

ITA-510NX/560NX Series Industrial AI Railway Computer with NVIDIA Jetson® Orin NX™ Processor

Startup Manual

Packing List

Before you begin installing your card, please make sure that the following items have been shipped:

- 1 x ITA-510NX/560NX series industrial computer
- 1 x ITA-510NX/560NX accessory box
- 2 x Mounting bracket
- 1 x Warranty card

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

Note: Acrobat Reader is required to view any PDF file. Acrobat Reader can be downloaded at: www.adobe.com/Products/acrobat/readstep2.html (Acrobat is a trademark of Adobe)

Specifications

Standard Functions

- **Chip and Chipset:** NVIDIA Jetson® Orin NX™ processor
- **Memory:** Onboard 16GB DDR5
- **Display:** NVIDIA Volta GPU
- **Storage:** Supports M.2 (M-Key) 2280
- **Expansion Slot:** Supports 1 x Mini PCIe slot, 1 x M.2 E-key slot, 1 x M.2 B-key slot, 1 x M.2 M-key slot and 1 x Nano SIM card slot

System Specifications

- **Ethernet:** 4 x 10/100/1000M Ethernet
- **USB:** 2 x USB3.0
- **Display:** 1 x HDMI
- **Serial Port:** 1 x serial port with RS-232/422/485
- **Digital I/O:** 1 x 8bit(4in/4out)

Mechanical and Environment

- **Dimensions (W x H x D):**
 - ITA-510NX: 482.6 x 44 x 195.8 mm
 - ITA-560NX: 190 x 60 x 160 mm
- **Voltage Input:** DC 24/110V input
- **Working Temperature:** -25 ~ 55° C (-13 ~ 131° F)
- **Weight:**
 - ITA-510NX: 4.5kg
 - ITA-560NX: 2.4kg

For more information on this and other Advantech products, please visit our website at:

<http://www.advantech.com>

<http://www.advantech.com/epc>

For technical support and service, please visit our support website at:

<http://support.advantech.com>

This manual is for the ITA-510NX/560NX Series.

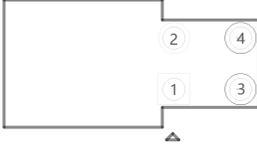
Part No.
Print in China

1st Edition
August 2023

Jumpers and Connectors

PWR1: DC Input

Pin	Setting
1-2	GND
3-4	12V



PWRBTN1: Power Button

Pin 1	Pin 2	Pin 3
PWRBTN#	GND	+V3.3



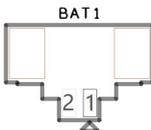
PSON1: Power On Mode Setting

Pin	Setting
1-2	AT mode
2-3	ATX mode (default)



BAT1

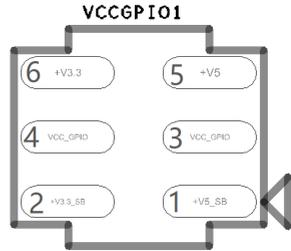
Pin	Setting
1	3.3V
2	GND



VCCGPIO1: GPIO Power Selection

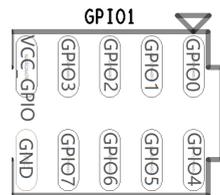
Pin	Setting
1-3	+V5_SB (default)
3-5pin	+V5
2-4pin	+V3.3_SB
4-6pin	+V3.3

Jumpers and Connectors (Cont.)



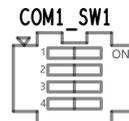
GPIO1 Pin Define

Pin	Setting
1	GPIO0
2	GPIO4
3	GPIO1
4	GPIO5
5	GPIO2
6	GPIO6
7	GPIO3
8	GPIO7
9	VCC_GPIO
10	GND



COM1_SW1, COM2_SW2: COM Mode Selection

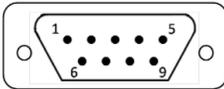
RS232 (default)	OFF,OFF,OFF,OFF
RS485	ON,ON,ON,OFF
RS422	ON,OFF,ON,OFF



Jumpers and Connectors (Cont.)

IO Interface

Serial Port					
Pin	Setting	Function	RS232	RS422	RS485
1	DCD	Data carrier detect	/	TXD(-)	DATA(-)
2	RXD	Data received	RXD	TXD(+)	DATA(+)
3	TXD	Data transmitted	TXD	RXD(+)	/
4	DTR	data-terminal-ready	/	RXD(-)	/
5	GND	signal ground connection	GND	GND	GND
6	DSR	Dataset ready	/	/	/
7	RTS	Request to send	/	/	/
8	CTS	Clear to send	/	/	/
9	RI	Ring detection	/	/	/



Ethernet: 10/100/1000Mbps, M12-X/Female Head

Pin	Setting	Pin	Setting
1	MDI0+	5	MDI3+
2	MDI0-	6	MDI3-
3	MDI1+	7	MDI2-
4	MDI1-	8	MDI2+



Power Input: DC: M12-S/Male Head

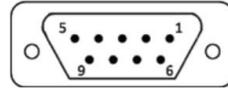
Pin	Setting	Pin	Setting
1	Power	3	GND
2	Power	4	NC



Jumpers and Connectors (Cont.)

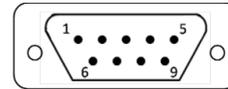
DIO: DB9/Female Head

Pin	Setting	Pin	Setting
1	GPIO0	6	GPIO4
2	GPIO1	7	GPIO5
3	GPIO2	8	GPIO6
4	GPIO3	9	GIPO7
5	GND		



CAN: DB9P/Male Head

Pin	Setting	Pin	Setting
1	NC	6	NC
2	CAN_L	7	CAN_H
3	GND	8	NC
4	NC	9	NC
5	NC		



Safety Precaution - Static Electricity

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

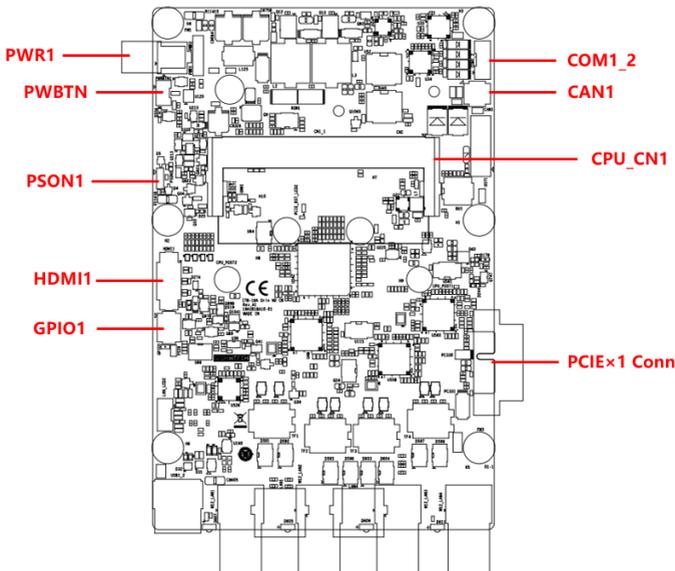
1. To avoid electrical shock, always disconnect the power from your PC chassis before you work on it.
2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.
3. Always disconnect the power cord from your chassis when you are working on it. Do not connect while the power is on. A sudden rush of power can damage sensitive electronic components. Only experienced electronics personnel should open the chassis. Always ground yourself to remove any static electric charge before touching motherboard, backplane or add-on cards. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static shielded bag.

Safety Instructions

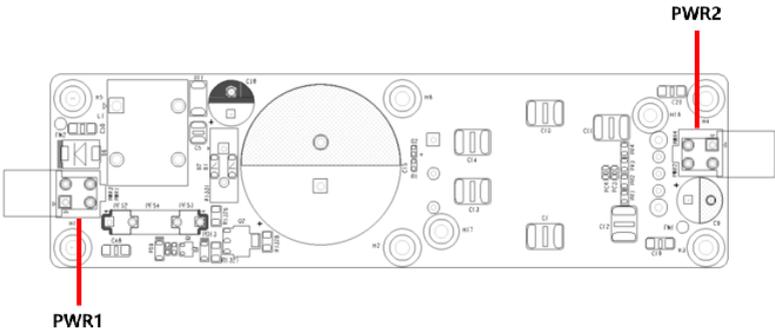
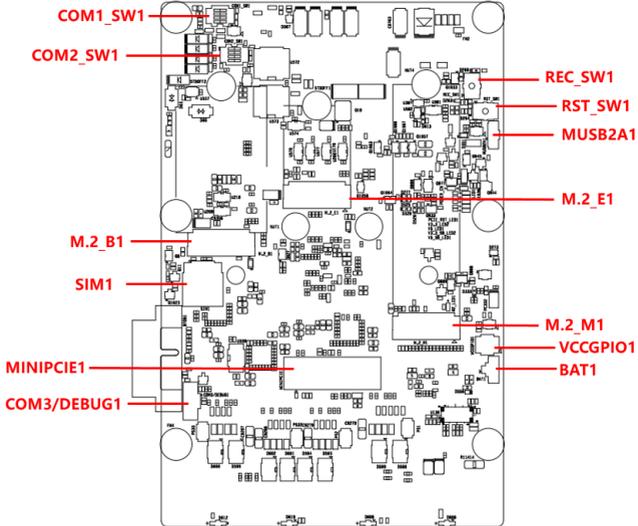
1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located 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. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
8. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
9. All cautions and warnings on the equipment should be noted.
10. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
11. Never pour liquid into an opening. This may cause fire or electrical shock.
12. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
13. If any of the following occurs, have the equipment checked by 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.
14. Do not leave the equipment in an environment with a storage temperature of below -25°C (-13°F) or above 55°C (131°F) as this may damage the components. The equipment should be kept in a controlled environment.
15. 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.
16. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).

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

Board Jumper Location Diagram

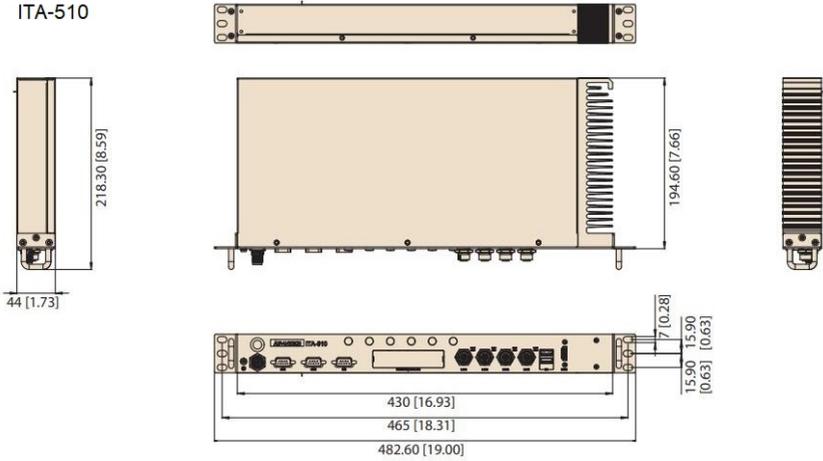


Board Jumper Location Diagram (Cont.)

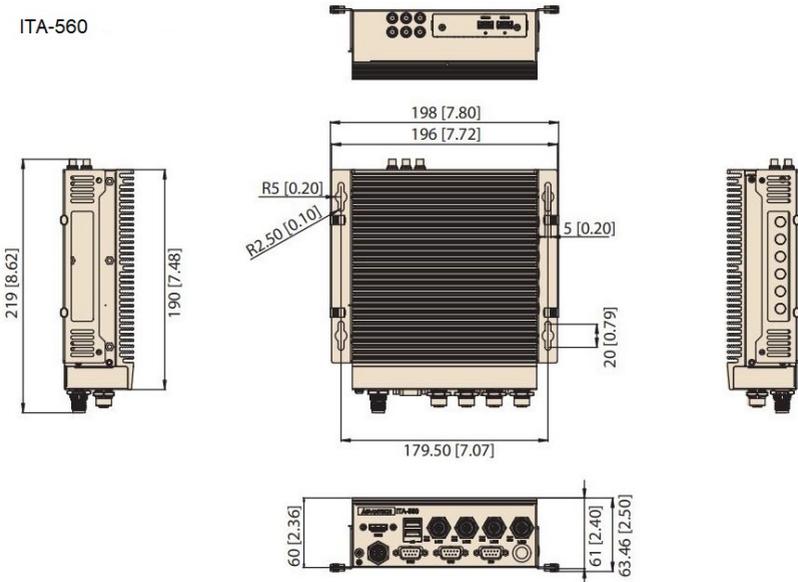


Dimension

ITA-510



ITA-560



ITA-510NX



ITA-560NX

