

LYNX- 6000 Series



User's Manual

Version 1.0

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Table of Contents

How to Use This Manual

| | |
|---|------------|
| Chapter 1 System Overview | 1-1 |
| 1.1 Introduction | 1-1 |
| 1.2 Check List..... | 1-1 |
| 1.3 Product Specification..... | 1-2 |
| 1.4 Mechanical Dimension..... | 1-3 |
| Chapter 2 System Installation | 2-1 |
| 2.1 M.2 Key E 2230 Wifi Module Installation..... | 2-1 |
| 2.2 M.2 Key B 2242 and Mini PCIe expansion Installation | 2-2 |
| 2.3 Wall Mounting Device Installation | 2-3 |
| 2.4 DIN-rail Mounting Device Installation..... | 2-3 |
| 2.5 Getting Started..... | 2-4 |
| 2.6 External Antenna installation..... | 2-4 |
| 2.7 I/O Interfaces | 2-5 |
| 2.7.1 Front View..... | 2-5 |
| 2.7.2 Rear View | 2-6 |
| Chapter 3 Important Instructions | 3-1 |
| 3.1 Note on the Warranty..... | 3-1 |
| 3.2 Exclusion of Accident Liability Obligation | 3-1 |
| 3.3 Liability Limitations / Exemption from the Warranty Obligation..... | 3-1 |
| 3.4 Declaration of Conformity | 3-1 |

How to Use This Manual

The manual describes how to configure LYNX- 6000 Series system to meet various operating requirements. It is divided into three chapters, with each chapter addressing a basic concept and operation of LYNX- 6000 Series system.

Chapter 1: System Overview. Present what may have in the box and give an overview of the product specifications and basic system architecture for this fan-less embedded system.

Chapter 2: System Installation. Show the definitions and locations of all the interfaces and describe a proper installation guide so that can easily configure the system.

Chapter 3: Important Instructions. Indicate some instructions which must be carefully followed when the fan-less embedded system is used.

The content of this manual is subject to change without prior notice. These changes will be incorporated in new editions of the document. The vendor may make supplement or change in the products described in this document at any time.

Revision History

| Revision | Date | Details of Change(s) |
|----------|------------|----------------------|
| V1.0 | 2019/12/25 | Initial Release |

Chapter 1

System Overview

1.1 Introduction

Portwell Inc., a world-leading innovator in the Industrial PC (IPC) market, announced LYNX-6000 Series system, a compact, fan-less and cable-less PC adapting low power Intel® Apollo Lake processor. Developed to meet heavy industrial standards, the rugged design makes sure its reliability as well as stability to work in harsh environment.

The modular design enhances the flexible of I/O demand and offers more opportunities to fulfilled different applications. LYNX- 6000 Series is empowered by Intel® Celeron® N3350 (6W TDP), which integrates the low power the 8th generation Intel® HD Graphics architecture. The palm-sized LYNX-6000 series includes LYNX-6110, LYNX-612E and LYNX-612G system, and this series provides basic features which is 4GB onboard LPDDR4, 2400 MT/s, non-ECC, up to 8GB; two USB 3.0; one DisplayPort (DP) with resolution up to 3840 x 2160; two Ethernet RJ-45 LAN port; and 32GB onboard eMMC 5.0 flash, up to 256GB; one M.2 Key E 2230 for wireless module. In addition, through the modular design, LYNX-6000 series provides extended I/O interfaces e.g. LYNX-612E features except not only the basic I/O but also two COM port (1x RS-232; 1 x RS-232/422/485 BIOS Configurable); one M.2 Key B 2242; one full-size Mini-PCIe expansion. In LYNX-612G , it applies with extended I/O interface two RS-232 COM port; four USB 2.0; one M.2 Key B 2242; one full-size Mini-PCIe expansion.

The robust, fan-less design makes the LYNX- 6000 Series durable in harsh environment applications, such as industrial automation, smart factory, edge computing, and IIoT gateway applications. The rugged and compact LYNX- 6000 Series supports a temperature range from 0°C to 50°C for harsh environment operation. In addition, it has already passed a vibration test of DIN-rail mounting 1Grms/ 10~500Hz and a shock test of 15G, assuring its solidity and reliability. In addition, the system accepts 12V-30VDC input voltage.




1.2 Check List

The LYNX- 6000 Series package should cover the following basic items:

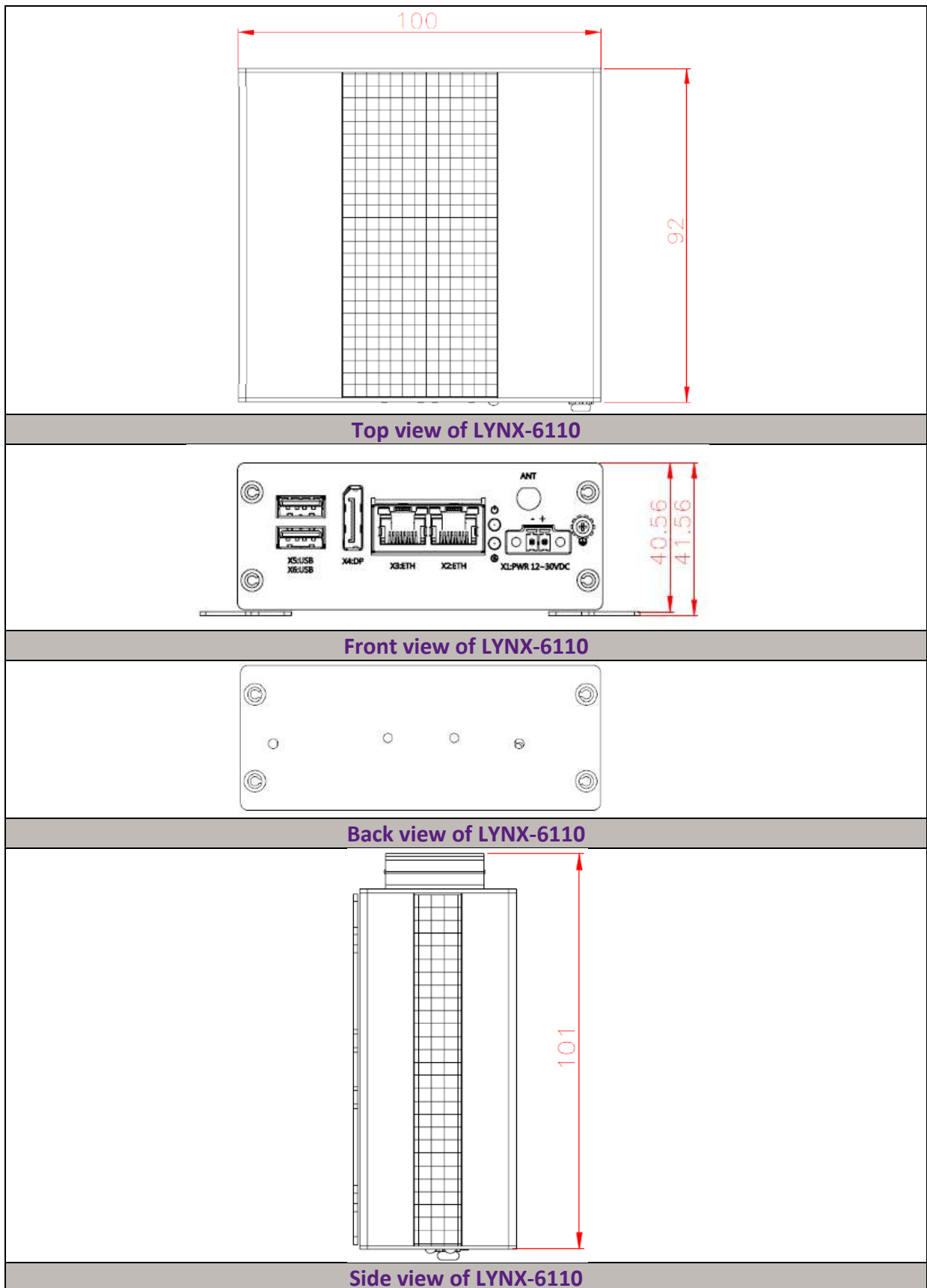
- ✓ One LYNX- 6000 Series System
- ✓ Other Accessories

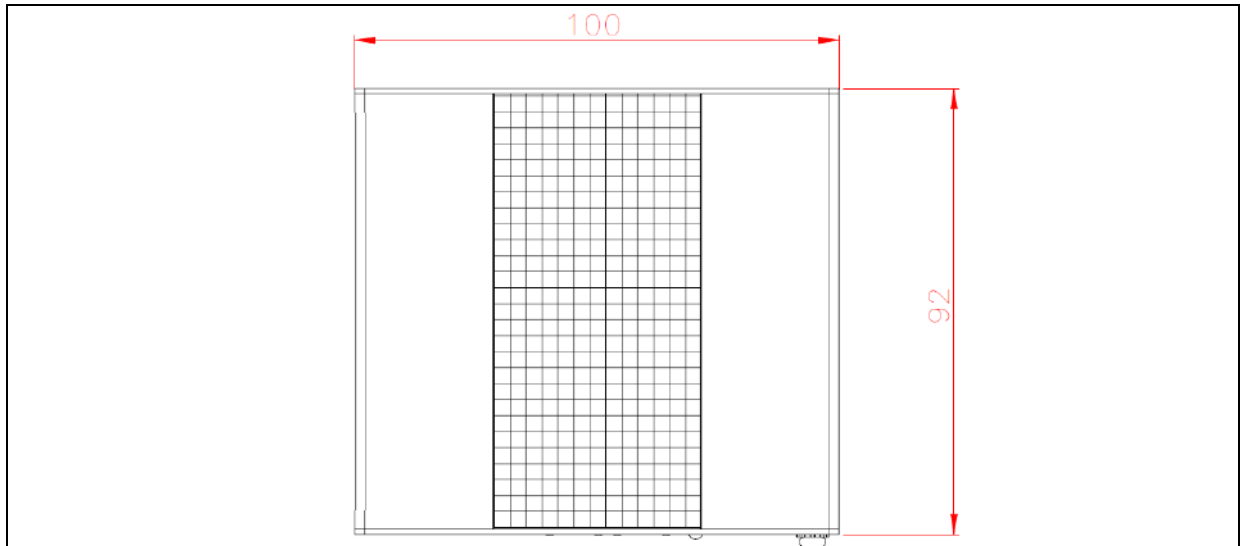
If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

1.3 Product Specification

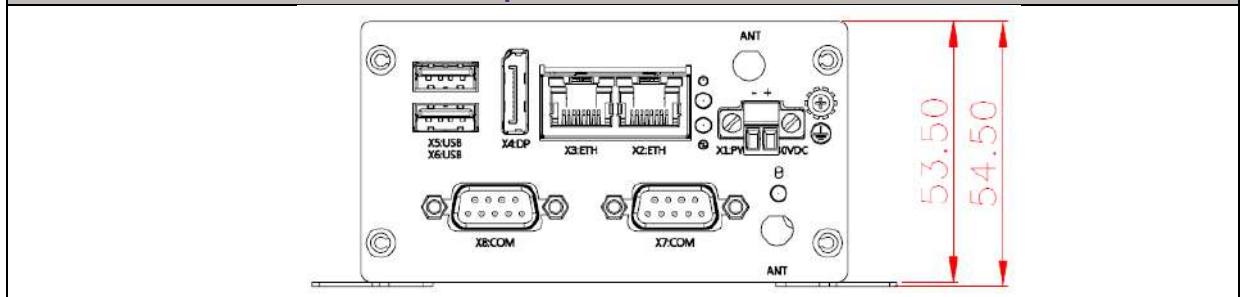
| | LYNX-6110 | | LYNX-612E | | LYNX-612G | |
|-------------------------------|---|--|--|--|---|--|
| Model Name |  | |  | |  | |
| Processor | Intel® Celeron® N3350, 2 cores, 1.1GHz/2.4 GHz, 6W TDP | | | | | |
| Memory | 4GB onboard LPDDR4, 2400 MT/s, non-ECC; up to 8GB (Optional) | | | | | |
| Storage | 32GB onboard eMMC 5.0 flash; up to 256GB (Optional) | | | | | |
| Power Input | 12-30VDC (+/- 20%) | | | | | |
| Operating System | Windows® 10 IoT Enterprise (64bit); Yocto v2.7 | | | | | |
| Expansion | 1x M.2 Key E 2230 for wireless module | | | | | |
| Basic I/O Interface | | | | | | |
| Power Connector | 1x 2-Pin Terminal Block | | | | | |
| Ethernet | 2x 10/100/1000 GbE (Intel® I210) | | | | | |
| USB | 2x USB 3.0 | | | | | |
| Display | 1x DP v1.4 4096 x 2160 @ 60Hz | | | | | |
| Extended I/O Interface | | | | | | |
| COM/Console | N/A | | 1x RS-232; 1x RS-232/422/485(BIOS Configurable) | | 2x RS-232 | |
| USB | N/A | | N/A | | 4x USB 2.0 | |
| Expansion | N/A | | 1x M.2 Key B 2242 for storage 1x full-size Mini-PCIe | | 1x M.2 Key B 2242 for storage 1x full-size Mini-PCIe | |
| Environmental | | | | | | |
| Storage Temp. | -40 °C ~ 85 °C | | | | | |
| Operating Temp. | 0°C ~ 50°C | | | | | |
| Permissible Humidity | 5-95% RH operating, non-condensing; 5-95% RH storage, non-condensing | | | | | |
| Vibration | 1G with DIN-rail mounting (EN 60068-2-6) | | | | | |
| Shock | 15G with 11 ms impulse length, 18 shocks in total (EN 60068-2-27) | | | | | |
| Certification | CE (EN 55032; EN 55024/ EN 55035) CE (EN 61000-6-4; EN 61000-6-2) FCC (Part 15 Subpart Class A) LVD (EN 62368) | | | | | |
| Mechanical | | | | | | |
| Degree of Protection | IP 30 | | | | | |
| Dimension (mm) | 100x40x92 | | 100x53.5x92 | | | |
| Net Weight (Kg) | 0.42 | | 0.53 | | | |
| Expansion | N/A | | 1x M.2 Key B 2242 for storage 1x full-size Mini-PCIe | | 1x M.2 Key B 2242 for storage 1x full-size Mini-PCIe | |
| Mounting | DIN-rail / Wall Mount | | | | | |
| Cooling | Fan-less | | | | | |

1.4 Mechanical Dimension

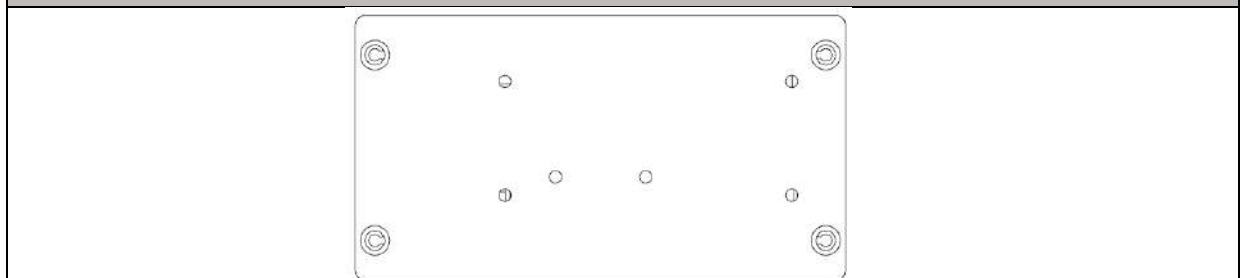




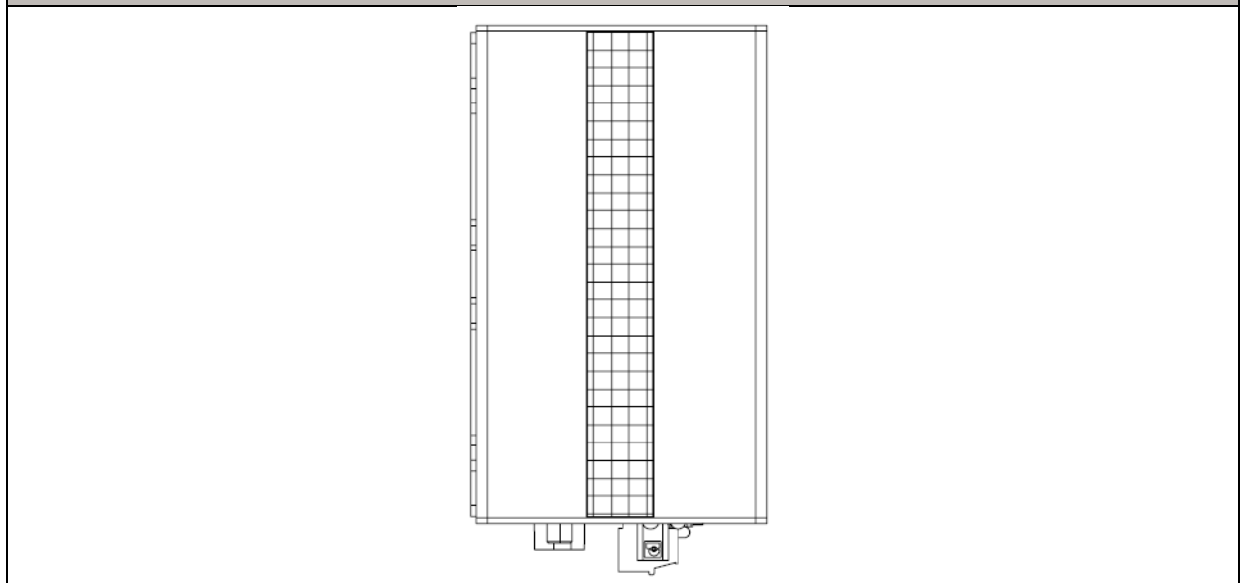
Top view of LYNX-612E



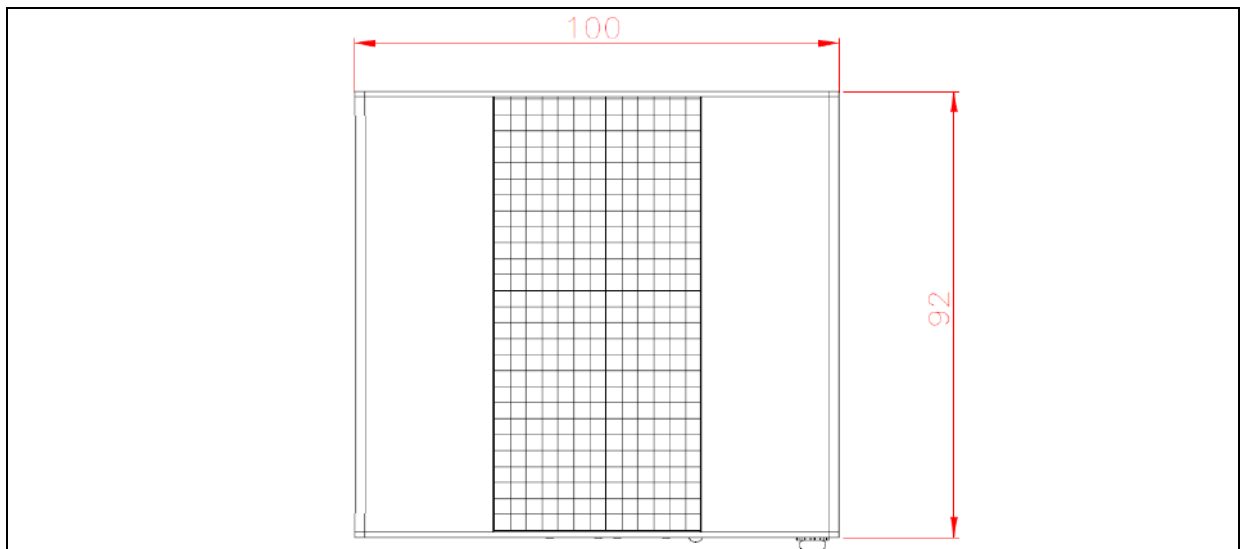
Front view of LYNX-612E



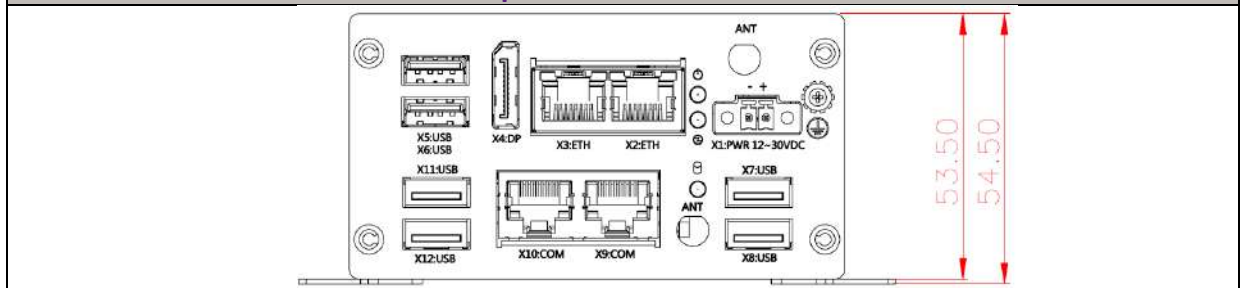
Back view of LYNX-612E



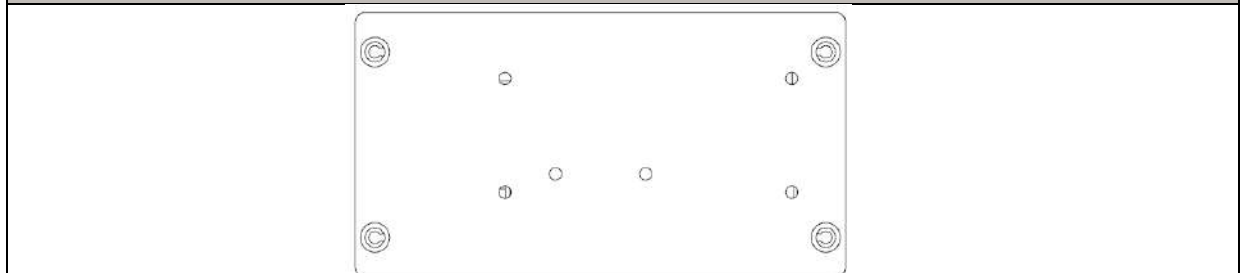
Side view of LYNX-612E



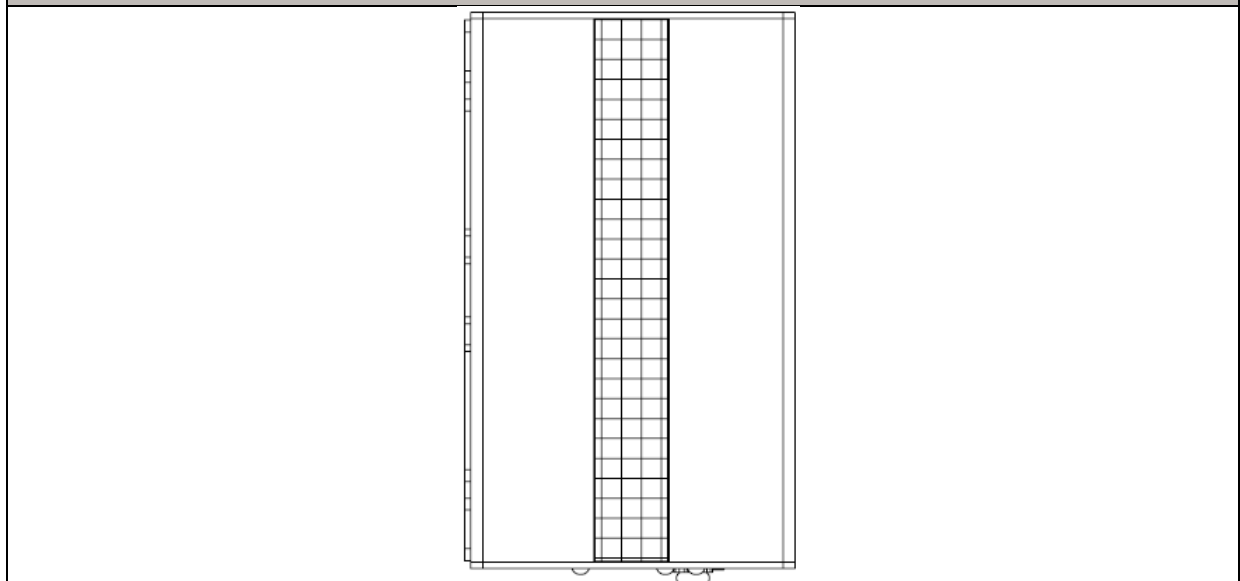
Top view of LYNX-612G



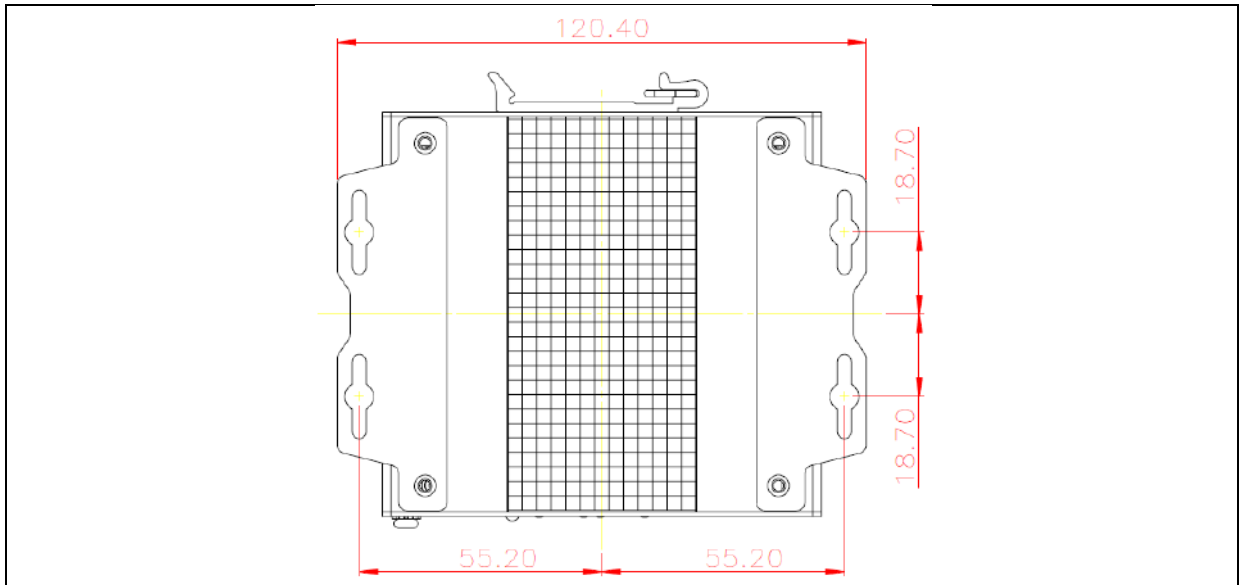
Front view of LYNX-612G



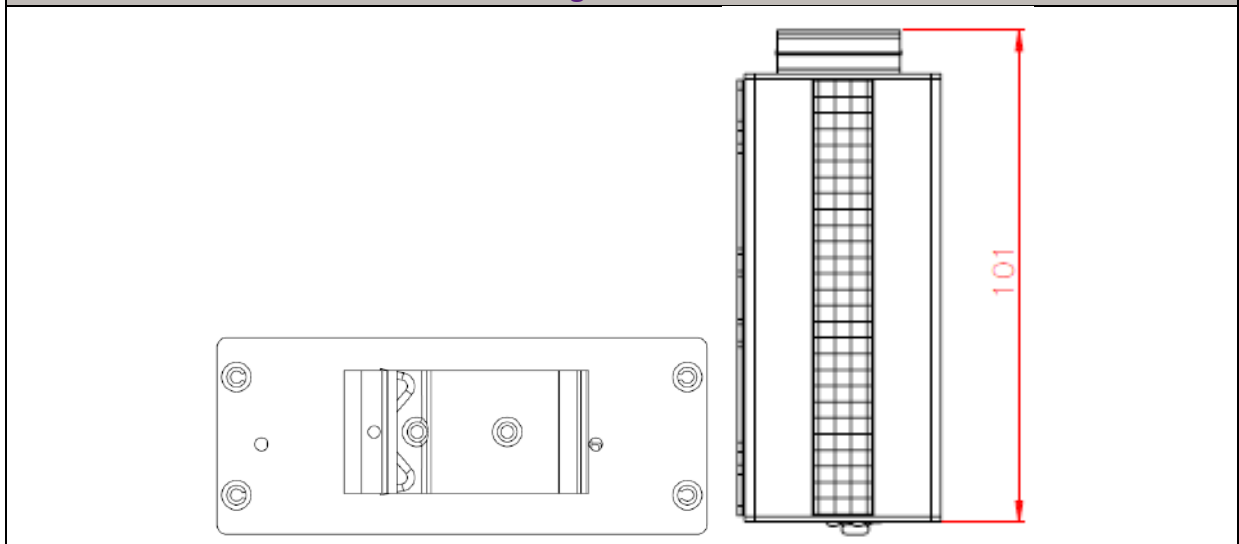
Back view of LYNX-612G



Side view of LYNX-612G



Wall Mounting of LYNX-6000 Series




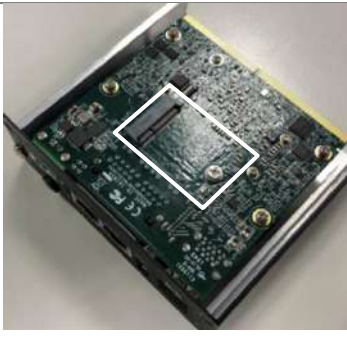


Din Rail mounting view of LYNX-6000 Series

Chapter 2 System Installation

This chapter provides you with instructions to set up your system. Definitions and locations of all the interfaces are described so that you can easily configure your system.



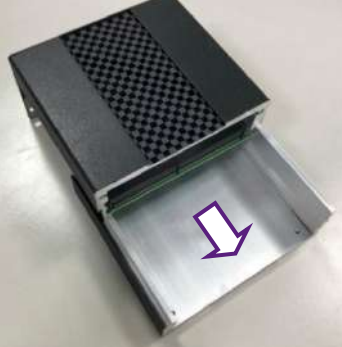
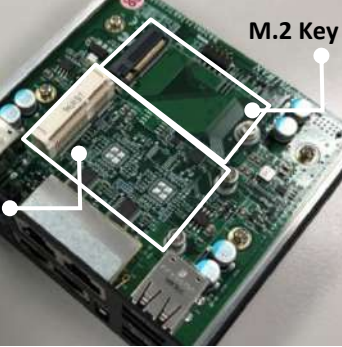
2.1 M.2 Key E 2230 Wifi Module Installation

| | |
|---|---|
| <p>Step 1. Remove 2 screws at the bottom of the front bracket.</p>  | <p>Step 2. Remove 4 screws from the rear bracket. Remove the rear bracket.</p>  |
| <p>Step 3. Pull out the bottom heat sink.</p>  | <p>Step 4. Turn around the system, you can find M.2 Key E 2230 socket and Wifi module can be installed on it.</p>  |
| <p>Step 5. Finishing the installation, put the bottom heat sink back to the initial position. Lock the front/rear bracket by screws.</p> | <p>Note: Make sure to fasten the screw back with proper torque (5kgf-cm) by torque wrench on LYNX-6000. Improper torque may cause the damage of screw thread on the aluminum chassis.</p> |

2.2 M.2 Key B 2242 and Mini PCIe expansion Installation

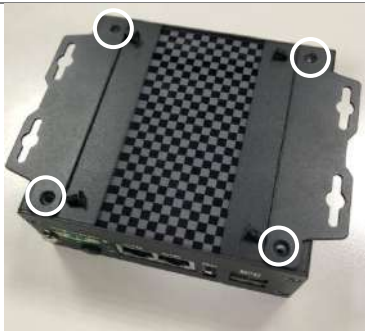
NOTE:

Expansion card may various for different model, please check specification of each model.

| | |
|---|--|
| <p>Step 1. Remove 2 screws at the bottom of the front bracket.</p> <p>NOTE: Need to remove the screw of COM port for some specific model.</p> | <p>Step 2. Remove all 4 screws from the rear bracket. Remove the rear bracket.</p> |
|  |  |
| <p>Step 3. Pull out the bottom heat sink.</p> | <p>Step 4. Turn around the system, you can find Mini PCI-e and M.2 Key B 2242 card socket and the expansion cards can be installed on it.</p> |
|  |  |
| <p>Step 5. Finishing the installation, put the bottom heat sink back to the initial position. Lock the front/rear bracket by screws.</p> | <p>Note: Make sure to fasten the screw back with proper torque (5kgf-cm) by torque wrench on LYNX-6000. Improper torque may cause the damage of screw thread on the aluminum chassis.</p> |

2.3 Wall Mounting Device Installation

Step 1. Fasten the Wall Mounting bracket by screws (M3 x 5L) on the LYNX-6000 series.

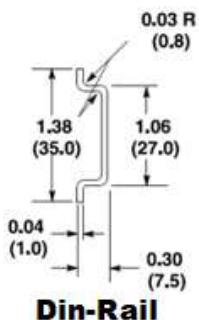
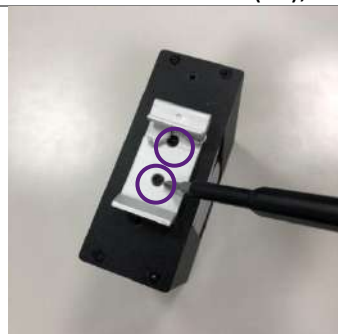


Step 2. Choose the correct type of mounting surface and securely attach the LYNX-6000 series on it (desk/wall). Ensure that the attaching hardware is in the small section of the keyholes.



2.4 DIN-rail Mounting Device Installation

Step 1. Fasten the DIN-rail Mounting bracket by screws (M3 x 5L) on the LYNX-6000 series.
Suitable for 35mm (W), 7.5mm(H) DIN-rail.



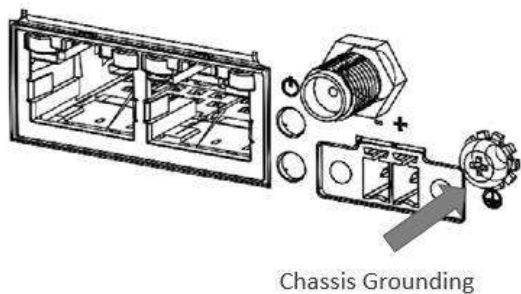
Step 2. Clip the DIN Rail onto the device and make sure it has been locked tightly



2.5 Getting Started

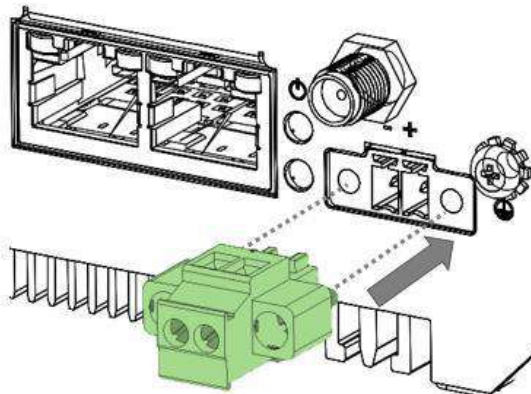
Step 1. Chassis Grounding

There is an easy-to-connect chassis grounding point to use



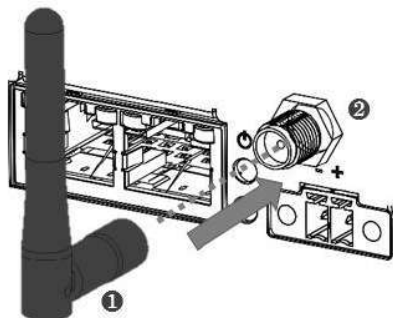
Step 2. Connecting Power

This product is intended to be supplied by a Listed Power Adapter or DC power source, rated 10-30Vdc, 2A and Tma 50 degree C, if need further assistance, please contact us for further information.



2.6 External Antenna installation

Included with the installed card is an antenna (1) that attaches to a connector on the front of the unit (2). Since the LYNX-6000 Series is often installed within an enclosure, it may be advisable to install the antenna on the exterior of the enclosure with appropriate length antenna cable rather than directly to the IPC.



2.7 I/O Interfaces

2.7.1 Front View

LYNX-6110



LYNX-612E



LYNX-612G



2.7.2 Rear View

LYNX-6110



LYNX-612E



LYNX-612G



USB3.0

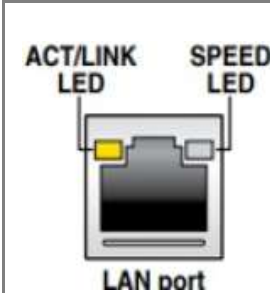
Two USB 3.0 (Universal Serial Bus) ports. USB 3.0 ports utilize a blue connector.

DP:

DP (Display Port) display output

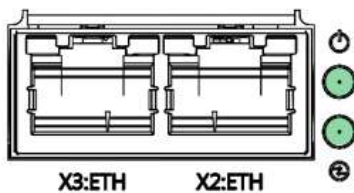
LAN:

Two Gigabit Ethernet (10/100/1000 Mbits/sec) LAN ports by using Intel I210 Gigabit LAN Controller.

|  | Activity Link LED | | Speed LED | |
|---|-------------------|---------------|---------------|--------------------|
| | Status | Description | Status | Description |
| | Off | No link | Off | 10Mbps Connection |
| | Orange | Linked | Orange | 100Mbps Connection |
| | Orange(Blink) | Data activity | Orange(Blink) | 1 Gbps Connection |

LED Indicator

Two LED indicator show the operating information.



| Function* | Status | Description |
|-------------------|-----------|-------------|
| Power | Power On | Solid Green |
| | Power Off | Off |
| Run Status (GPIO) | Run | Flash Green |
| | Off | Off |

*: Need to auto detection functionality while power applied.

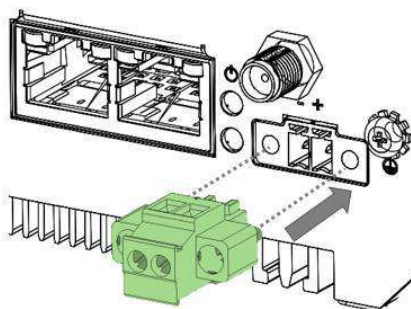
COM

Serial (COM): D-SUB 9 serial ports are available for use, which is configurable as either RS-232, RS-422, or RS-485 by BIOS setting. The function of the pins in the D-SUB 9 connector varies with the different configuration settings on different model, please check it on the datasheet.

| D-SUB 9 pin | RS-232 | RS-422 | RS-485 |
|-------------|----------------|--------|-----------|
| 1 | DCD | TXD- | TXD-/RXD- |
| 2 | RXD | TXD+ | TXD+/RXD+ |
| 3 | TXD | RXD+ | - |
| 4 | DTR | RXD- | - |
| 5 | GND | GND | GND |
| 6 | DSR | - | - |
| 7 | TRRS | - | - |
| 8 | CTS | - | - |
| 9 | Ring indicator | - | - |

Power Terminal:

2-pin screw-type terminal block is provided for connecting power to LYNX-6000 series.



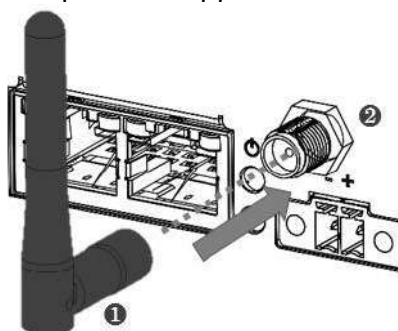
| Pin No. | Description |
|---------|-------------------|
| - | 0 V DC |
| + | 12-30VDC (+/-20%) |

M.2 and Mini PCIe Card Socket

Disassemble the chassis of LYNX-6000 series, you will see M.2 and Mini PCIe card socket on the main board or carrier board. The socket type are varies with different models.

Antenna

A M.2 Key E 2230 or Mini PCIe expansion support wireless module.



Chapter 3 Important Instructions

This chapter includes instructions which must be carefully followed when the LYNX-6000 Series is used.

3.1 Note on the Warranty

Due to their limited service life, parts which, by their nature, are especially subject to wear are not included in the guarantee beyond the legal stipulations.

3.2 Exclusion of Accident Liability Obligation

Portwell, Inc. shall be exempt from the statutory accident liability obligation if users fail to abide by the safety instructions.

3.3 Liability Limitations / Exemption from the Warranty Obligation

In the event of damage to the system unit caused by failure to abide by the hints in this manual and on the unit (especially the safety instructions), Portwell, Inc. shall not be required to respect the warranty even during the warranty period and shall be free from the statutory accident liability obligation.

3.4 Declaration of Conformity

EMC

CE/FCC Class A

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This equipment may not cause harmful interference.
2. This equipment must accept any interference that may cause undesired operation.

Applicable Standards:

EN 55032

EN 55024/ EN 55035

EN 61000-3-2: 2006

EN 61000-6-2

EN 61000-6-4

FCC 47 CFR Part 15 Subpart Class A

Safety

EN 62368-1