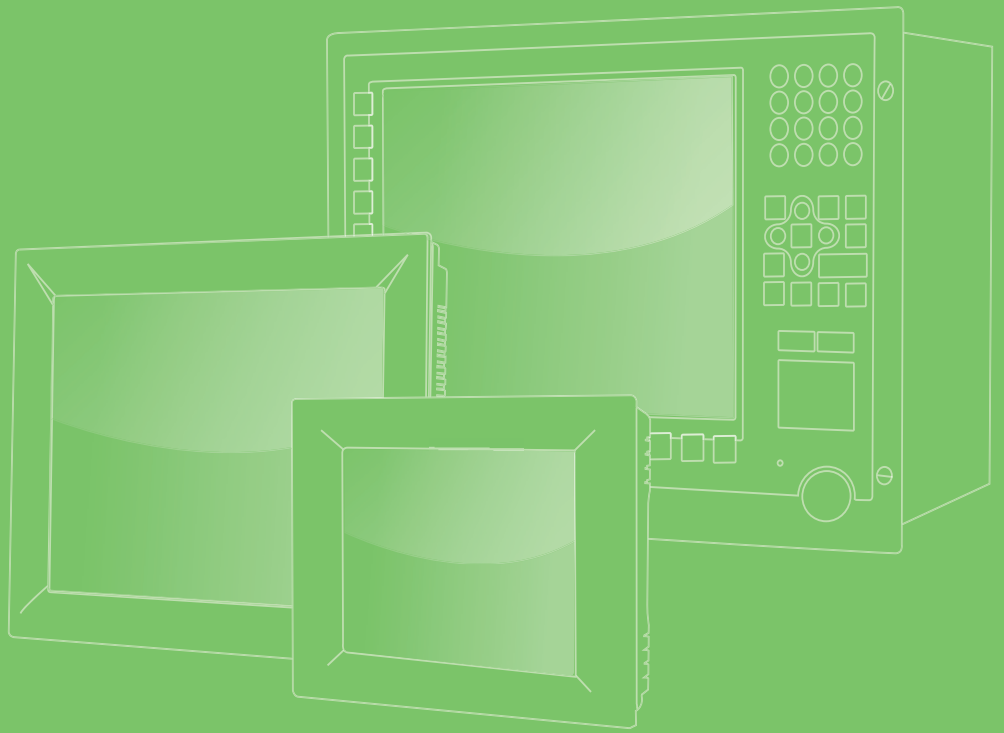


User Manual



PPC-IPS-100/150

Intelligent Power System for PCs

ADVANTECH

Enabling an Intelligent Planet

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Advantech warrants the original purchaser that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product to be defective, follow the steps outlined below.

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages displayed when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and a proof of purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This type of cable is available from Advantech. Contact your local supplier for ordering information.

Test conditions for passing also include the equipment being operated within an industrial enclosure. In order to protect the product from damage due to electrostatic discharge (ESD) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. In this event, users are required to correct the interference at their own expense.

Technical Support and Assistance

1. Visit the Advantech website at www.advantech.com/support to obtain the latest product information.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before calling:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
8. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
12. Never pour liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If any of the following occurs, have the equipment checked by qualified service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated the equipment.
 - The equipment has been exposed to moisture.
 - The equipment is malfunctioning, or does not operate according to the user manual.
 - The equipment has been dropped and damaged.
 - The equipment shows obvious signs of breakage.
15. Do not leave the equipment in an environment with a storage temperature of below -20°C (-4°F) or above 50°C (122°F) as this may damage the components. The equipment should be kept in a controlled environment.
16. CAUTION: Batteries are at risk of exploding if incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
17. ATTENTION: Danger d'explosion si la batterie est inexactement remplacée. Remplacez seulement avec la même chose ou le type équivalent recommandé par le fabricant. Jettent les batteries utilisées instructions de s selon fabricant des.
18. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).
19. **이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.**
20. The power outlet socket should have a ground connection.

DISCLAIMER: These instructions are provided according to IEC 704-1 standards. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Safety Precautions - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from the PC chassis before manual handling. Do not touch any components on the CPU card or other cards while the PC is powered on.
- Disconnect the power before making any configuration changes. A sudden rush of power after connecting a jumper or installing a card may damage sensitive electronic components.

Battery Information

Batteries, battery packs, and accumulators should not be disposed of as unsorted household waste. Please use the public collection system to return, recycle, or treat them in compliance with local regulations.



- Do not replace the battery with a substandard battery of incorrect type (i.e., some lithium battery types). (用不合格的電池替換可能會破壞安全的電池)
- Do not attempt to dispose of the battery by throwing it into a fire or hot oven, or by crushing or cutting it open as this can cause an explosion. (將電池投入火中或熱烤箱中，或將其機械破碎或切割，可能導致爆炸)
- Leaving the battery in environments with extremely high temperatures can cause an explosion or leakage of flammable liquid or gas. (將電池放置在極端高溫的環境中，可能導致爆炸或易燃液體或氣體洩漏)

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Chapter 1

General Information

- Introduction
- Specifications
- Dimensions

1.1 Introduction

This lightweight and intelligent power management module protects a Panel PC from electrical damage and greatly reduces the risk of losing data. The IPS module serves as temporary power supply during a break in power and allows a safe system shut-down. It can be easily installed on DIN-rail or on the back of a Panel PC.

1.2 Specifications

Table 1.1: Specifications			
Item		PPC-IPS-150	PPC-IPS-100
Input	Input Voltage	24±20% V _{DC}	
	Operation with charging power consumption	≥150W	≥120W
Output	Output Voltage	24±10% V _{DC}	
	Output current	Type 5A (Max 6.25A for 3~5 secs)*	Type 3.75A (Max 4.17A for 3~5 secs)*
Battery	Type	Li-ion	
	Battery Capacity	14.4 V _{DC} , 6900mAh	14.4 V _{DC} , 2600mAh
	Cycle life	≥1000 cycles**	
Protection	Short-circuit protection	Yes	
Certification	EMC	CE, FCC, BSMI	CE, FCC
	Safety	UL, CB, BSMI	
Physical	Dimensions	196.9*157.5*42.7 mm	
	Weight	1.89kg(4.17lb)	2.09kg(4.61lb)
Environment	Operating Temperature	0 ~ 40 °C	
	Storage Temperature	Recommend:-20 ~ 25 °C *** Limit: -20 ~ 50 °C	
	Relative Humidity	95% @ 40 °C (non-condensing)	
	Shock Operating	10 G peak acceleration (11 ms duration), follow IEC 60068-2-27	
	Vibration	Operating Random Vibration Test 5 ~ 500Hz, 1Grms, follow IEC 60068-2-64	
I/O Connectors	I/O Connectors	PC RS-232 w/isolation for monitoring and setting IPS	PC RS-232 for monitoring and setting IPS

Note*: The charging time and backup time could be varied on different models or operating temperature.

Note**: A full charge cycle is defined as the process of discharge from 100% to 0% and then back to more than 80%, in an ambient temperature of 23°C ± 2°C.

Note***: If the battery is not used for an extended period, ensure it has a certain amount of charge before storage. Store the battery in a cool, dry place. Charge the battery once every six months to prevent deep discharge during prolonged storage.



- Avoid subjecting the battery to impacts, throwing, or exposing it to strong mechanical vibrations.
 - Do not Pierce the battery with sharp objects such as nails.
 - During use, keep the battery away from heat sources and high-voltage sources.
- If the battery exhibits unusual odors, heating, deformation, discoloration, or any other abnormal phenomena during use, please discontinue use immediately. Place the battery pack in a well-ventilated area and promptly contact us.

1.3 Dimensions

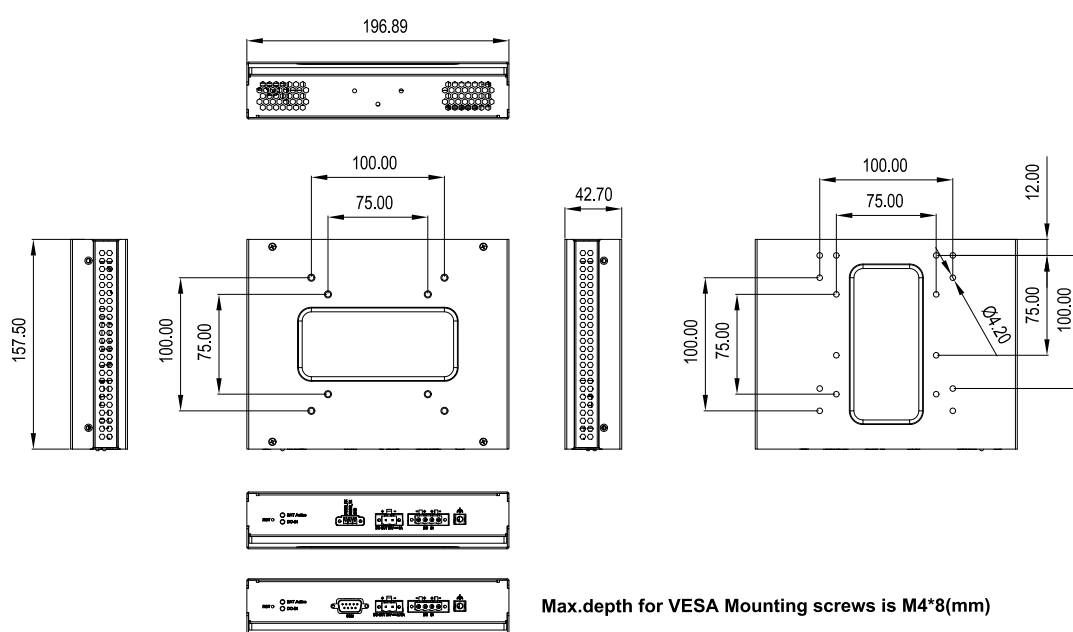


Figure 1.1 PPC-IPS with Baseboard

The VESA mount should be affixed using M4 screws at a maximum depth of 8 mm / 0.31 in.

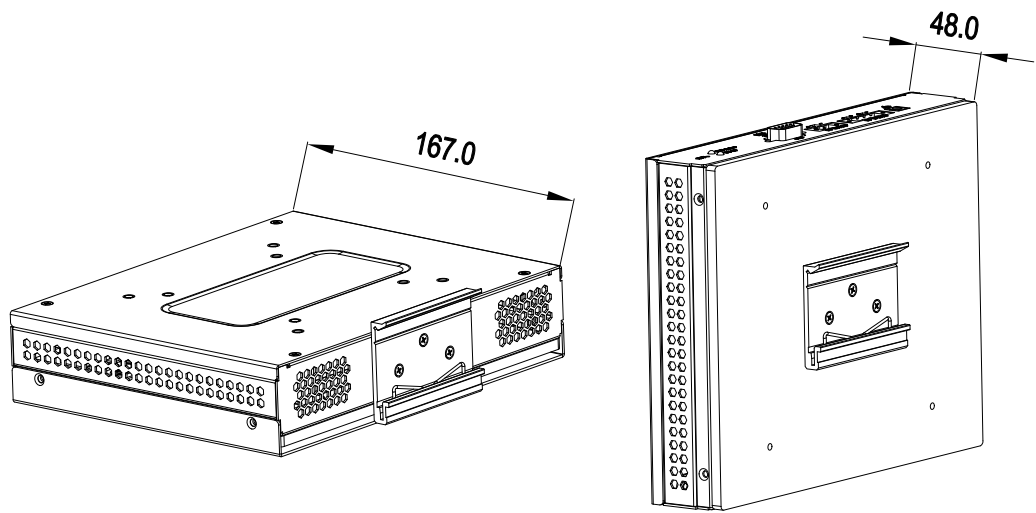


Figure 1.2 Installation via DIN-Rail Mount

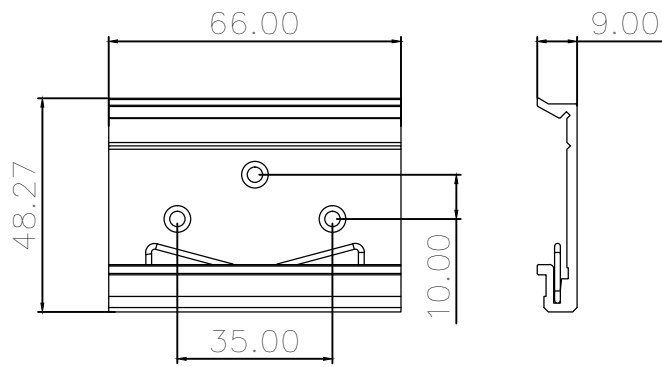


Figure 1.3 DIN-Rail Bracket Dimensions

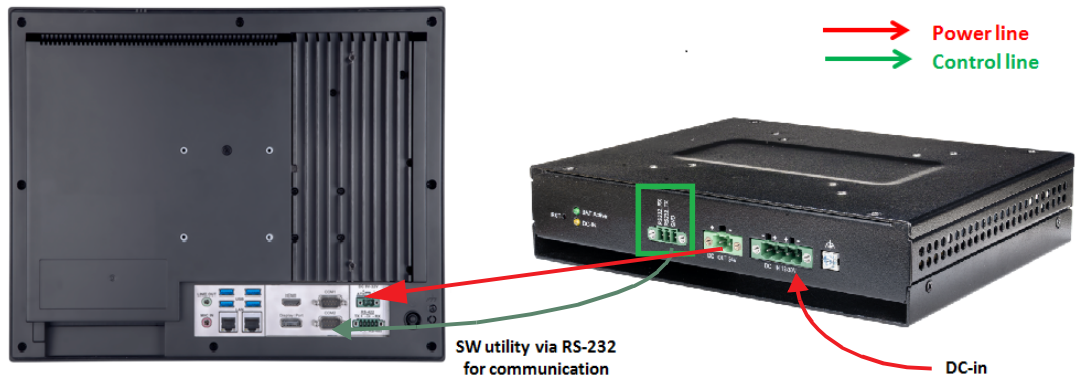
Chapter 2

Installation
Instructions

2.1 Introduction

The PPC-IPS module can serve as a temporary power source during power interruptions. This helps to delay system shutdowns, allowing work to be finished and reducing data losses. Once the shutdown delay interval has expired, the module sends a shutdown order to the PC.

Auto shut down through RS-232 by Software Utility



- ❑ PPC-IPS issues a command to shut down PPC after a delay when power outage
- ❑ The delay is set by SW utility, either from 5s to 360s or "Max" according to battery capacity

Installation procedures

- Plug RS-232 cable between PPC-IPS and PPC
- Install SW utility
- Set for timing and shut down mode (S4 or S5) by the SW utility

Advantage

- Able to set all ranges of timing
- Support "Max" mode *
- Status monitoring

2.2 Auto-Shutdown Modes

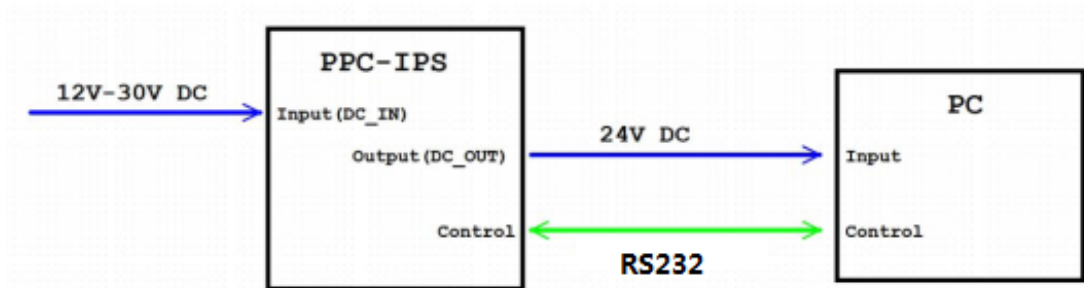
Table 2.1: Auto-Shutdown Modes

Installation Procedures	<ul style="list-style-type: none"> ■ Connect the PPC-IPS module to the PPC device using an RS-232 cable. ■ Install SW utility. ■ Configure the timing and shutdown mode (S4 or S5) settings in the SW utility (refer to Chapter 4.2). 				
Settings	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Time to shut down PC after power outage</td> <td>5~ 360 seconds (per second)</td> </tr> <tr> <td>Time to turn off IPS after shutdown command</td> <td>1~ 5 minutes (per minute)</td> </tr> </table>	Time to shut down PC after power outage	5~ 360 seconds (per second)	Time to turn off IPS after shutdown command	1~ 5 minutes (per minute)
Time to shut down PC after power outage	5~ 360 seconds (per second)				
Time to turn off IPS after shutdown command	1~ 5 minutes (per minute)				
Operating System	windows10, windows11, Linux				
Accessories	RS-232 cable				
Advantages	<ul style="list-style-type: none"> ■ Time ranges can be configured ■ Supports max. power mode* ■ Status monitoring 				

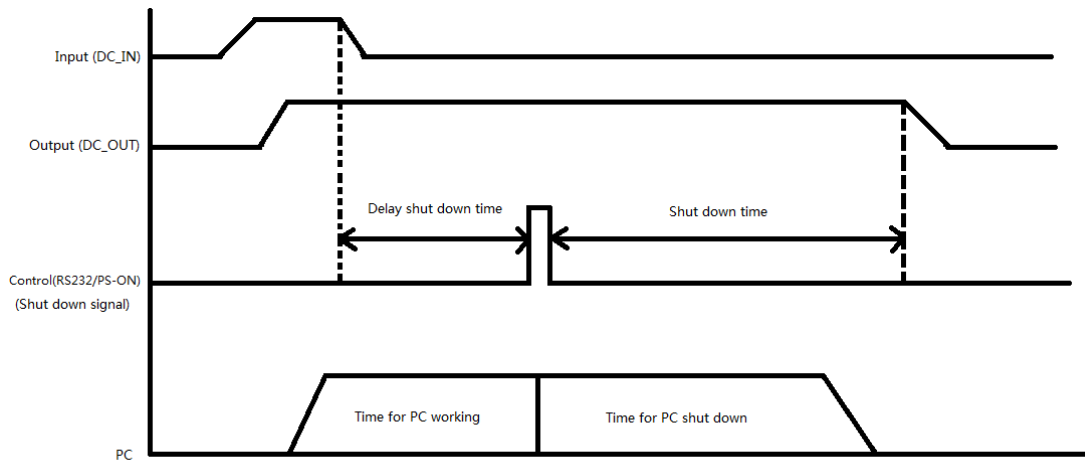
*In max. power mode, the PPC-IPS module optimizes power consumption to support a maximum length of time based on the remaining battery capacity.

RS-232 Mode

Connect the PPC-IPS module to the PC using the PPC-IPS control cable.



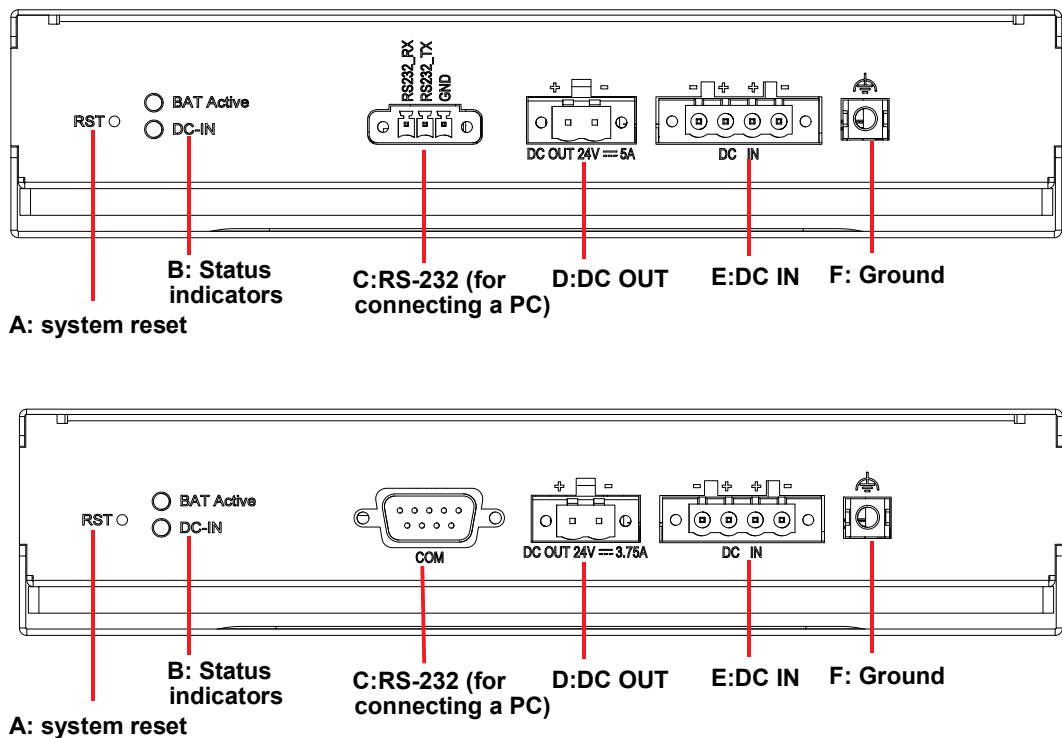
PPC-IPS Shutdown Signal Diagram



2.3 System I/O

Before installing the PPC-IPS power module, take a moment to familiarize yourself with the location and function of the various controls, connectors, and ports (as shown in the figures below).

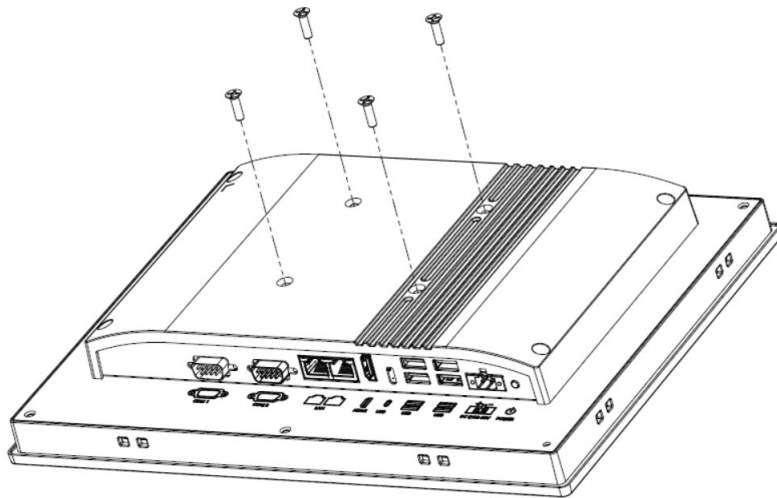
When placed upright, the PPC-IPS module will appear as shown in Figure 2.3.



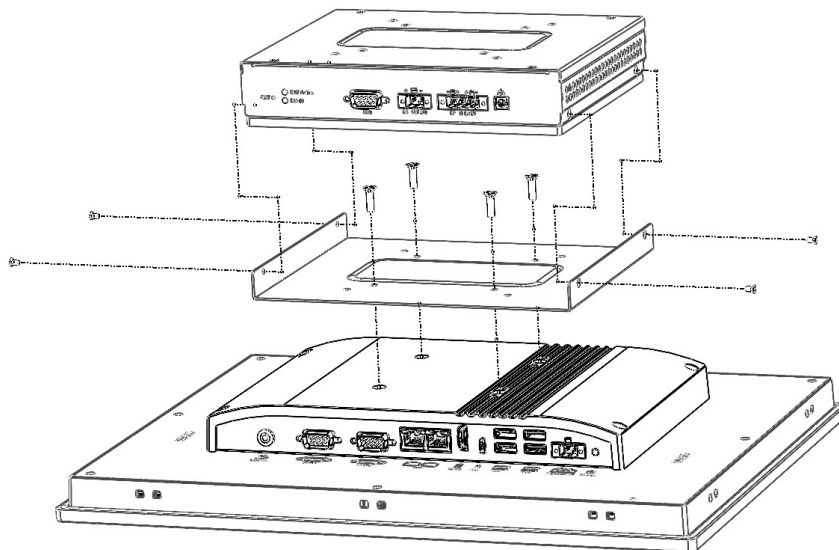
2.4 Installation Procedures

2.4.1 VESA Mount Installation

1. Remove the 4 VESA mount screws from the PPC.



2. Use the 4 screws to attach the PPC-IPS as in the following figure.

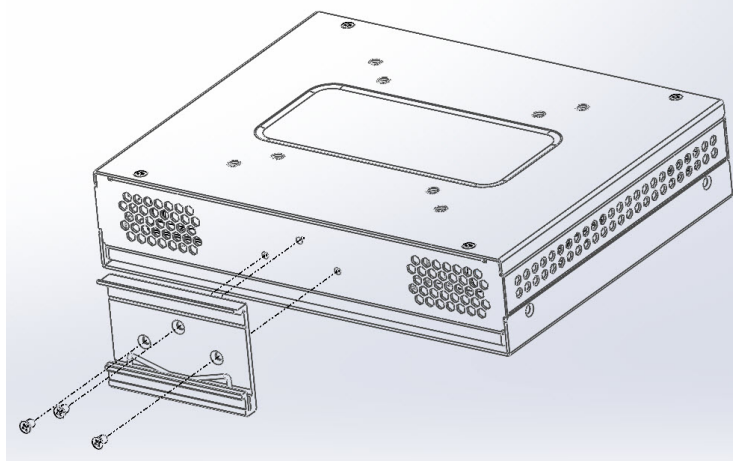


2.4.2 DIN-Rail Installation

The PPC-IPS module can also be installed via a DIN-rail.

Retrieve the DIN-rail bracket and screws from the accessory box, then attach the bracket to the PPC-IPS module as shown below.

Mode A



Mode B

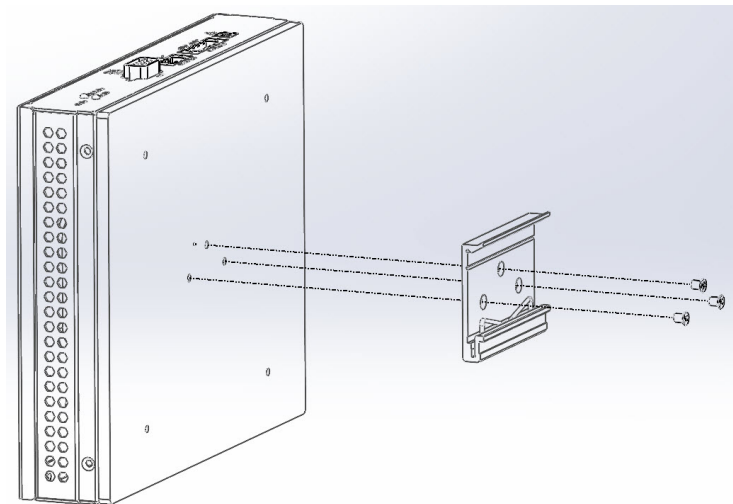


Figure 2.1 DIN-Rail Mounting

Note! *DIN-rail screw type: M3*
Maximum screw depth: 5 mm/0.19 in



After the DIN-rail bracket is secured to the PPC-IPS module, mount the bracket onto the DIN-rail as shown below.

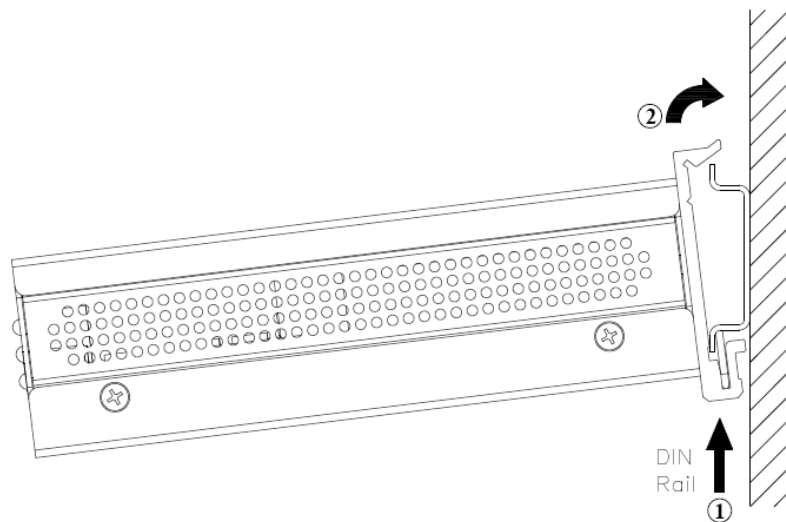
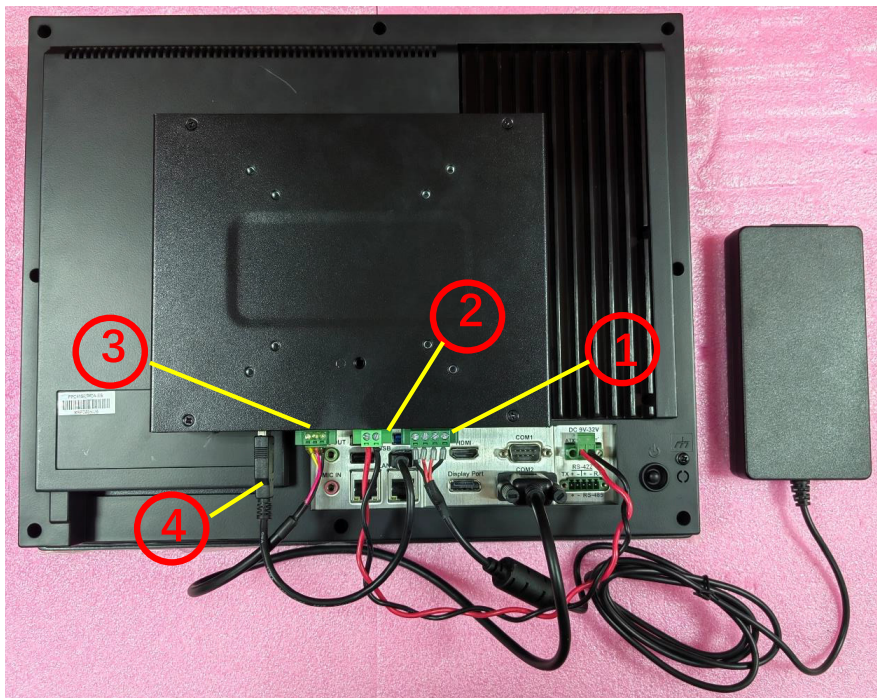


Figure 2.2 Mounting the DIN-Rail Bracket

2.4.3 Module Installation

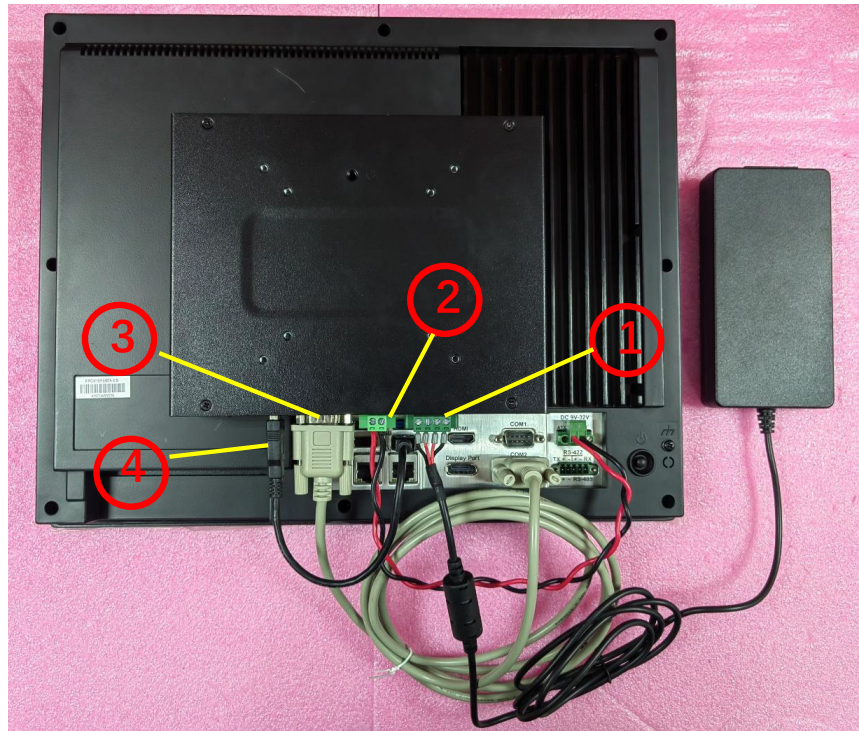
In the instructions provided below, a VESA mount is used as the demonstration example.

PPC-IPS-150



1. DC-IN cable
2. Power out cable
3. COM transmission cable
4. USB control cable (Linking for special application requirements)

PPC-IPS-100



1. DC-IN cable
2. Power out cable
3. COM transmission cable
4. USB control cable (Linking for special application requirements)

2.4.4 Replace the IPS Battery

1. Remove the affixing screws on the top cover of the PPC-IPS module (circled in red below).

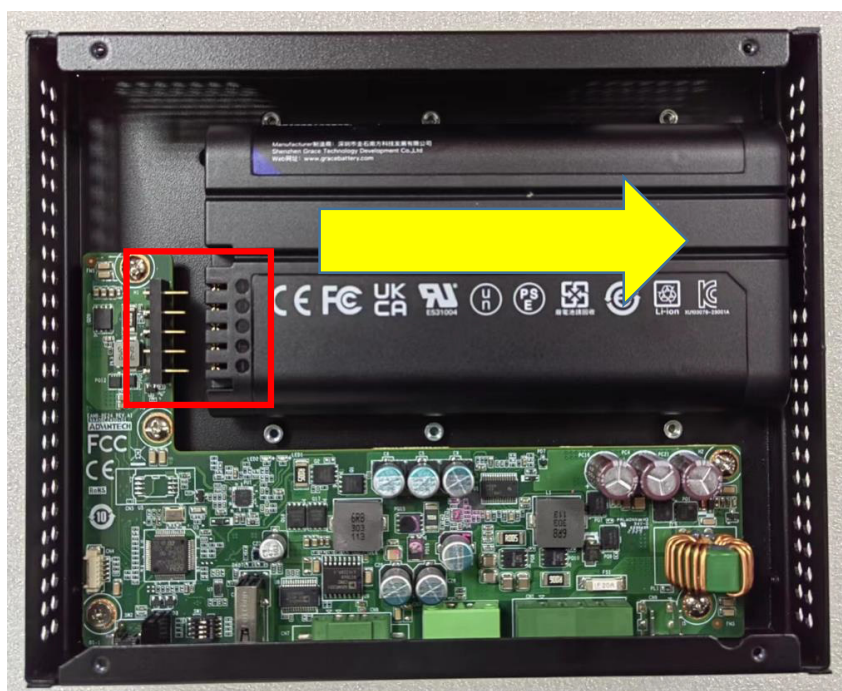


Figure 2.3 Top Cover Screw Locations

2. Open the top cover and remove the fixed bracket.



3. Push out the battery in the direction of the arrow and replace it with a new one. (Be sure to detach the battery from the battery connect completely before removing the battery)



4. Assemble the battery, battery bracket, and back cover according to the previous steps.

Chapter 3

IPS Settings

3.1 I/O Connector Specifications

Table 3.1: Status Indicator

	Bright	Dark	Blinking
BAT Active	Battery ready	No battery detected	Slow: Battery is slow charge Fast: Battery is cannot charge
DC-In	DC_IN ready	No DC_IN	PPC will shutdown

Table 3.2: Control Interface

PPC-IPS-150 PLUG-3		PPC-IPS-100 DB9	
1	RS-232_RX	1	
2	RS-232_TX	2	RS-232_RX
3	GND	3	RS-232_TX
		4	
		5	GND
		6	
		7	
		8	
		9	

PPC-IPS-150 interface: Phoenix connector, 3 pin, 3.5 mm pitch

PPC-IPS-100 interface: DB9

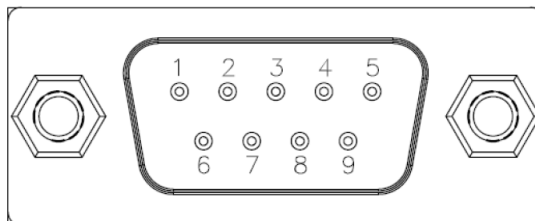


Table 3.3: DC Out

Pin	Name	Type	Description
1	DC-OUT(+)	Output	24V \pm 10% provide to PC
2	DC-OUT(-)	Output	

PPC-IPS interface: Phoenix connector, 2pin, 5.00 mm pitch

Table 3.4: DC In

Pin	Name	Type	Description
1	DC-OUT(-)	Input	24 \pm 20% V _{DC} provide to PPC-IPS
2	DC-OUT(+)	Input	
3	DC-OUT(+)	Input	
4	DC-OUT(-)	Input	

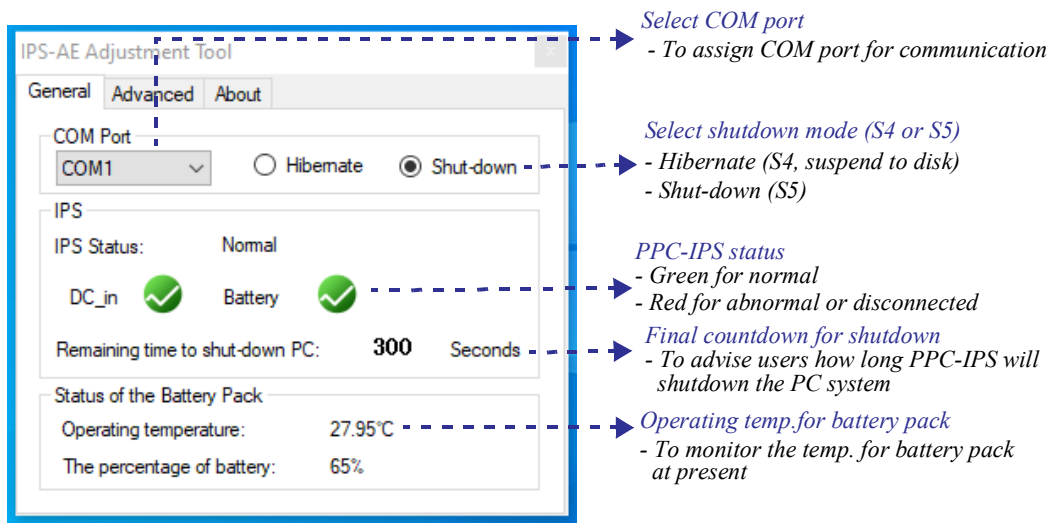
PPC-IPS interface: Phoenix connector, 4pin, 5.00 mm pitch

NOTE: DC-In must exceed DC-Out by 30W to ensure reliable battery charging. We recommend a power supply wattage of at least 150W.

Chapter 4

PPC-IPS Adjustment
Tool

4.1 UI Introduction - Basic




4.1.1 Select COM Port

Select the COM port to be connected to the PPC-IPS module.

4.1.2 Power State Selection (S4 or S5)

This option allows users to set the system power status as hibernation (S4) or shut-down (S5) when the PPC-IPS module is activated.

Note! *Hibernation (S4): All data/program status is saved in storage. Users can resume previous operations after the system awakens from S4.*

 *Shutdown (S5): The shutdown process can be paused in the event of an unfinished program task or unsaved data.*

4.1.3 Status Indicators

Status indicators provide a convenient way to determine the PPC-IPS module status/activity.

Green  indicates normal status and Red  indicates abnormal status.

DC-In: indicates whether the DC power source is active

Battery: indicates whether the battery is functioning normally

4.1.4 Final Countdown for Shutdown

The PPC-IPS module will shutdown/hibernate your device when the countdown time interval expires.

Note! *The interval can be set to between 5 and 360 seconds or the maximum battery supply time. Refer to Sections 4.3.1 and 4.3.2 for more information.*



Note! *If DC power is supplied to the PPC-IPS module before the countdown time expires, the system will stop counting and the countdown time will be reset automatically.*



4.1.5 Operating Temperature for the Battery Pack

This option allows you to configure the battery pack temperature.

Note! *The maximum operating temperature tolerated is 50 °C/122 °F.*

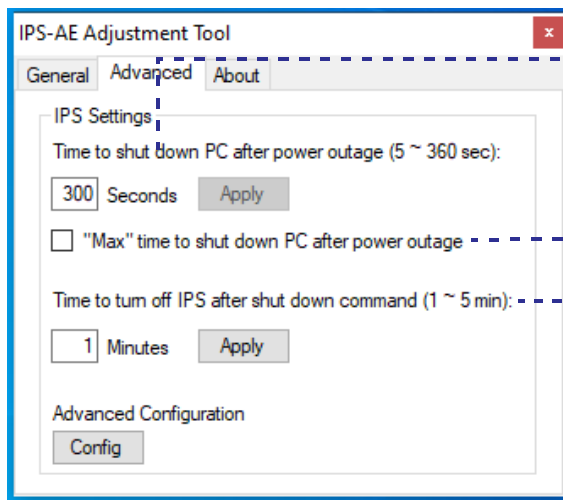


The operating temperature of battery pack:

charge: 0-50 °C

no charge: 0-60 °C

4.2 UI Introduction - Advanced



Time to shut-down PC after power outage
- To set the timing for turning off PC system
- Support full range from 5 to 360 seconds

"Max" to shutdown PC after power outage
- To set "Max" mode when this item is clicked
- The utility issues the shut-down command as long as the battery pack is able to sustain

Time to turn-off IPS after shut-down command
- To set the timing for turn-off IPS after the shut-down command is issued
- Support full range from 1 to 5 minutes

4.2.1 Time to Shutdown after Power Outage

This option allows users to configure the countdown time before shutdown to between 5 and 360 seconds.

4.2.2 Maximum Time to Shutdown after Power Outage

If this feature is enabled, the countdown time before shutdown will be dynamically adjusted according to the battery discharge state. The PPC-IPS module will turn off the panel PC once the battery reaches 20% capacity.

Warning! During this time the PPC-IPS will supply the PC with its battery to ensure the loading PC works properly.



If the battery capacity is down to 20%, the PPC-IPS will immediately, send the shut-down signal to turn off the loading PC. For this reason, please ensure the battery has enough power.

The PPC-IPS has a software utility to adjust this period setting, and the maximum uninterrupted period is strongly related with the loading PC power consumption.

4.2.3 Time to Turn Off IPS after a Shutdown Command

This option allows users to configure the time before turning off the PPC-IPS module after a shutdown/hibernate signal is sent to the panel PC to protect the battery life. The time interval can be between 1 and 5 minutes.

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