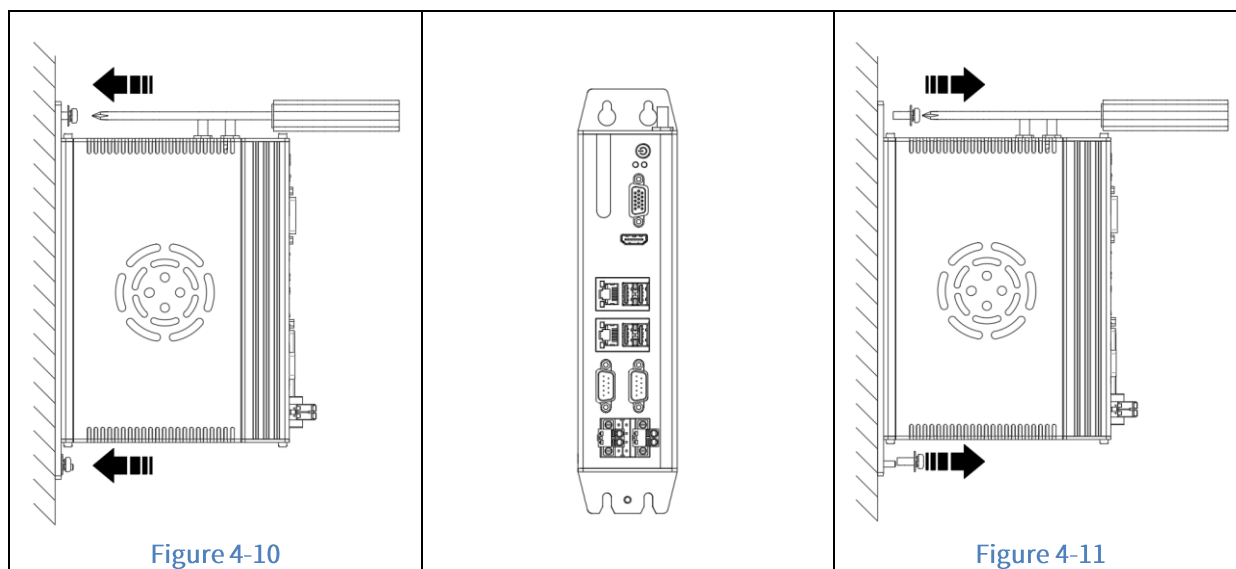
4.1.10 DIN-Rail mounted

NP-6125 series IPC also support DIN-Rail mounted as an option. Put the IPC in the normal mounting position, the IPC is mounted on the DIN rail from above. Make sure that the universal DIN rail adapter is in the correct position behind the DIN rail (A in **Figure 3-12**). Then press the IPC down until the universal DIN rail adapter audibly latches into place (B in **Figure**

3-12).Please make sure that the IPC is securely attached to the DIN rail. When disassembling, the steps are reversed, please refer to **Figure** 3-13 and **Figure** 3-14.

Figure 4-12	Figure 4-13	Figure 4-14
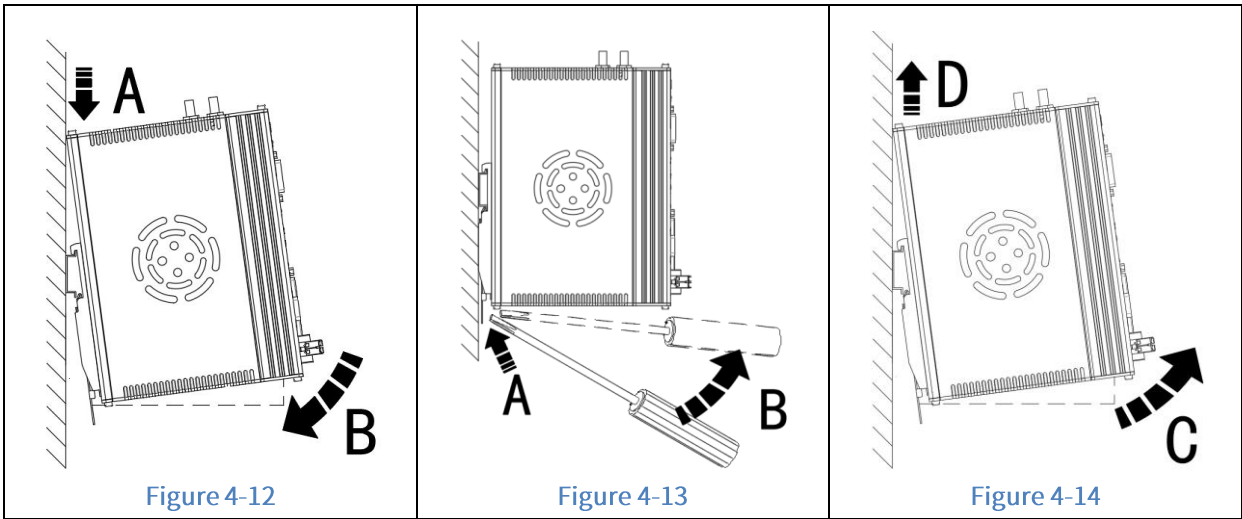
4.1.11 Connection and use

4.1.11.1 Phoenix terminal wiring

The power input interface and IO interface of NP-6125 series IPC adopt spring-type pressing terminals. Please connect according to the parameters in the table when using, otherwise it may lead to loose wiring, falling off or unstable communication.
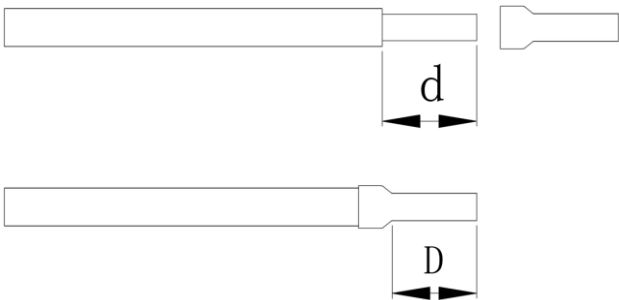
Figure 4-15

Name	d(mm)	D(mm)	Rigid wire(mm^2)	Flexibly wire(mm^2)
DC IN Connector	10-11	12	0.5-2.5	0.5-2.5
IO Connector	7-8	10	0.2-1.0	0.2-1.5

4.1.11.2 Ethernet

The NP-6125 series IPC have Ethernet ports, standard RJ-45 connector. The network cable is recommended to use a shielded network cable of Category 5 or above to ensure its working stability.

26AWG super category 5 twisted pair shielded wire
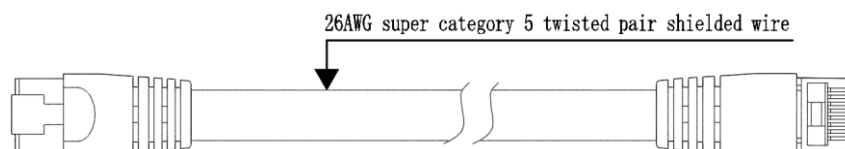
Figure 4-16

4.1.11.3 RS-485 communication

The cable is recommended to use a shielded twisted pair and the shield should be connected to the ground properly by the single point. A120 ohm terminal resistor should be placed at the end of the cable for limiting bus reflections.
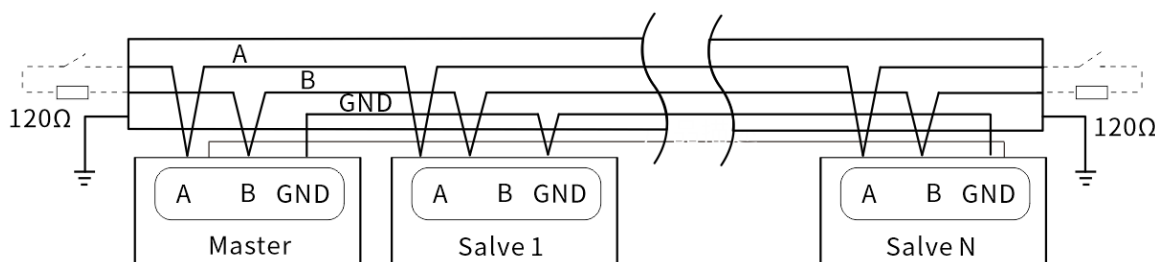
Figure 4-17

4.1.11.4 Power Supply

In order to make the IPC work more reliably, it is recommended to add a DC power filter between the IPC and the input power supply, and ensure that the filter and the IPC must be well grounded to prevent some interference problems.
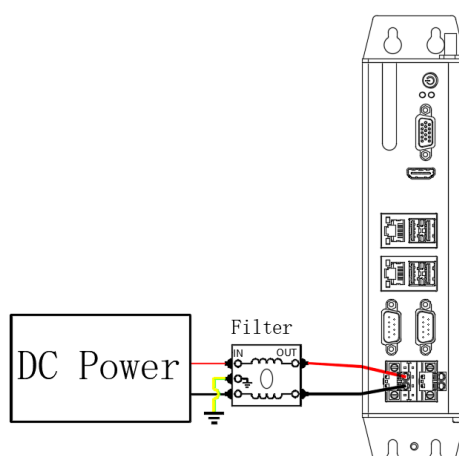
Figure 4-18 Power filter wiring diagram

4.2 driver installation

1. Go to www.nodka.com official website to download and download the corresponding driver

2. Select the corresponding machine model and click search, download the corresponding driver, and follow the installation wizard to install the driver software.

5 Safety and Maintenance

Please follow the precautions described in this chapter, otherwise may cause device damaged.

5.1 Safety Precautions

Please follow the safety precautions described in this section below.

5.1.1 General Safety Precautions

Please ensure that the following safety precautions are followed:

- Follow electrostatic precautions if you open the device;
- When installing, moving or modifying the device, ensure that the power is switched off and the power cable is disconnected;
- It is forbidden to use more than the specified voltage as this may cause a fire or electric shock;
- Electric shock may occur if the device chassis is opened while the device is running;
- Do not drop or insert any debris into the device vents;
- If large quantities of dust, water or liquid enter the device, disconnect the power supply and contact the supplier;
- The following are prohibited:
  - It is forbidden to drop the device on a hard surface;
  - It is forbidden to knock or apply excessive force to the device;
  - It is forbidden to use the device in places where the rated environment exceeds the standard.

5.1.2 ESD Precautions

Failure to take ESD precautions during device installation may result in damage to the device or injury to the user. Electrostatic discharge (ESD) can cause damage to the components of a device. Dry climates are more prone to ESD. Therefore, the following anti-static precautions need to be strictly followed when opening the equipment:

- Wearing anti-static bracelet;
- Personally well grounded: When handling electronic components, grounded conductive substances should be touched frequently;
- Using anti-static mats: Electronic components should be operated on anti-static mats, which can reduce the possibility of ESD damage.

Touch only the edges of electronic components: operate by holding the edge of electronic components.

5.1.3 Product Disposal

Disposal of used batteries must be in accordance with local environmental regulations.

- Outside the European Union:

If you want to dispose the used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.

- Within the European Union:

EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (right) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States. Please follow the national guidelines for electrical and electronic product disposal.

5.2 Maintenance and Cleaning Precautions

Please follow the guidelines below when maintaining or cleaning the product.

5.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the product, please read the details below:
Never spray or squirt liquids directly onto any other components.

- The interior does not require cleaning. Keep fluids away from the interior.
- Be careful not to damage the small, removable components inside.
- Turn off before cleaning.
- Never drop any objects or liquids through the openings.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning.
- Avoid eating, drinking and smoking nearby.
  - Fans are regularly cleaned of dust.

5.2.2 Cleaning Tools

Some components may only be cleaned using special tool for the safety. In such case, the product will be explicitly mentioned in the cleaning tips.
Below is a list of items to be used for cleaning.

- **Cloth** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended.

- **Water or rubbing alcohol** – A cloth moistened with water or rubbing alcohol should be used;

- **Using solvents** – The use of solvents is not recommended as they may damage the plastic parts.

- **Vacuum cleaner** – Using a vacuum specifically designed for computers is one of the best methods of cleaning. Dust and dirt can restrict the airflow and cause circuitry to corrode.

- **Cotton swabs** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.

  - **Foam swabs** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

6 Q&A

This section explains and illustrates common problems that users may encounter when using the product.

6.1 Ditital IO Electrical Wiring Diagram

The blow sections can be refered to by the field electrical engineer.

6.1.1 Remote Electrical Wiring Diagram

Remote Wiring	Dry Contact
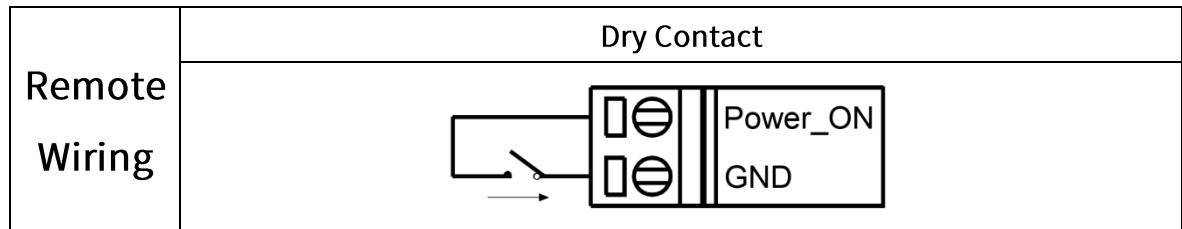
Figure 6-1 Remote wiring

6.1.2 H1/JH2 Electrical Wiring Diagram （old）

6.1.2.1 DI Electrical Wiring Diagram

Output Wiring	Wet Contact	
	Dry Contact	
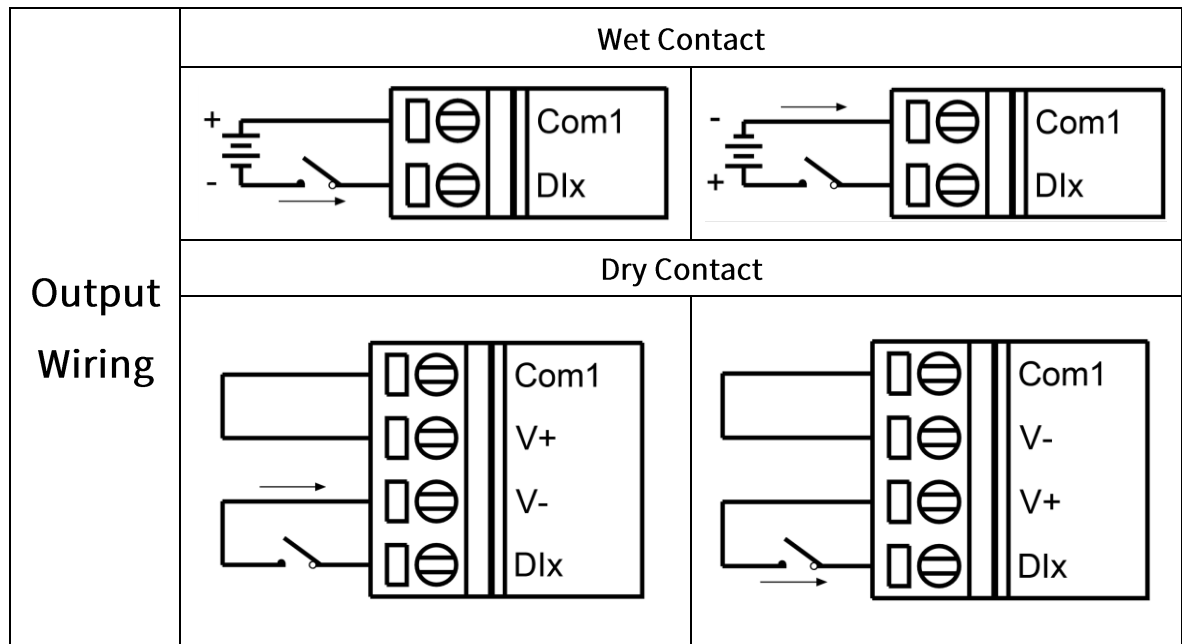
Figure 6-2 H1/JH2 DI wiring

6.1.2.2 DO Electrical Wiring Diagram

Output Wiring	Digital Output	
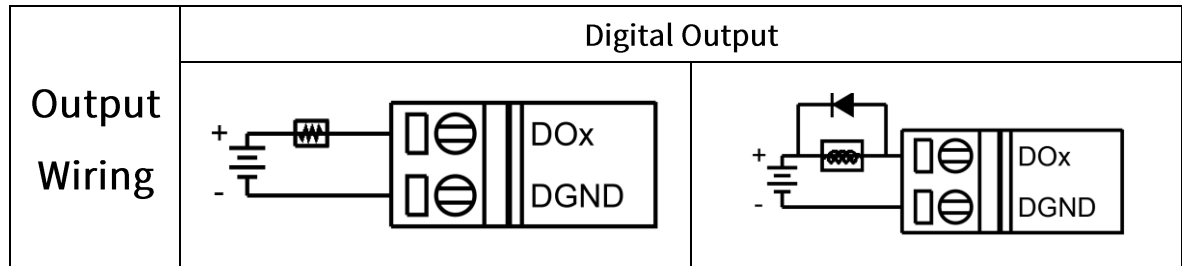
Figure 6-3 H1/JH2 DO wiring

6.1.2.3 Light Control Electrical Wiring Diagram

Light Wiring	PWM Output
	CHx+ CHx-
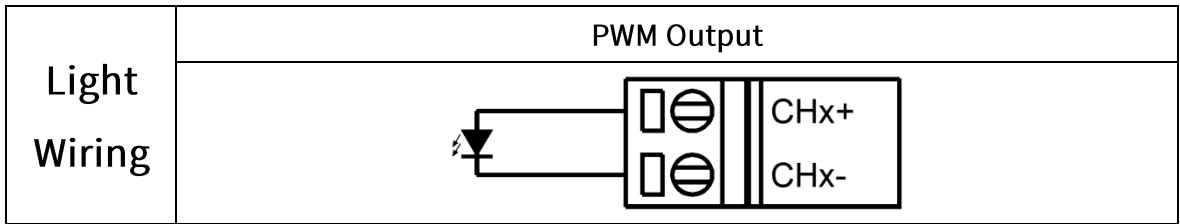
Figure 6-4 H1/JH2 Light source wiring

6.1.2.4 Light Control External Hard Trigger Electrical Wiring Diagram

Light TR Wiring	Wet Contact
	LCOM TRx LCOM TRx
	Dry Contact
	LCOM TRx GND
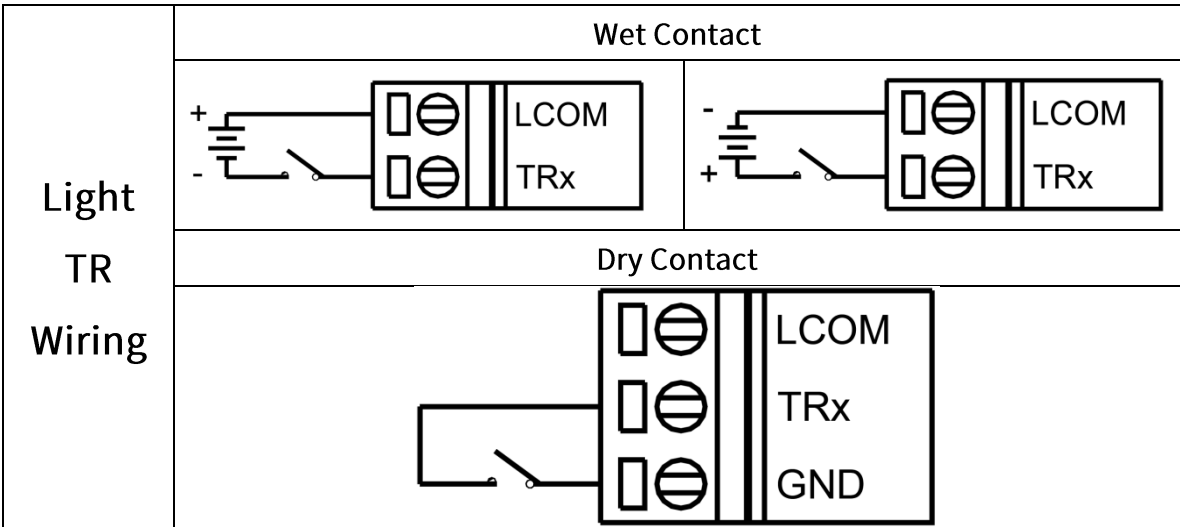
Figure 6-5 H1/JH2 Light source tigger wiring

6.1.3 H1/JH2/H7 Electrical Wiring Diagram（new）
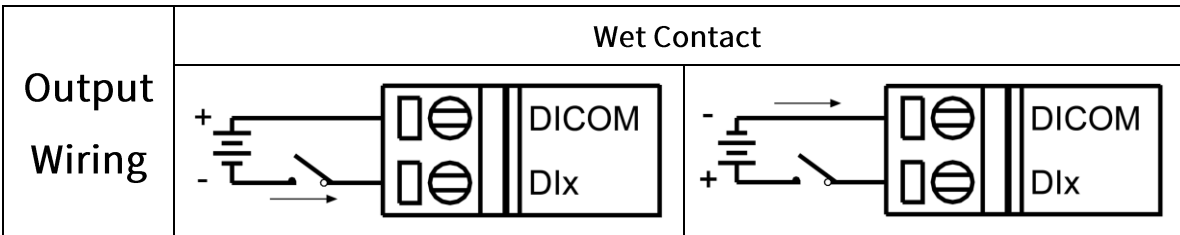
6.1.3.1 DI Electrical Wiring Diagram

Output Wiring	Wet Contact
	DICOM DIx DICOM DIx

Figure 6-6 H1/JH2/H7 DI wiring

6.1.3.2 DO Electrical Wiring Diagram
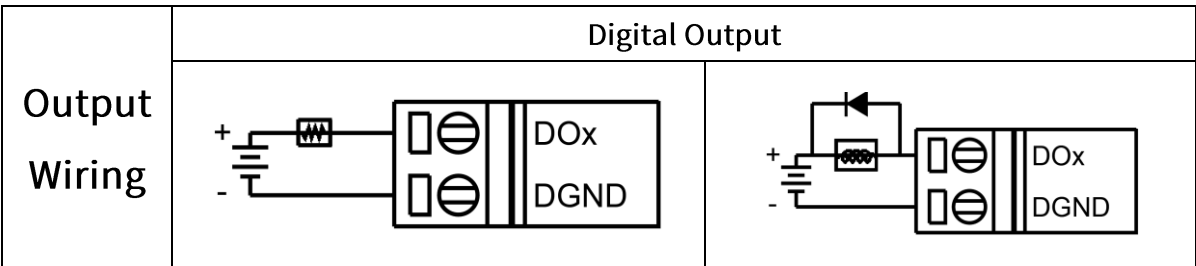
Output Wiring	Digital Output
	DOx DGND DOx DGND

6.1.3.3 Light Control Electrical Wiring Diagram

Light Wiring	PWM Output
	CHx+ CHx-
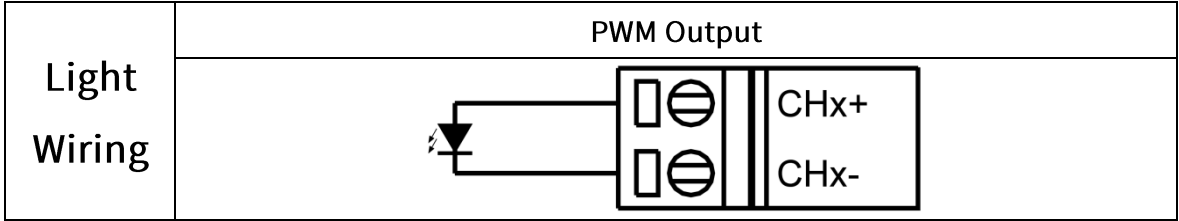
Figure 6-8 H1/JH2/H7 Light source wiring

6.1.3.4 Light Control External Hard Trigger Electrical Wiring Diagram

Light TR Wiring	Wet Contact	
	LCOM TRx	LCOM TRx
	Dry Contact	
	LCOM TRx GND	
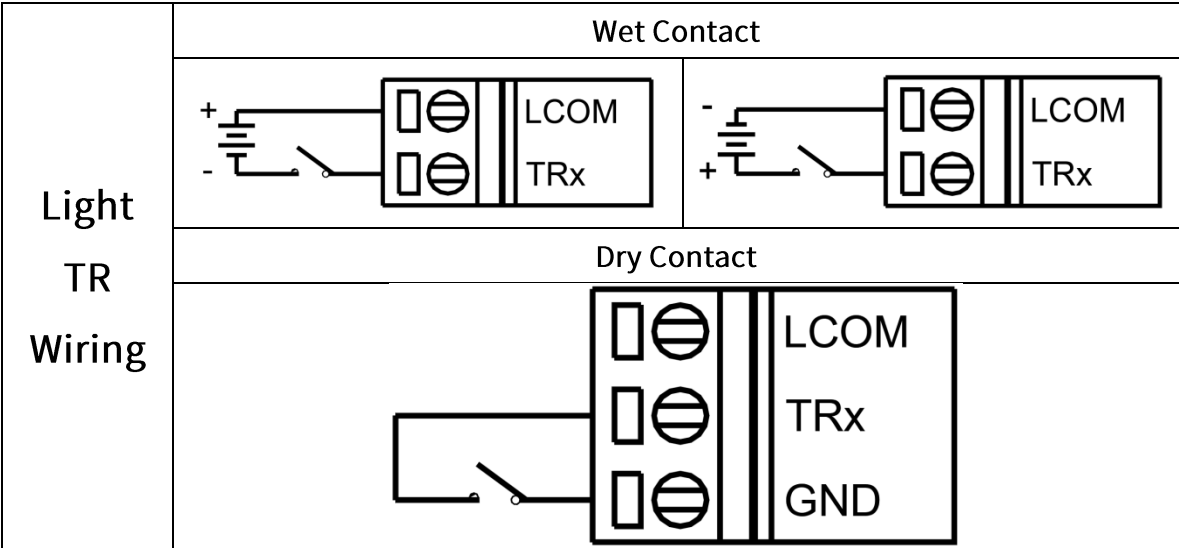
Figure 6-9 H1/JH2/H7 Light source tigger wiring

6.1.4 H1B/JH2B/H7B Electrical Wiring Diagram

6.1.4.1 DI Electrical Wiring Diagram

Output Wiring	Wet Contact	
	DICOM DIx	DICOM DI4~15
	Dry Contact	
	DIx DIGND	
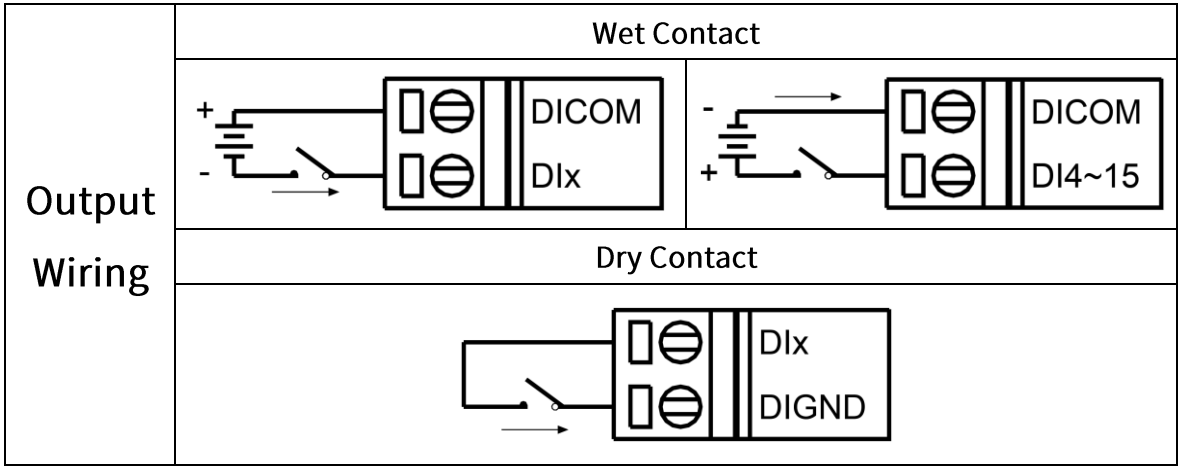
Figure 6-10 H1B/JH2B/H7B DI wiring

6.1.4.2 DO Electrical Wiring Diagram

Digital Output		
Output Wiring		
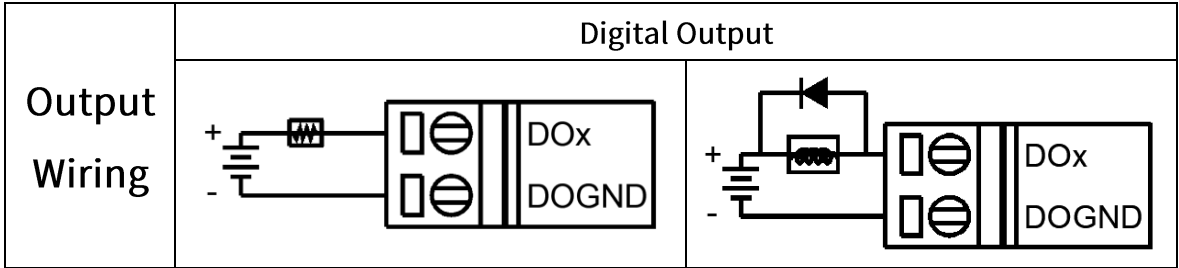
Figure 6-11 H1B/JH2B/H7B DO wiring

6.1.5 JH3 Electrical Wiring Diagram

6.1.5.1 DI Electrical Wiring Diagram

	Wet Contact	
Output Wiring		
	Dry Contact	
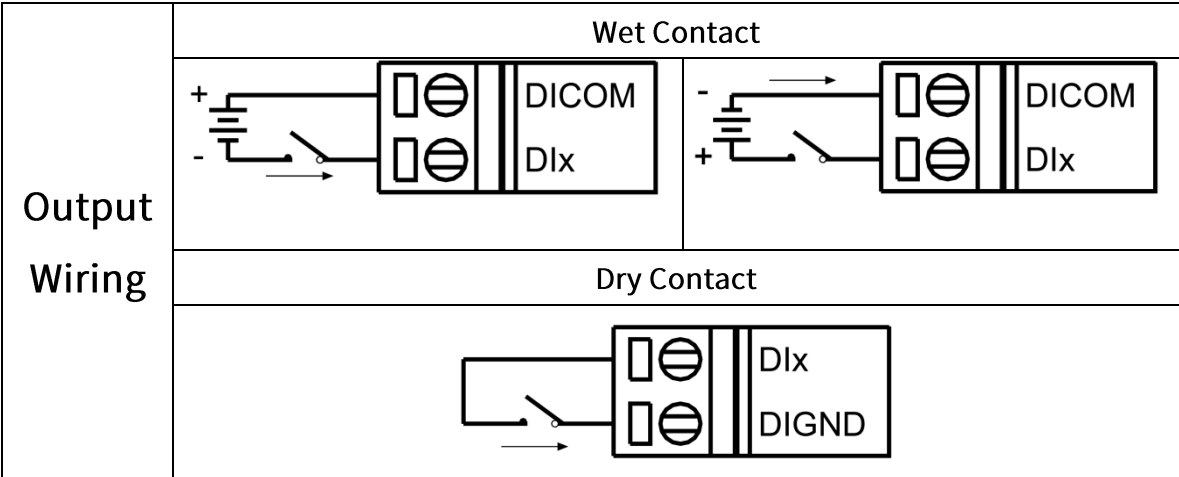
Figure 6-12 JH3 DI wiring

6.1.5.2 DO Electrical Wiring Diagram

Digital Output		
Output Wiring		
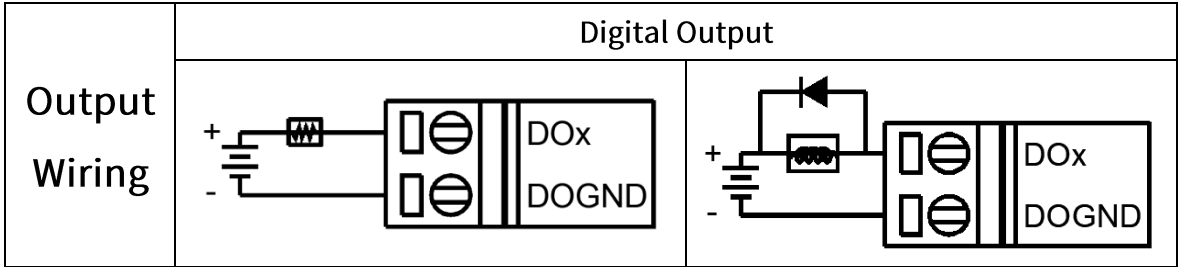
Figure 6-13 JH3 DO wiring

6.1.6 JH4 Electrical Wiring Diagram

6.1.6.1 DI Electrical Wiring Diagram

Output Wiring	Wet Contact	
	DICOM DIx	DICOM DIx
	Dry Contact	
	DIx DIGND	
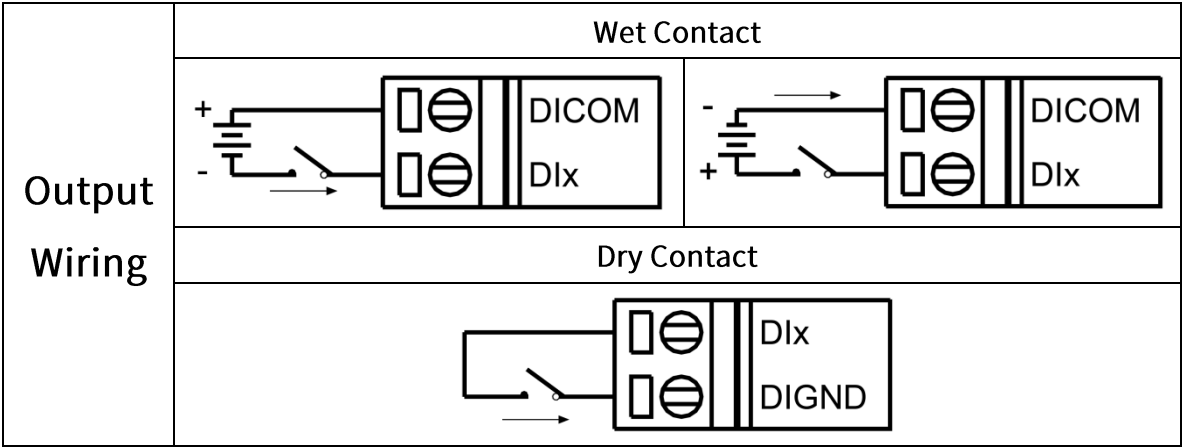
Figure 6-14 JH4 DI wiring

6.1.6.2 DO Electrical Wiring Diagram

Output Wiring	Digital Output	
	DOx DOCOMx	DOx DOCOMx
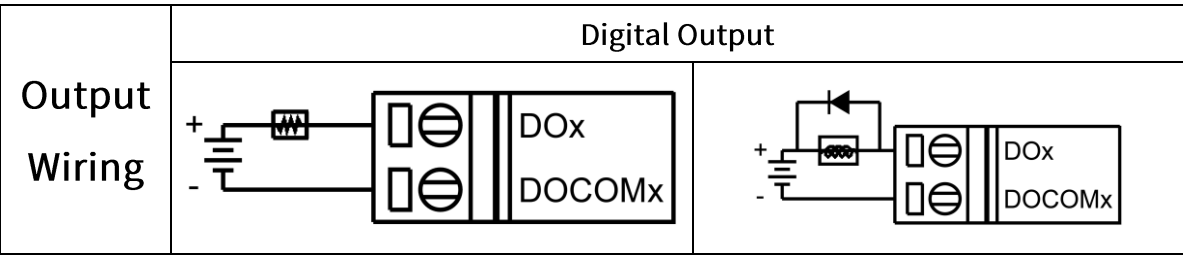
Figure 6-15 JH4 DO wiring

6.1.7 H1BP Electrical Wiring Diagram

6.1.7.1 DI Electrical Wiring Diagram

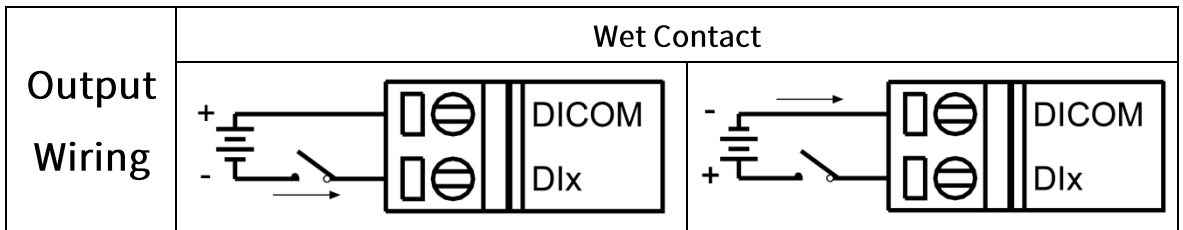| Output Wiring	Wet Contact	
	DICOM DIx	DICOM DIx

Figure 6-16 H1BP DI wiring
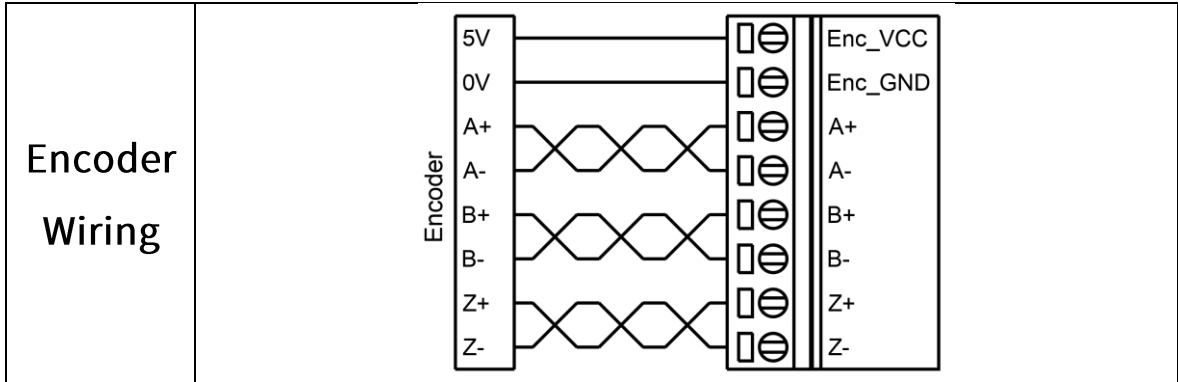
6.1.7.2 Encoder Electrical Wiring Diagram

Figure 6-17 H1BP DI wiring

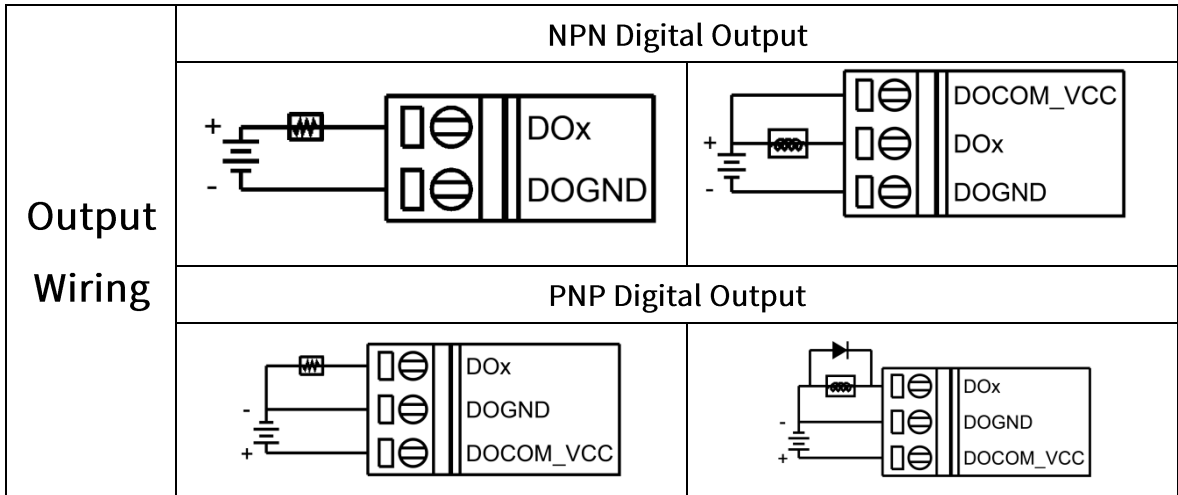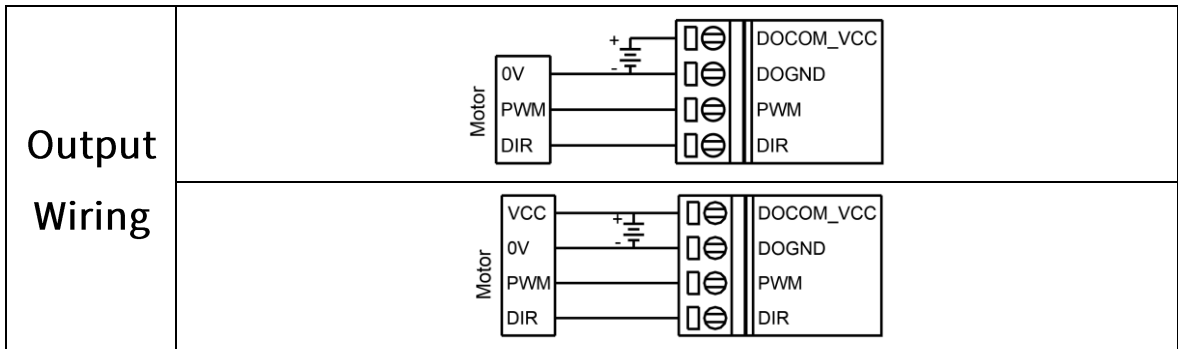### 6.1.7.3 DO Electrical Wiring Diagram

Figure 6-18 H1BP DO wiring

6.1.7.4 PWM Electrical Wiring Diagram

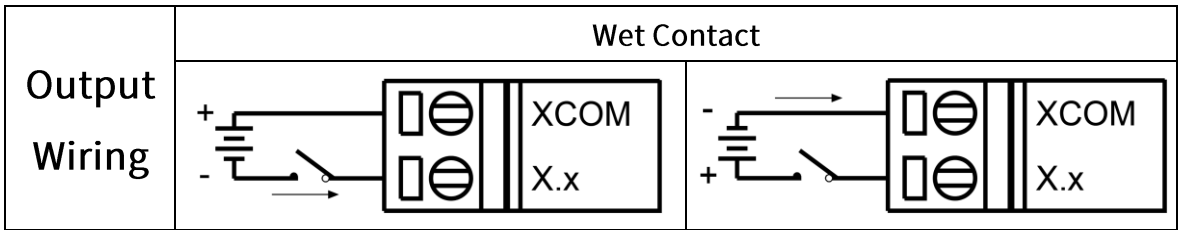## 6.1.8 JH5 Electrical Wiring Diagram

6.1.8.1 DI Electrical Wiring Diagram

Output Wiring	Wet Contact

Figure 6-19 JH5 DI wiring

6.1.8.2 DO Electrical Wiring Diagram

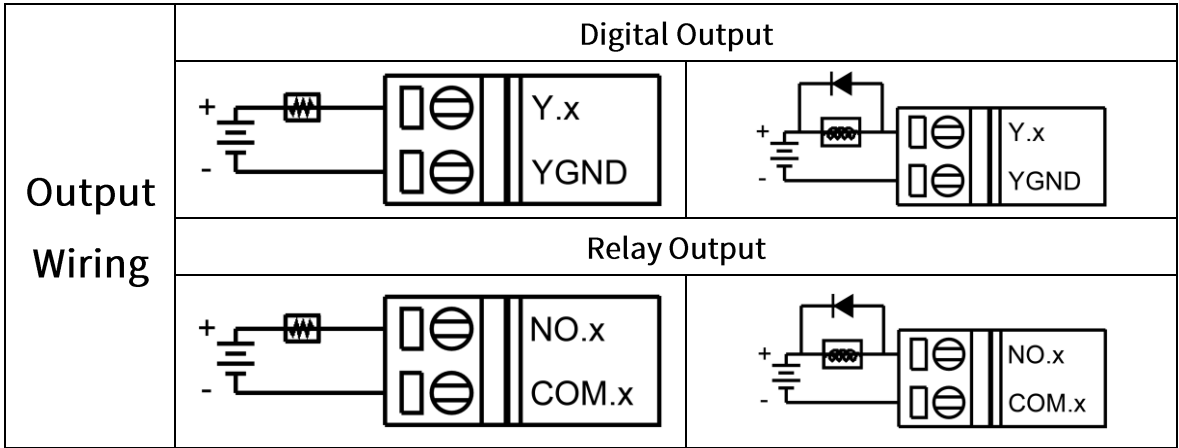| Output Wiring	Digital Output
	Relay Output

Figure 6-20 JH5 DO wiring

6.2 Power supply

Due to the different situations at each site, there may be some interference. In order to ensure more reliable use of the machine, it is recommended to add a power filter at the front end of the controller in case of poor on-site environment, and ensure that the filter can be well grounded.

EMI FILTER SJD210D-6

Rated current: 6A

Rated voltage: 0-110VDC

Frequency: 50/60Hz

Temperature: 25/85/21

6.3 How to use a multimeter to test whether the DO signal is conducting

If DO is the output of the OC gate, its internal equivalent is a transistor circuit controlled by the base. The multimeter can be set to buzzer mode, with the red probe connected to DOx and the black probe connected to DOGND. Then, use a testing tool to turn on DOx, and the multimeter buzzer will conduct. If it does not conduct, it will not conduct.

6.4 Technical Support and Services

Please visit the official website of Nodka at www.nodka.com to download the documentation and related driver software, or contact your local distributor directly for support and service.