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MC-346
User's Manual

with Microsoft® Windows® 10
with Microsoft® Windows® 11
with Ubuntu22.04

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Chapter 1. About this Manual

Chapter 1. About this Manual

1.1. Manual version revision record

Date	Version number	Revise Content	Modifier
2024/12/25	V1.0.	Prepare the manual for the first time	LWT

1.2. Copyright Statement

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If the manual is different from the latest product, please contact our FAE. We will not be responsible for any direct, indirect, intentional or unintentional damage or hazards caused by improper installation or use.
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1.3. Disclaimer

This manual only describes the use of embedded industrial computers manufactured by Darveen. If you use the product, unless otherwise mandatory by law, Darveen shall not bear any express or implied warranty or guarantee for the product for the use of this manual, including but not limited to the following:
(1) This product will meet your needs or expectations;
(2) The information contained in this product is real-time and correct;
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You clearly understand and agree that, in addition to the law, breach, its subsidiaries, agents, partners, relationships, managers, employees and authorized person need not be responsible for you any direct, indirect, special, derivative, incidental, punitive damage (including but not limited to the goodwill, profit, use data damage or other intangible loss).

With an extremely rigorous and scientific attitude, the manual is compiled, but the technology is constantly developing, and the speed of product upgrading is far beyond the speed of the preparation, so we reserve the right to modify it at any time without notification.

1.4. Trademark

The ownership of the trademark involved in this manual, Darveen Technology Limited , is owned by the holder of Darveen Technology Limited No one shall use it without their permission.

1.5. Warranty terms

The default product warranty period is 1 year. In case of special circumstances, the contract signed by both parties shall prevail
Safety guidance for installed and use
1. Please read carefully and keep this manual properly before use.
2. Keep the plate card dry and packed intact before installation, ensuring that the equipment is placed in a stable plane, and an accidental fall or flip may cause equipment failure or damage.
3. In order to avoid unnecessary damage caused by frequent turning to the product, wait at least 30 seconds before shutdown of the machine. If the equipment is not used for a long time, disconnect

the power cord to avoid the equipment being damaged by instantaneous voltage.
4. The opening slot of the chassis is used for ventilation to avoid overheating of the parts in the chassis. Do not mask or block such openings.
5. Before connecting the product to the power supply, confirm the supply voltage and adjust the voltage to 220V.
6. Protect the power cord from trampling or other accidents that may cause sudden power failure, and do not stack anything on the power cord.
7. Unplug the power cord before unplugging any expansion card or module.
8. Note to all the notes and warnings mentioned in the manual.
9. Do not make any changes or modifications to this product. If there is any abnormal use of the equipment, please find a professional personnel for safety reasons.
10. Please do not place or store the product at an ambient temperature above 60℃ (140℉) as it will cause harm to the product.
11. If the battery is not replaced properly, it can cause a danger. Be sure to use the same model or equivalent battery as recommended by the manufacturer.

Chapter 2. Product Overview

Chapter 2. Product Overview

Industrial control machine (Industrial Personal Computer, IPC) is the industrial control computer, is a use of bus structure, the production process and electromechanical equipment, process equipment for detection and control of the tool general name.

Industrial control machine has important computer attributes and characteristics, such as computer CPU, hard disk, memory, peripherals and interfaces, and operating system, control network and protocols, computing power, friendly man-machine interface.

The industrial control machine often operates in a harsh environment, and the safety requirements for data are higher. Therefore, the industrial control machine is usually reinforced, dust proof, moisture proof, corrosion proof, radiation prevention and other special designs.

2.1. Overview of the MC-346 function

The MC-346 marine computer features a rugged aluminum enclosure and a fanless design. It is powered by the 13th Gen Intel® Celeron®/Core™ i3/i5/i7 Processor and includes 4x NMEA 0183 (RS-422/485) ports, 8 isolated DIO, and 2x removable 2.5" SSD drive bays. With 2x DP, 6xUSB, 4x LAN, and supports TPM 2.0, it offers optional Wi-Fi, Bluetooth, LTE/5G, GPS, and CAN2.0 capabilities. It is IEC 60945/61162-1/2 and IACS E10 certified(Pending).

* Table 2.1-1 MC-346 Functional Overview table

Product Keywords	Marine Computer with 13th Gen Intel® Celeron®/Core™ i3/i5/i7 Processor
Product Features	▪ Rugged aluminum enclosure and fanless design ▪ 13th Gen Intel® Celeron®/Core™ i3/i5/i7 Processor ▪ 4x NMEA 0183 (RS-422/485), 8 x isolated DIO ports ▪ 2x removable 2.5" SSD drive bays, RAID 0,1 Hot-swap ▪ 2x DP, 6x USB, 4x 2.5GbE LAN, TPM 2.0 ▪ Optional Wi-Fi, Bluetooth, LTE/5G, GPS, CAN2.0 ▪ IEC 60945/61162-1/2, IACS E10 certified(Pending)

Chapter 3. Product Presentation

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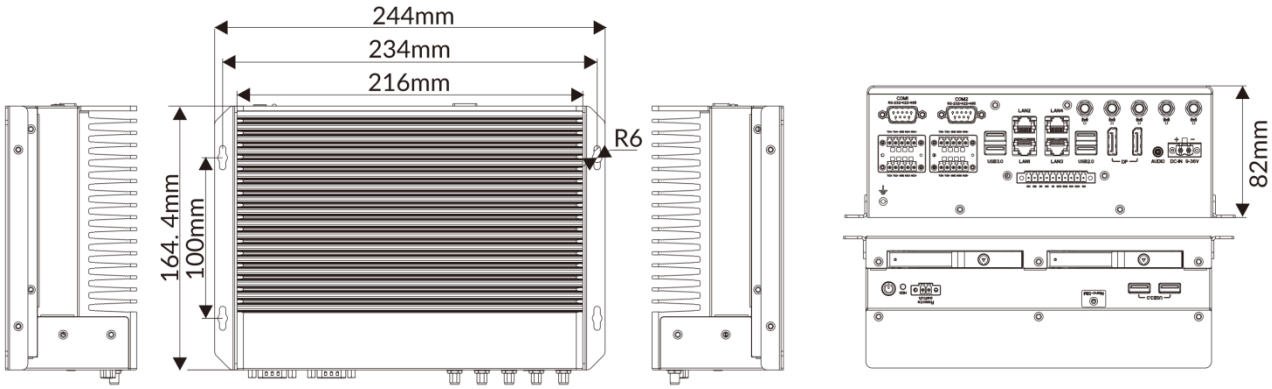
3.1. Product Appearance

* Figure 3.1-1 front view of MC-346

3.2. Appearance size diagram



* Figure 3.2-1 MC-346 dimensional drawing

3.3. Product specification introduction

* Table 3.3-1 MC-346 product specification

Model No.	MC-346
Short Description	Marine Computer with 13th Gen Intel® Celeron®/Core™ i3/i5/i7 Processor
Features	Rugged aluminum enclosure and fanless design
	13th Gen Intel® Celeron®/Core™ i3/i5/i7 Processor
	4x NMEA 0183 (RS-422/485), 8 x isolated DIO ports
	2x removable 2.5" SSD drive bays, RAID 0,1 Hot-swap
	2x DP, 6x USB, 4x 2.5GbE LAN, TPM 2.0
	Optional Wi-Fi, Bluetooth, LTE/5G, GPS, CAN2.0
	IEC 60945/61162-1/2, IACS E10 certified(Pending)
Overview	The MC-346 marine computer features a rugged aluminum enclosure and a fanless design. It is powered by the 13th Gen Intel® Celeron®/Core™ i3/i5/i7 Processor and includes 4x NMEA 0183 (RS-422/485) ports, 8 isolated DIO, and 2x removable 2.5" SSD drive bays. With 2x DP, 6xUSB, 4x LAN, and supports TPM 2.0, it offers optional Wi-Fi, Bluetooth, LTE/5G, GPS, and CAN2.0 capabilities. It is IEC 60945/61162-1/2 and IACS E10 certified(Pending).
Specifications	
Model No.	MC-346
System	
CPU	Intel Celeron®-7305E/Core™ i3-1315UE/Intel Core™ i5-1345UE/Intel Core™ i7-1365UE processor
Memory	2x SO-DIMM DDR5-4800/5200 MT/s (up to 64GB)
Storage	1x M.2 Key M 2242/2280, Nvme PCIe x4 SSD 2x removable 2.5" SSD drive bays, RAID 0,1 Hot-swap
GPU	Intel® UHD Graphics
TPM	Built-in onboard hardware TPM2.0-NPCT760AABYX
Watchdog Timer	Software programmable supports 256 levels system reset
I/O Ports	
USB Port	4x USB3.0, 2x USB2.0
Serial Port	4x NMEA0183 (RS-422/485), 2x DB9(RS-232/422/485)
Ethernet	4x 2.5GbE LAN
Display Port	2x DP++ (Up to 4K each)
SIM Card Slot	1x SIM
DIO	8x isolated DIO
CAN bus	2x CAN2.0B (optional)
Expansion Slot	
Mini-PCIe	1x Mini PCIe slot
M.2	1x M.2 Key M 2242/2280 Nvme, 1x M.2 E-Key 2230, 1x M.2 B-Key 3052
Antenna Hole	5x SMA-type
RF Communication	

Wi-Fi	1x M.2 2230 E-Key (PCIe AxMac Wi-Fi 6)
Cellular	1x M.2 3052 B-Key (USB3.0)
Bluetooth	1x M.2 2230 E-Key (PCIe AxMac Wi-Fi 6)
GNSS	1x Mini PCIe (USB2.0)
Audio	
Audio	Mic in, line out
Power	
Button	Yes
Remote Power On/Off	2-Pin phoenix terminal (3.81 mm)
DC Input	9 to 36V DC-IN (2-Pin Phoenix terminal 5.0 mm)
Power Mode	AT/ATX
Operating System	
Windows	Windows 10, windows 11
Linux	Ubuntu22.04
Mechanical	
Dimensions (WxDxH)	216 x 164 x 82mm (8.5 x 6.46 x 3.23 inches)
Weight (N.W.)	3.5kg (7.72 lbs)
Mounting Mode	Wall-mount
Material	Aluminum alloy
Environment	
Operating Temperature	-20 to 60℃（-4 to 140°F) with SSD Airflow 0.7m/s
Storage Temperature	-40 to 85℃（-40 to 185°F)
Relative Humidity	5 to 95%，non-condensing
Certification	
EMC	CE, FCC, IEC 60945/61162-1/2, IACS E10(Pending)
Packing List	
Part No.	Description
	Main body
	AC-DC Power Adapter
	AC Power Cord
Optional Accessories	
Part No.	Description
	Wi-Fi & Bluetooth kits
	4G/LTE kits
	GNSS kits
Ordering Informations	
Part No.	Description
MC-346-7305E	Celeron-7305E/4LAN/6COM/6USB/2DP/8DIO

MC-346-1315UE	i3-1315UE/4LAN/6COM/6USB/2DP/8DIO
MC-346-1345UE	i5-1345UE/4LAN/6COM/6USB/2DP/8DIO
MC-346-1365UE	i7-1365UE/4LAN/6COM/6USB/2DP/8DIO

Chapter 4. IO Panel description

Chapter 4. IO Panel description

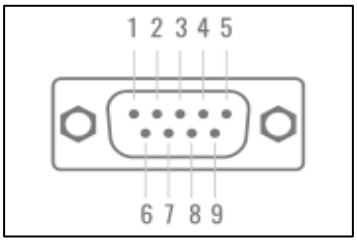
4.1. MC-346 panel is shown below

* Figure 4.1-1 MC-346 panel diagram

* Figure 4.1-2 MC-346 panel diagram

4.2. Serial communication port (simply "serial port")

Equipped with 2 DP9 serial ports, COM1/COM2 can be switched to RS485orRS232orRS422. COM1/2 defaults toRS232.

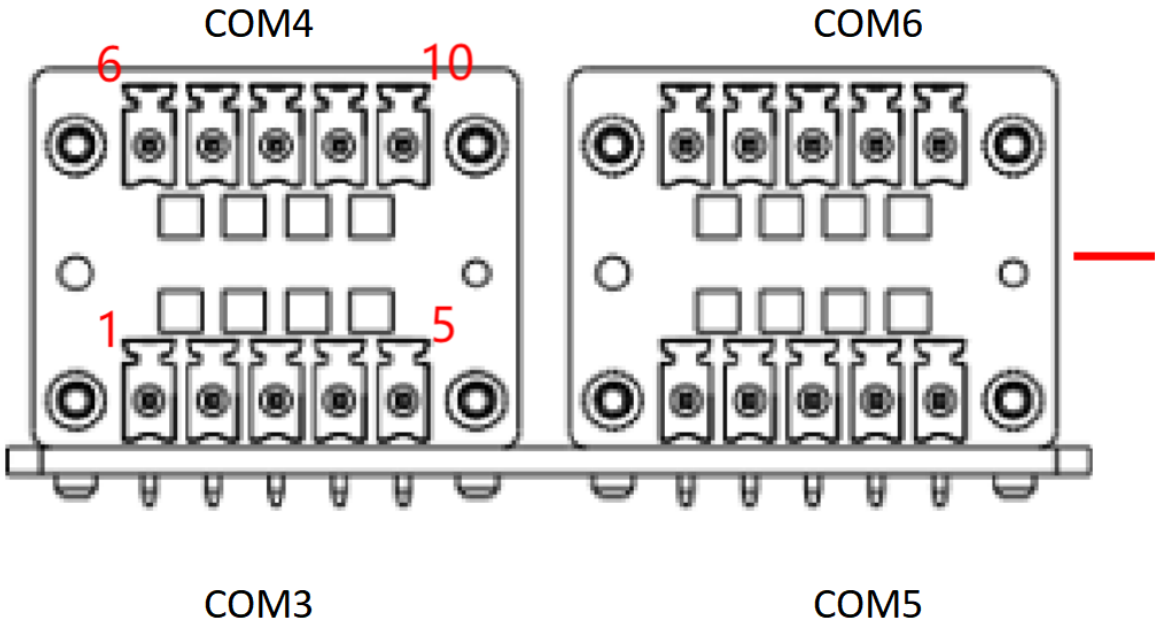


* Figure 4.2-1 serial port diagram of DP 9

* Table 4.2-1 Explanation of serial definition for DP 9

PIN	Signal name	PIN	Signal name
1	DCD/RS485-/RS422TX-	2	RXD/RS485+/RS422TX+
3	TXD/RS422RX+	4	DTR/RS422RX-
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

COM Connector (JCOM3-4/JCOM5-6)
JCOM3-4 and JCOM5-6 are 4x RS-422/485 serial port functions. When using NMEA card, it is necessary to insert the motherboard and the card through the pin header. The card realizes the COM function through the USB2.0 signal on the motherboard. Switching of RS422/485 is achieved through the dip switch on the small card, please refer to 4.1.2 for details.



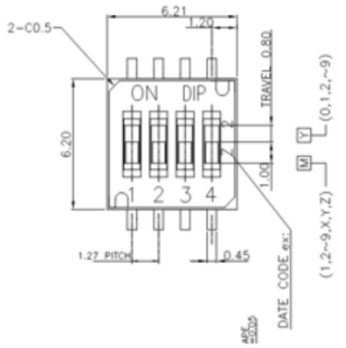
* Figure 4.2-2 DC port diagram

* Table 4.2-2 Explanation of serial definition for Phoenix

1	TX1-	2	TX2-	1	TX3-	2	TX4-
3	TX1+	4	TX2+	3	TX3+	4	TX4+
5	ISO_GND1	6	ISO_GND1	5	ISO_GND2	6	ISO_GND2
7	RX1-	8	RX2-	7	RX3-	8	RX4-
9	RX1+	10	RX2+	9	RX3+	10	RX4+

* Table 4.2-3 Explanation of Dip switch (SW1/SW2)

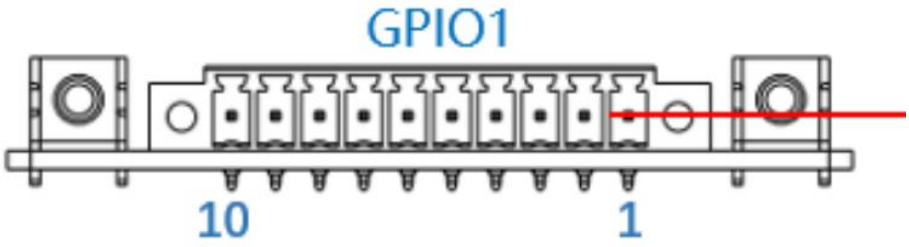
拨码开关SW1/SW2



SW1	1&2	ON	COM3 485 mode
	1&2	OFF	COM3 422 mode
	3&4	ON	COM4 485 mode
	3&4	OFF	COM4 422 mode
SW2	1&2	ON	COM5 485 mode
	1&2	OFF	COM5 422 mode
	3&4	ON	COM6 485 mode
	3&4	OFF	COM6 422 mode

4.3. DIO

Configure the 8 xGPIO isolation. 4 x DI and 4 x DO (onboard header).



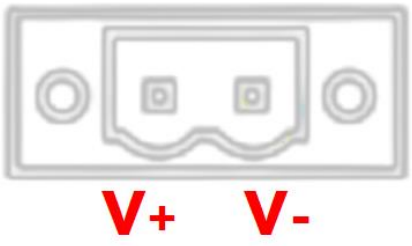
* Figure 4.3-1 DIO port diagram

* Table 4.3-1 Explanation of DIO

1	O_COM	6	I_COM
2	OUT1	7	IN1
3	OUT2	8	IN2
4	OUT3	9	IN3
5	OUT4	10	IN4

4.4. DC port

Equipped with Input 9-36V, 1x 2-pin terminal block connector as shown in Fig.

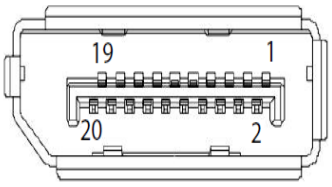


* Figure 4.4-1 DC port diagram

Note: Use the adapter or switch power supply supporting the equipment. Do not connect more than 36V power supply, otherwise it will cause the motherboard over voltage to burn!!!

4.5. Display Output (DP)

Equipped with 2 DP, DP can achieve 4K high-definition signal transmission at high speed, and also has good anti-interference ability. As shown in the figure.



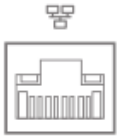
* Figure 4.5-1 DP Interface Figure

4.6. SIM Block

Built-inJump to select the mPCIe/M.2 signal , support for 5G communication, compatible with 4G.

4.7. Ethernet Interface (LAN)

With 4 Ethernet interfaces, as shown in the figure, and supports 10 / 100 / 1000Mbps. The port uses the standard RJ-45 jack with LED indicators indicating the connection and transmission status. See the chart below for the indicator light representation and the machine status.



* Figure 4.7-1 Ethernet interface diagram

* Table 4.7-1 LED indicator light definitions table

LED pilot lamp			
Left side LED			offside LED
close	orange	green	green
10Link	100Link	1000Link	transfer

4.8. USB Interface

Equipped with 4 USB3.0 and 2 USB 2.0 interfaces, the USB interface supports the plug and play function, allowing the user to connect or disconnect the device at any time, as shown in the chart.

* Figure 4.8-1 USB interface diagram

Table 4.11-1 USB interface definition table

Pin	Signal
1	Vbus
2	D-
3	D+
4	GND

4.9. Audio Interface (Line-out, Mic-in)

With 1 * Line-Out/MIC 2in1 Phone Jack. the interface is shown in the chart

* Figure 4.9-1 Audio interface diagram

4.10. Antenna interface

5xSMA-type

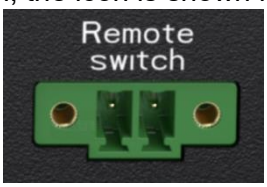
4.11. Explanation of indicator lights

* Table 4.11-1 Machine indicator table

icon	pigment	State instructions	description
⏻	white	mains switch	DC power supply off: off / DC power supply on: always on

4.12. Remote switch

Equipped with 1 4.11.Remote switch, the icon is shown in Fig.



* Figure 4.12-1* The 4.11.Remote switch icon

Chapter 5. Direction for Use

Chapter 5. Direction for Use

This section provides a simple operation description for the normal use of MIC-7311 series products, introducing the working environment, installation steps and the basic operation of the system protection functions of industrial computers.

5.1. OOBA

Before opening the package, please check whether the product model indicated on the outer package is consistent with the product model ordered. After opening the package, carefully check whether the accessories are complete according to the packing list or the order contract. If the surface of the industrial computer is damaged, or the product content is not consistent, please do not use it, and contact the dealer immediately.

Note:
In order to prevent electrostatic damage to industrial computers, please touch the effective grounded metal object to release the electrostatic charge carried by the body, and wear anti-static gloves.

5.2. Note the following points when unpacking the equipment:

1. It is recommended that you do not discard the original packaging materials. Please keep the original packaging materials for use when transporting the equipment again.
2. Check the delivered equipment for any obvious damage caused during transit.
3. Confirm whether the received goods include complete equipment and accessories. refer to the packing list. If there is any discrepancy or transportation damage, please contact the relevant business or customer service personnel.

Table 5.2-1 Machine packing list table

List of binning		
order number	type	quantity
1	The MC-346 series of industrial computers	A
2	Wall hanging kit	A set

5.3. Work environment

1. Industrial computers need to be far away from the high-power and strong electromagnetic interference of electrical appliances and the environment;
2. The working environment temperature should be between 0 degrees and 55 degrees Celsius;
3. The power supply voltage shall be kept between 200 V and 240 V.

5.3 Dead Work

Before installation, please prepare the relevant items, such as:
1. MIC-7311 series of industrial computers, and related power supply and cables;
2. Display, and the display cable between the display and the industrial controller;
3.USB mouse and keyboard;
4. PLC, camera and corresponding connecting lines;
5. Power supply.

5.4. Installation Steps

Hardware connection:
1.Connect the equipped display to the industrial computer display interface;
2.Connect keyboard, mouse and other to industrial computer USB interface;
3.Connect other hardware, such as PLC and camera, according to the corresponding interface;
4.Power adapter access 220V voltage, power on.

5.5. Gigabit Network Card Camera Configuration

1. Confirm that the camera is connected to the power supply and that the camera is connected to the industrial computer.
2. Close the firewall, control panel-> Windows Defender-> Set-> Implement protection-> Remove hook and administrator-> Enable Windows Defender-> Remove hook.
3. Turn on camera software.

Chapter 6. Troubleshooting Guide

Chapter 6. Troubleshooting Guide

6.1. Boot Abnormal Q&A

Q1: After pressing the power button to start on, the power indicator is not on
1. Answer A: Check whether the industrial computer is connected correctly, and whether the power socket is charged;
2. Answer B: Check the industrial computer power adapter, plug and unplug the power cord, display data cable and keyboard mouse cable, confirm that the display and host connection is correct;
3. Answer C: Check whether the positive and negative electrodes of the power plug are reversed.
4.

Q2: The power indicator is on and the display is not displayed
1. Answer A: Check the display power supply and switch;
2. Answer B: Check whether the display data line is in bad contact;
3. Answer C: If using Display Port or VGA converter, replace other brand converters;
4. Answer D: Observe the keyboard and mouse indicator, if the keyboard indicator, mouse indicator is on, replace the monitor screen.

Q3: After the boot of the motherboard can not self-check success
1. Answer: Press [Del], key to reset CMOS, or clear CMOS.

Q4: The mouse and keyboard cannot be used after the boot
1. Answer A: To see whether the keyboard lock is locked, remove the keyboard lock;
2. Answer B: If not, check whether the connection with the main board and the keyboard and mouse are connected correctly;
3. Answer C: Check whether there is a keyboard mouse one two turn joint, if there is the keyboard, mouse reverse use;
4. Answer D: Replace one joint and two joints;
5. Answer E. Replace the mouse and keyboard.

Q5: Unable cannot boot the system from the hard drive after boot
1. Answer A: Press the "Del" key to enter the CMOS hard disk parameter setting and boot order are correct;
2. Answer B: After using the optical drive or floppy drive boot, check whether the hard disk has a boot system or the hard disk is normal partition and has activated the boot partition;
3. Answer C: Press F8 at startup and select the last correct configuration to start the operating system;
4. Answer D: Replace the new hard drive and reinstall the system.

Q6: The system dies or has a blue screen during operation
1. Answer A: Check whether the industrial computer temperature is too high;
2. Answer B: Check whether the incorrect or expired drivers are installed;
3. Answer C: Check whether the system is infected with the virus;
4. Answer D: Whether the system file or application and disk are damaged.

Q7: Unable to install the device driver correctly
1. Answer A: Check whether the driver is correct and the latest;
2. Answer B: Whether the driver needs the patch support of the operating system;
3. Answer C: Whether the resources occupied by other equipment are in conflict with the resources occupied by the equipment that need to be driven;
4. Answer D: If the peripheral equipment, change a slot and reinstall the drive;

5. Answer E: Replace the equipment and reinstall the driver program.

Q8: BIOS Upgrade method
1. Prepare a UEFI start U disk, if not, you need to make one;
2. Please copy the required refresh BIOS file and batch to the U disk root directory;
3. Press F7, select the made UEFI U disk, return, and enter the Shell;
4. Enter FS0: return (if no other storage devices, fs0:);
5. Run the flash. The nsh, brush BIOS, the middle of no power off;
6. After brushing the BIOS, power off, then power on, restart the industrial computer, enter the BIOS setting, F3 load the BIOS optimization value (Load optimized defaults return car selection Y).

Q9: Precautions The following conditions may lead to a refresh failure and no boot up.
1. Power interruption during the refresh process;
2. Virus exists in the U disk;
3. BIOS files;
4. Non-UEFI system.

If it cannot be started after refresh, you can empty the BIOS and try it. If the situation is still the same, please return to the factory for repair.

Chapter 7. After-Sale Service

Chapter 7. After-Sale Service

Please visit the official website of Darveen (www.darveen.com), Get the latest information on the product.

If users need technical support, please contact the local distributor, seller or the customer service department. Before the technical consultation, please collect the following information:
1. Product model and production serial number (normally, bar code on the body)
2. Software used (operating system, version, application software, etc.)
3. Additional equipment situation of product docking (such as power supply situation, resistance and other basic information)
4. Complete description of the problem (video and photo)
5. Full content of each error message (video recording and photo taking)

Darveen Co., Ltd.
Email: sales@darveen.com
www.darveen.com