



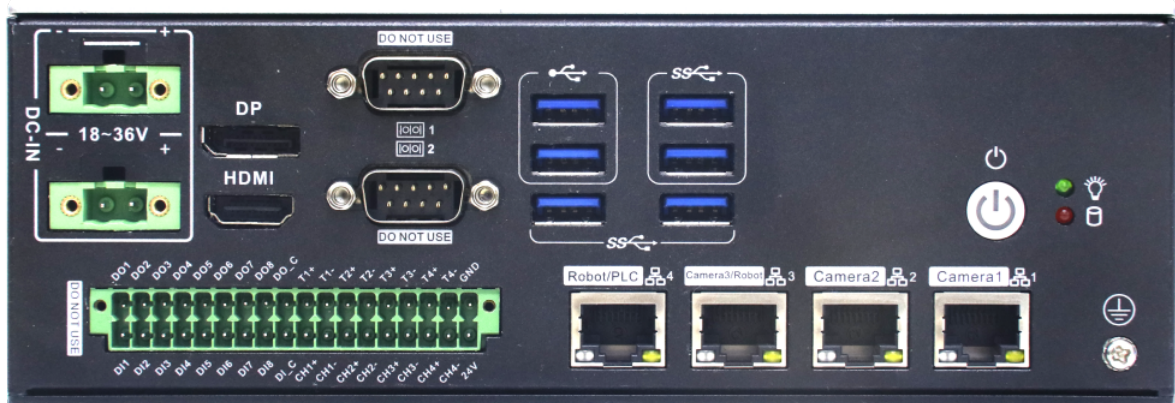
**Mech-Mind IPC STD (2022)
User Manual**

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Preface

This user manual applies to the industrial PCs (IPCs) of the Mech-Mind IPC STD (2022) model.



The IPCs of the Mech-Mind IPC STD model can be purchased with the following order numbers:

- IPCK-i5-16G-256G-EU
- IPCK-i5-16G-256G-JP
- IPCK-i5-16G-256G-US
- IPCK-i5-16G-256G-UK

1. Safety Instructions

- To ensure safe use, please do not use the product before reading this manual and becoming familiar with the correct usage. Improper use and maintenance may damage the product or cause other hazards. Mech-Mind shall not be liable for any injury or damage brought upon the user or any third party due to improper use and maintenance.
- Following the instructions and warnings in this manual can lower risks, but cannot eliminate all risks.
- Every step has been inspected during the drafting of this user manual. Please do not hesitate to contact Mech-Mind if you find any problems or mistakes in the manual.
- This product is to be mounted, connected, used and maintained by trained adults only. To ensure safe operation, the product should be transported, stored, mounted, connected, used and maintained properly.
- The precautions outlined in this section shall be strictly observed. Failure to follow these precautions may result in damage to the Mech-Mind IPC STD series.

1.1. General Safety Precautions

Follow the safety precautions outlined below:

- Make sure to follow these general principles.
- Make sure the power is turned off and the power cord is disconnected when moving, installing, or modifying the system.
- Do not apply voltage levels that exceed the specified voltage range. Doing so may cause a fire and/or electric shock.
- An electric shock may occur if the power is still on.
- Do not put any object down or insert any object into the vent.
- If a large amount of dust, water, or liquid enters the system, turn off the power immediately, unplug the power cord, and contact the system supplier.
- Do not drop the device on a hard surface.
- Do not use the device in locations where the ambient temperature exceeds the rated temperature.

2. Technical Specifications

Model	Mech-Mind IPC STD (2022)
Configuration	
CPU	Intel® Core i5-12400 2.5GHz (6 cores)
Chipset	Intel® H610
Memory	16 GB SO-DIMM DDR4 3200 MHz (up to 64 GB)
GPU card	No discrete graphics card
Storage	256 GB SSD
Operating system	Windows 10 IoT Enterprise LTSC 2021
Wireless network	1 x External WiFi antenna
Switches	1 x POWER switch
IO interfaces	
Network ports	4 x Intel® I211/I210AT GbE
USB ports	4 x USB 3.0
	2 x USB 2.0
Serial ports	2 x RS232/422/485
Digital IO	36-pin DIO
Display interfaces	1 x HDMI (up to 4096 x 2160 @ 60Hz)
	1 x DP (up to 7680 x 4320 @ 60Hz)
Mechanical features	
Dimensions (W x D x H)	200 mm x 164 mm x 69 mm
Weight (net/gross)	3.0 kg/4.4 kg
Electronics	
Power supply	Adapter AC input: 100-240 V, 2.34 A, 50-60 Hz
	Adapter DC output: 24 V, 7.5 A, 180 W
Rated output power	180 W
Environmental	
Operating environment	Operating temperature: -20°C to 50°C; humidity: 10% to 95%; non-condensing
Storage environment	Storage temperature: -40°C to 85°C; humidity: 10% to 95%; non-condensing
Safety & Certification	
Certification	Rohs/FCC/CE/VCCI

Model	Mech-Mind IPC STD (2022)
Warranty	
Warranty period	One year

NOTE | For more information about certification, please contact Mech-Mind Technical Support.

3. Product Overview

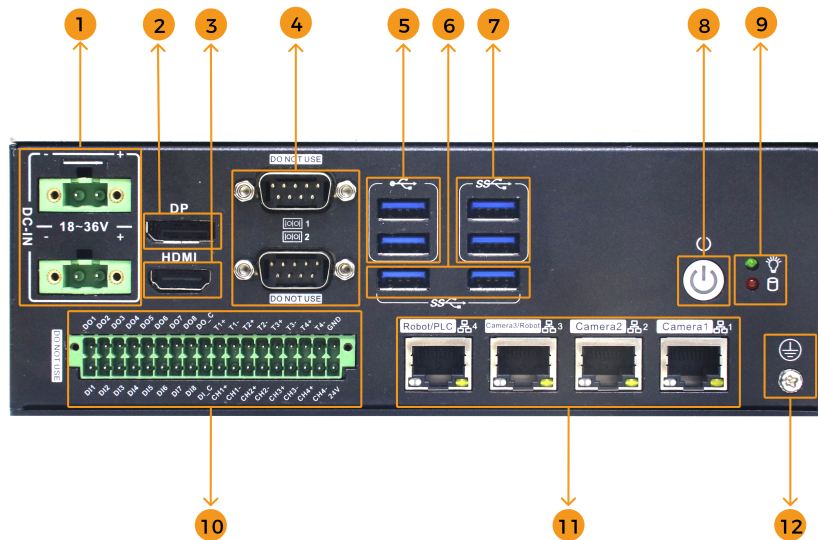
3.1. Overview

The Mech-Mind IPC STD series is a system for harsh industrial environments, powered by a 12th-generation Intel Core processor, Intel H610 chipset, and has dual-260-pin DDR4 SDRAM SODIMM slots that support up to 64 GB memory (16 GB preloaded). The Mech-Mind IPC STD series provides IO interfaces including a digital I/O port, an HDMI port, a DP port, four GbE LANs, four USB 3.0 ports, two USB 2.0 ports, two RS-232/422/485 connectors.

3.2. Product Views

3.2.1. Front View

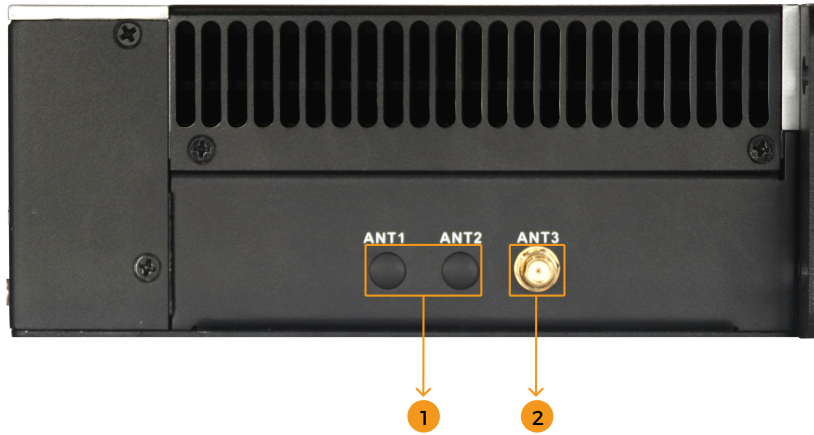
The following figure shows the front panel of the Mech-Mind IPC STD series and the interfaces on it.



No.	Description	No.	Description
1	DC power connector, 18-36 V	2	DP port
3	HDMI port	4	DB9 serial ports (1 and 2), supporting RS232/422/485
5	2 x USB 2.0	6	2 x USB 3.0
7	2 x USB 3.0	8	POWER button (switch)
9	HDD/Power LEDs	10	DIO&Light source terminals
11	4 x RJ45 GbE (CAMERA 1, CAMERA 2, CAMERA 3/ROBOT, ROBOT/PLC)	12	Ground point

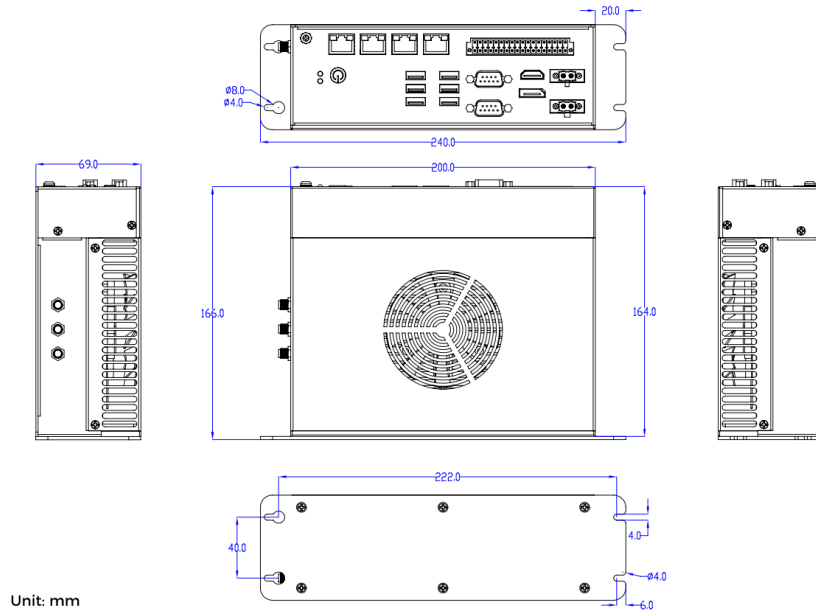
3.2.2. Side View

The following figure shows the side panel of the Mech-Mind IPC STD series and the interfaces on it.



No.	Description	No.	Description
1	2 x Reserved WiFi antenna holes	2	WiFi antenna hole

3.3. Mechanical Dimensions & Mounting Holes






4. Installation

4.1. Unpacking Checklist

NOTE | If some of the components listed in the checklist below are missing, please do not proceed with the installation and contact Mech-Mind Technical Support.

The Mech-Mind IPC STD series is shipped with the following components:

No.	Item	Quantity	Schematic diagram
1	Mech-Mind IPC STD	1	
2	Power adapter	1	
3	External WiFi antenna	1	

4.2. Installation Precautions

Before installing the Mech-Mind IPC STD series, please pay attention to the following precautions:

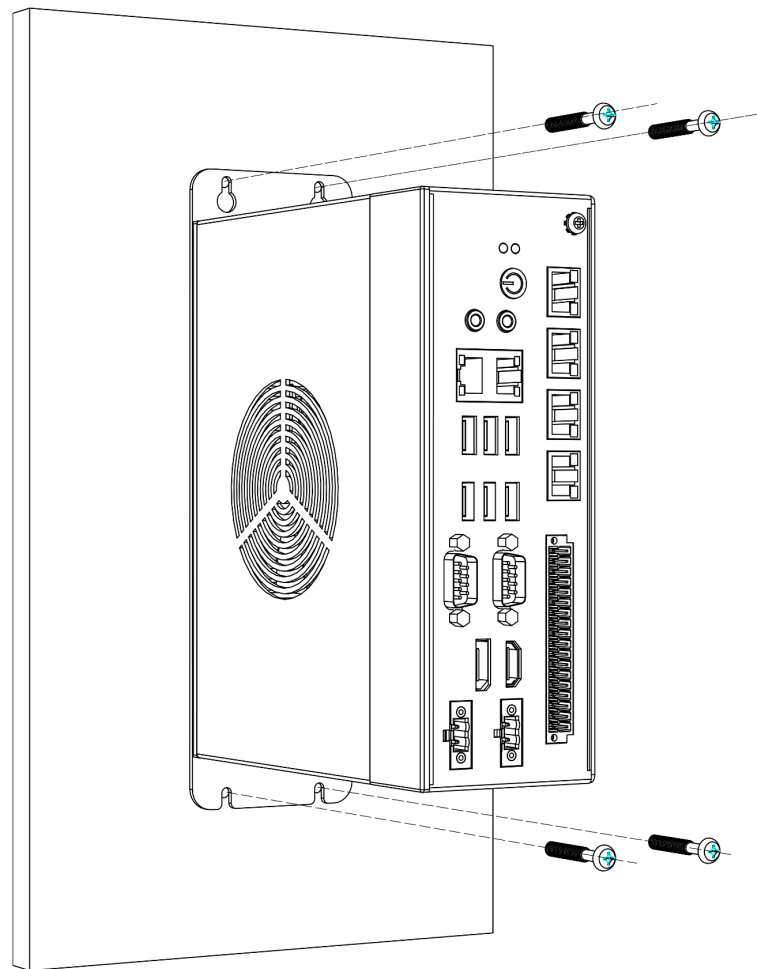
- **Read the user manual:** The user manual provides a complete description of the Mech-Mind IPC STD series, installation instructions and configuration options.
- **DANGER! Disconnect power:** Power to the Mech-Mind IPC STD series must be disconnected during the installation process, or before any attempt is made to access the rear panel. Electric shock and personal injury might occur if the rear panel of the Mech-Mind IPC STD series is opened while the power cord is still connected to an electrical outlet.
- **Qualified personnel:** The Mech-Mind IPC STD series must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may only be carried out by qualified personnel who are familiar with the associated dangers.
- **Air circulation:** Make sure there is sufficient air circulation when installing the Mech-Mind IPC STD series. The Mech-Mind IPC STD series' cooling vents must not be obstructed by any objects. Leave at least 5 cm of clearance around the Mech-Mind IPC STD series to prevent overheating.

- **Grounding:** The Mech-Mind IPC STD series should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the panel of the Mech-Mind IPC STD series.

4.3. Mount the System on the Wall

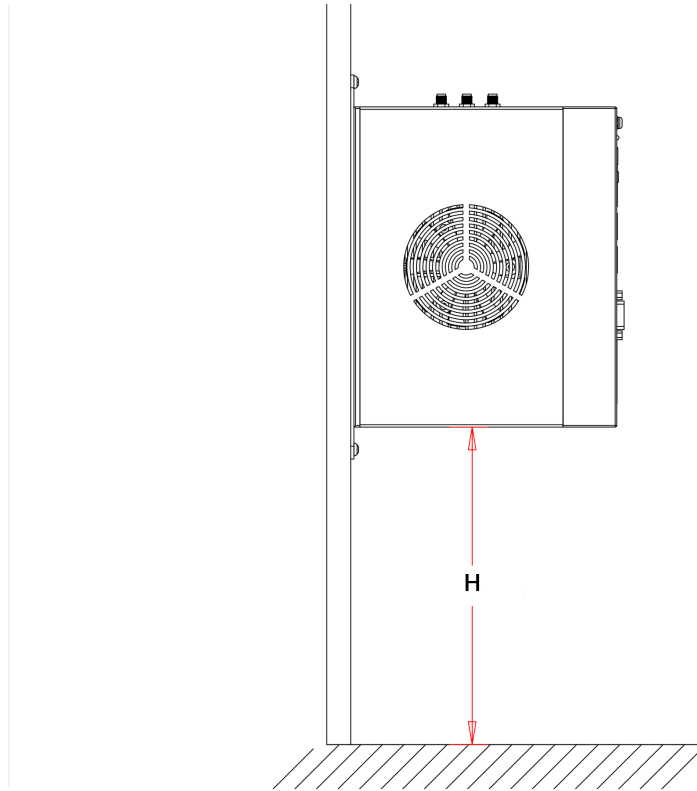
To mount the system onto a wall, please follow the steps below.

1. Drill holes in the intended mounting surface.
2. Turn the system over and align the mounting holes on both sides of the mounting bracket with the holes drilled in the intended mounting surface.
3. Secure the system to the target mounting surface by inserting and tightening four M3.5/M4 mounting bolts.



IMPORTANT

1. Please ensure that the strength of the wall is enough to support the weight of the IPC.
2. Please ensure that the installation depth of the four bolts is more than 35 mm.
3. Please ensure that the installation height (H) of the IPC is equal to or less than 1 m.



4.4. Install the External WiFi Antenna

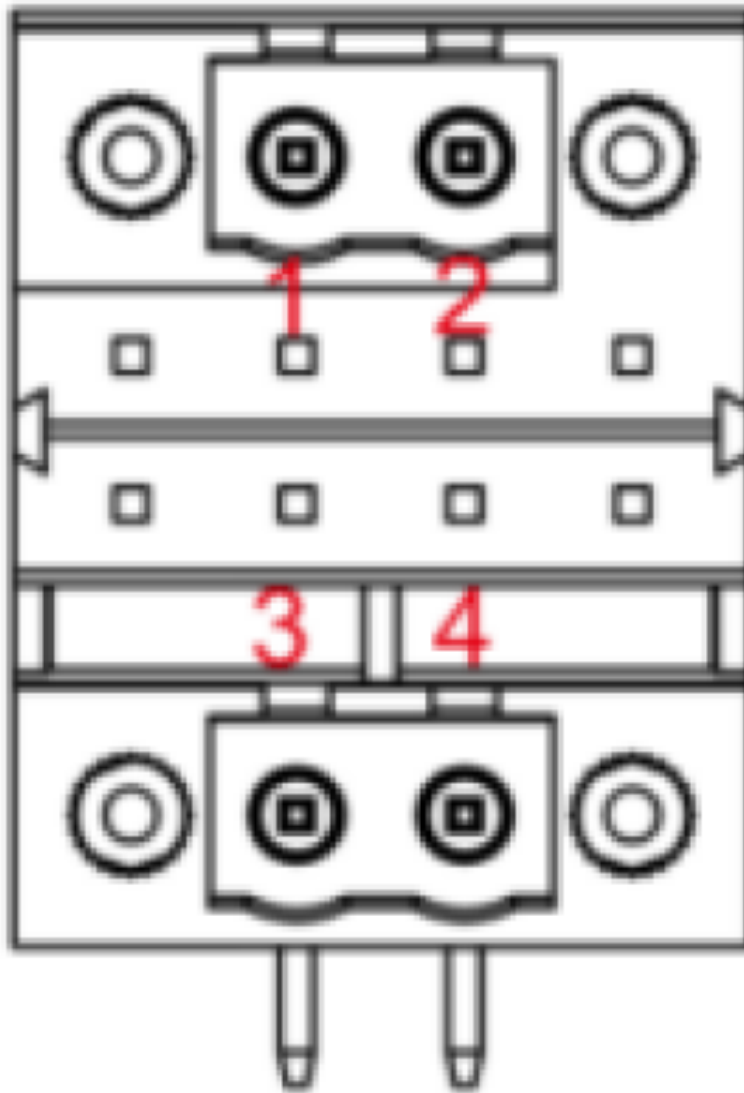
To install the external WiFi antenna, follow these steps:

1. Find the external WiFi antenna in the package and unscrew it.
2. Insert the external WiFi antennas into the antenna connector on the side panel.
3. Screw the WiFi antenna to the antenna hole.

5. External Interface Description

5.1. Power Connector

The front panel provides the DC power connector that should be connected to an 18–36 V DC power adaptor.



Pin No.	Description	Pin No.	Description
1	V-	2	V+
3	V-	4	V+

The power LED indicator indicates the status of the power.

Power LED indicator	Description
Off	No power supply

Power LED indicator	Description
Solid green	Power-on mode

When connecting the power adapter to the power connector, pay attention to the following notes:

- Ensure that the AC voltage source connected to the power adapter meets the input parameters (100–240 V).
- Ensure that the DC voltage output of the power adapter matches the power input of the IPC.
- When using the power adapter, first connect the AC line to the adapter, then plug the green DC terminals of the power lead into the IPC, and finally plug the AC power lead into an AC electrical outlet and switch on the electrical outlet.
- Do not place the power adapter in an overheating environment. Otherwise, its service life will be reduced.

5.2. Ethernet Ports

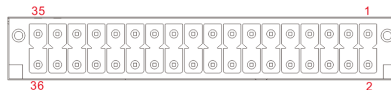
The Ethernet ports allow the IPC to connect to an external network.

To connect the IPC to an external network, follow these steps:

1. Locate the Ethernet ports on the IPC.
2. Align the RJ-45 connector on the Ethernet cable with one of the Ethernet ports.
3. Insert the RJ-45 connector on the Ethernet cable into the Ethernet port.



5.3. Composite IO Interface



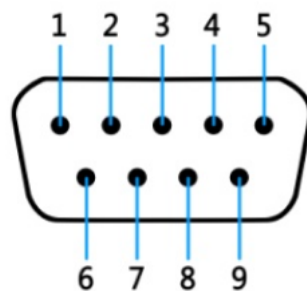
The pinouts for the composite IO connector are listed in the table below.

Pin No.	Signal	Description	Pin No.	Signal	Description
1	GND	External light source GND	2	24 V	External light source power 24 V
3	T4-	Trigger cathode outside light source channel 4	4	CH4-	Power supply cathode of light source channel 4
5	T4+	Trigger positive pole outside light source channel 4	6	CH4+	Power supply positive pole of light source channel 4

Pin No.	Signal	Description	Pin No.	Signal	Description
7	T3-	Trigger cathode outside light source channel 3	8	CH3-	Power supply cathode of light source channel 3
9	T3+	Trigger positive pole outside light source channel 3	10	CH3+	Power supply positive pole of light source channel 3
11	T2-	Trigger cathode outside light source channel 2	12	CH2-	Power supply cathode of light source channel 2
13	T2+	Trigger positive pole outside light source channel 2	14	CH2+	Power supply positive pole of light source channel 2
15	T1-	Trigger cathode outside light source channel 1	16	CH1-	Power supply cathode of light source channel 1
17	T1+	Trigger positive pole outside light source channel 1	18	CH1+	Power supply positive pole of light source channel 1
19	DOC	Digital output common terminal	20	DIC	Digital input common terminal
21	DO8	Digital output port 8	22	DI8	Digital input port 8
23	DO7	Digital output port 7	24	DI7	Digital input port 7
25	DO6	Digital output port 6	26	DI6	Digital input port 6
27	DO5	Digital output port 5	28	DI5	Digital input port 5
29	DO4	Digital output port 4	30	DI4	Digital input port 4
31	DO3	Digital output port 3	32	DI3	Digital input port 3
33	DO2	Digital output port 2	34	DI2	Digital input port 2
35	DO1	Digital output port 1	36	DI1	Digital input port 1

5.4. DB-9 RS-232/422/485 Serial Port Connector

The following figure shows RS-232/422/485 (1 and 2) connector pins.



Pin No.	RS232	RS422	RS485
1	DCD	TX-	D-
2	SIN	TX+	D+
3	SOUT	RX+	
4	DTR	RX-	

Pin No.	RS232	RS422	RS485
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

6. Maintenance and Cleaning

When maintaining or cleaning the Mech-Mind IPC STD series, please follow the guidelines below.

6.1. Cleaning Precautions

Prior to cleaning any part or component of the Mech-Mind IPC STD series, please read the details below.

- The interior of the Mech-Mind IPC STD series does not require cleaning. Keep fluids away from the Mech-Mind IPC STD series interior.
- Be cautious of all small removable components when vacuuming the Mech-Mind IPC STD series.
- Turn the Mech-Mind IPC STD series off before cleaning the Mech-Mind IPC STD series.
- Never drop any objects or liquids through the openings of the Mech-Mind IPC STD series.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the Mech-Mind IPC STD series.
- Avoid eating, drinking and smoking within the vicinity of the Mech-Mind IPC STD series.

6.2. Cleaning Tools

Some components in the Mech-Mind IPC STD series may only be cleaned using a product specifically designed for the purpose. In such cases, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the Mech-Mind IPC STD series.

- Cloth - Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the Mech-Mind IPC STD series.
- Water or rubbing alcohol - A cloth moistened with water or rubbing alcohol can be used to clean the Mech-Mind IPC STD series.
- Using solvents - The use of solvents is not recommended when cleaning the Mech-Mind IPC STD series as they may damage the plastic parts.
- Vacuum cleaner - Using a vacuum cleaner specifically designed for computers is one of the best methods of cleaning the Mech-Mind IPC STD series. Dust and dirt can restrict the airflow in the Mech-Mind IPC STD series and cause its circuitry to corrode.
- Cotton swabs - Cotton swabs 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.

7. Troubleshooting

Symptom	Solution
Blue screen appeared frequently on IPC	<p>Please follow the steps below to re-install the operating system.</p> <ol style="list-style-type: none"> 1. Please go to “Production Interface → Maintenance → Backup management”, create a backup of the current solution, and copy it to your storage medium. 2. Re-install the operating system. 3. Restore the software and project with the backup file.
Insufficient space on the IPC	<ol style="list-style-type: none"> 1. Check the current space (e.g., C drive and D drive) on your computer, and clear the unneeded files regularly. 2. Set the disk space monitoring rules in the “Production interface configurator”. (Skip this step if you have already set the hard disk space monitoring rule.) When there is not enough disk space, alert messages will appear in the status panel of the production interface.

8. Obtain Support

If you need technical support, please contact Mech-Mind Technical Support in any of the following means:

- Email: service@mech-mind.net
- Community: [Mech-Mind Online Community](#)