



Mech-Mind IPC ADV User Manual

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Preface

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



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

- IPCW-i5-16G-512G-1660S-EU
- IPCW-i5-16G-512G-1660S-US
- IPCW-i5-16G-512G-1660S-UK
- IPCW-i5-16G-512G-1660S-JP
- IPCW-i5-16G-512G-1660S-KR

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 ADV 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 ADV
Configuration	
CPU	Intel Core i5-12400 2.5GHz (6 cores)
Chipset	Intel® H610
Memory	16 GB SO-DIMM DDR4 3200MHz (supports up to 64 GB)
GPU card	GeForce® GTX 1660S
Storage	512 GB SSD
Operating system	Windows 10 IoT Enterprise LTSC 2021
Wireless network	NA
Switches	1 x POWER switch
	1 x RESET switch
External interfaces	
Network ports	1 x Intel® I219 LM GbE controller (LAN1)
	1 x Intel® I225V 2.5 GbE controller (LAN2)
USB ports	2 x USB 3.2 GEN1
	2 x USB 3.2 GEN2
	4 x USB 2.0
Serial ports	2 x RS232/422/485
Digital IO	NA
Display interfaces	1 x HDMI (up to 4096 x 2304 @ 30Hz)
	1 x DP (up to 4096 x 2304 @ 60Hz)
Mechanical features	
Dimensions	484 mm x 435.5 mm x 176 mm
Weight (net/gross)	13.2 kg/17.1 kg
Electronics	
Power supply	AC Input: 100-240 V AC, 5-10 A, 50-60 Hz (ErP/EuP compliant)
Rated output power	500 W
Environmental	
Operating environment	Operating temperature: -10°C to 60°C; humidity: 5% to 95%; non-condensing

Model	Mech-Mind IPC ADV
Storage environment	Operating temperature: -30°C to 70°C; humidity: 5% to 95%; non-condensing
Safety & Certification	
Certification	CE/FCC/VCCI/KC/NRTL
Warranty	
Warranty period	One year

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

3. Product Overview

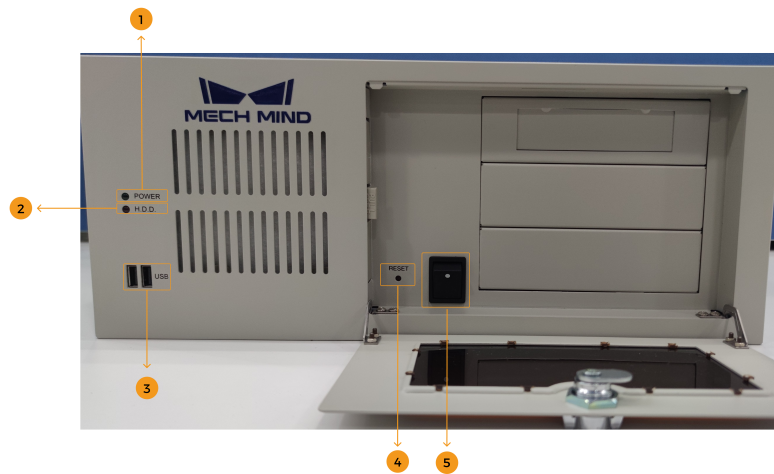
3.1. Overview

The Mech-Mind IPC ADV series is powered by a 12th-generation Intel Core processor and H610 chipset. The system is bundled with 16 GB DDR4 3200MHz memory, 512 GB SSD HDD storage, and GeForce® GTX 1660S GPU card, and supports operating in -10°C to 60°C.

3.2. Product Views

3.2.1. Front View

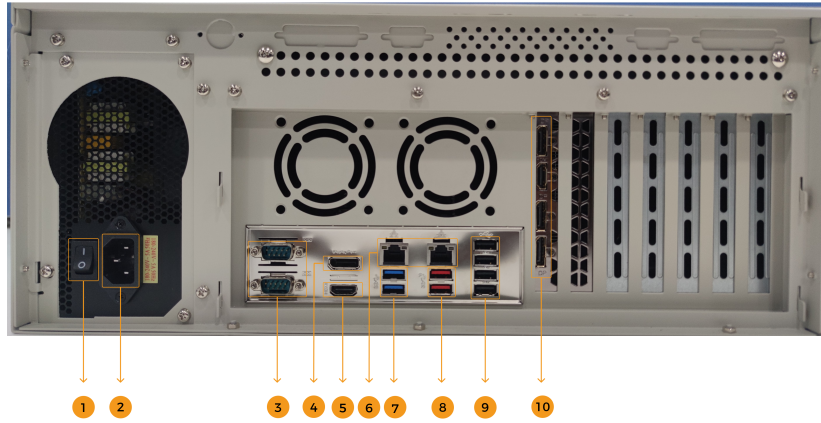
The following figure shows the front panel of the Mech-Mind IPC ADV series and the interfaces on it.



No.	Description	No.	Description
1	POWER LED	2	HDD LED
3	2 x USB ports	4	RESET button (switch)
5	POWER switch		

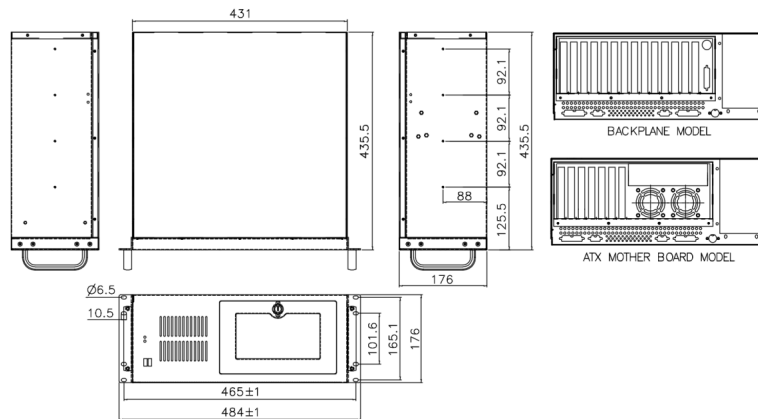
3.2.2. Rear View

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



No.	Description	No.	Description
1	POWER switch	2	Power connector
3	2 x RS232/422/485	4	1 x DP port
5	1 x HDMI port	6	1 x Intel I219LM GbE, 1 x Intel I225v 2.5 GbE
7	2 x USB 3.2 GEN1	8	2 x USB 3.2 GEN2
9	4 x USB 2.0	10	1 x iDPM slot

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 ADV series is shipped with the following components:

No.	Item	Quantity	Schematic diagram
1	Mech-Mind IPC ADV	1	
2	Handler	2	
3	Power cord (EU/US standard)	1	
4	Handler mounting screw	8	

No.	Item	Quantity	Schematic diagram
5	Rail mounting screw	8	

4.2. Installation Precautions

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

- **Read the user manual:** The user manual provides a complete description of the Mech-Mind IPC ADV series, installation instructions and configuration options.
- **DANGER! Disconnect power:** Power to the Mech-Mind IPC ADV 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 ADV series is opened while the power cord is still connected to an electrical outlet.
- **Qualified personnel:** The Mech-Mind IPC ADV 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 ADV series. The Mech-Mind IPC ADV series' cooling vents must not be obstructed by any objects. Leave at least 5 cm of clearance around the Mech-Mind IPC ADV series to prevent overheating.
- **Grounding:** The Mech-Mind IPC ADV 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 ADV series.

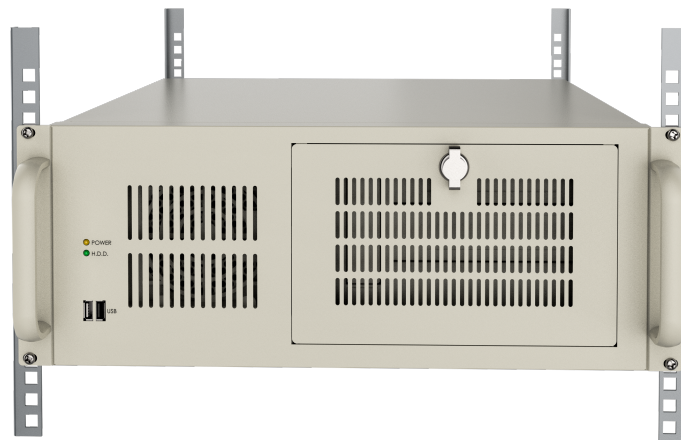
4.3. Mount the System with the Handlers

To mount the system onto a rack using the two handlers, please follow the steps below.

1. Align the mounting holes in the handlers with the corresponding retention screw holes on the side surface of the case.
2. Secure the handlers to the system by inserting retention screws into each handler.



3. Align the mounting holes in the front of the handlers with the mounting holes on a rack.
4. Use eight screws to secure the system to the rack.



5. External Interface Description

5.1. Power Connector

There is one power connector on the rear panel. The power connector is a 3-pin terminal that can directly connect to a power supply through the power cord. The supported power input voltages are 100 V to 240 V.



The power LED indicator on the front panel indicates the status of the power.

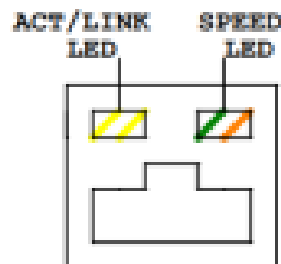
Power LED indicator	Description
Off	No power supply
Solid green	Power-on mode

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.



Each Ethernet port on the IPC has two status light-emitting diodes (LEDs), one green and one yellow. The yellow LED indicates the link status or the activity of the port and the green LED indicates the connection speed of the port.

The following table shows the LED status of the I225V 2.5 GbE Ethernet port.

LED	Status	Description
Activity/Link LED (yellow)	Off	No link
	Yellow	Linked
	Blinking	Data is being sent/received
Speed LED (green)	Off	100 Mbps connection
	Orange	1 Gbps connection
	Green	2.5 Gbps connection

The following table shows the LED status of the I219LM GbE Ethernet port.

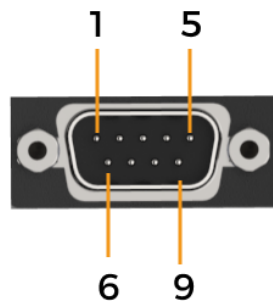
LED	Status	Description
Activity/Link LED (yellow)	Off	No link
	Yellow	Linked
	Blinking	Data is being sent/received
Speed LED (green)	Off	10 Mbps connection
	Orange	100 Mbps connection
	Green	1 Gbps connection

5.3. Digital I/O Connector

No digital I/O connectors are provided.

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

The following figure shows the RS-232/422/485 connector pins.



Pin No.	RS232	RS422	RS485
1	DCD	TXD422-	TXD485-

Pin No.	RS232	RS422	RS485
2	RXD	TXD422+	TXD485+
3	TXD	RXD422+	
4	DTR	RXD422-	
5	GND		
6	DSR		
7	RTS		
8	CTS		
9	RI		

6. Maintenance and Cleaning

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

6.1. Cleaning Precautions

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

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

6.2. Cleaning Tools

Some components in the Mech-Mind IPC ADV 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 ADV series.

- Cloth - Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the Mech-Mind IPC ADV series.
- Water or rubbing alcohol - A cloth moistened with water or rubbing alcohol can be used to clean the Mech-Mind IPC ADV series.
- Using solvents - The use of solvents is not recommended when cleaning the Mech-Mind IPC ADV 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 ADV series. Dust and dirt can restrict the airflow in the Mech-Mind IPC ADV 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](#)

Appendix A: Error Beep Codes During Start

A.1. PEI Beep Codes

Number of Beeps	Description
4	Memory not Installed.
1	Memory was installed twice. (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started.
3	DXEIPL was not found.
3	DXE Core Firmware Volume was not found.
4	Recovery failed.
4	S3 Resume failed.
7	Reset PPI is not available.

A.2. DXE Beep Codes

Number of Beeps	Description
1	Invalid password.
4	Some of the Architectural Protocols are not available.
5	No Console Output Devices are found.
5	No Console Input Devices are found.
6	Flash update failed.
7	Reset protocol is not available.
8	Platform PCI resource requirements cannot be met.

Appendix B: Hazardous Material Disclosure

The details provided in this appendix are to ensure that the product is compliant with the RoHS II Directive (2015/863/EU). The table below acknowledges the presence of small quantities of certain substances in the product and applies to RoHS II Directive (2015/863/EU).

Please refer to the following table.

Part Name	Toxic or Hazardous Substances and Elements									
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)	Bis(2-ethylhexyl) phthalate (DEHP)	Butyl benzyl phthalate (BBP)	Dibutyl phthalate (DBP)	Diisobutyl phthalate (DIBP)
Housing	O	O	O	O	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O	O	O	O	O
Battery	O	O	O	O	O	O	O	O	O	O
O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in Directive (EU) 2015/863. X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in Directive (EU) 2015/863.										